

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CANADIAN SOLAR (USA) INC.,
Petitioner,

v.

FIRST SOLAR, INC.,
Patent Owner.

Case IPR2025-01432
Patent No. 9,130,074

**DECLARATION OF DR. MICHAEL DUDLEY, PH.D. IN SUPPORT OF
PATENT OWNER'S PRELIMINARY RESPONSE**

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I, Michael Dudley, Ph.D., hereby declare and state:

1. INTRODUCTION

1. I have been retained by counsel on behalf of Patent Owner First Solar, Inc. (“First Solar”) to provide expert opinions in this proceeding. The statements of fact made in this declaration are based on my personal knowledge and analysis.

2. I am being compensated at my usual consulting rate of \$600 per hour for my work related to this matter. My compensation is in no way dependent on the outcome of this proceeding or the testimony or opinions that I may provide. I have no financial interest, benefit or otherwise, in any of the parties.

2. PROFESSIONAL BACKGROUND QUALIFICATIONS

3. I am a professor of materials science and chemical engineering at the State University of New York at Stony Brook. I have a Ph.D. in Engineering Science from the University of Warwick, in the United Kingdom.

4. I have been with SUNY at Stony Brook for 41 years and been recognized for my contributions as a scholar, teacher, and administrator. I was the chairman of the Department of Materials Science and Engineering from 1993 until 2017. I have been the director or co-director of numerous research teams and initiatives related to the fabrication of silicon devices as well as gallium nitride and silicon carbide. I have advised some 28 Ph.D. students and numerous Master’s students. I am currently the director of the Onsemi Research Center for Wide

Bandgap Materials at Stony Brook University. I have about 20 years of experience working specifically on solar cell projects, and thus am very familiar with methods of manufacturing solar cells both today and throughout my career.

5. I have authored more than 480 papers in the area of semiconductors with several specifically in the area of solar cell manufacturing, including:

-- X. Zhang, B. Raghothamachar, D.L. Meier, M. Dudley, and S. Mahajan, "A study on dendritic web silicon growth". Extended Abstracts and Papers, 13th Workshop on Crystalline Silicon Solar Cell Materials and Processes, Vail, CO, United States, Aug. 10-13, 2003, Editor(s): Soporì, Bhushan L, Publisher: National Renewable Energy Laboratory, Golden, CO, pp. 73-76 (2003).

-- Colli, K. Attenkofer, B. Raghothamachar, and M. Dudley, "Studying the Impact of Stress/Strain on Cracks in Laminated Crystalline Silicon Cells: Opening the Doors of Synchrotron Facilities to the PV Module Industry," 2016 IEEE 43rd Photovoltaic Specialists Conference (PVSC), Portland, OR, 2643-2646 (2016) doi: 10.1109/PVSC.2016.7750128.

-- Colli, K. Attenkofer, B. Raghothamachar, and M. Dudley, "Synchrotron X-Ray Topography for Encapsulation Stress/Strain and Crack Detection in Crystalline Silicon Modules," IEEE Journal of Photovoltaics, 6 (5), 1387-1389 (2016).

6. My publications have been widely cited in my field, garnering nearly ten thousand citations across my papers. A more complete summary of my experience, expertise, and publications is set forth in my *curriculum vitae*, which is attached as **Appendix A**.

3. MATERIALS CONSIDERED

7. In preparing this declaration, I have relied on my over 40 years of education, training, research, knowledge, and extensive personal and professional experience in the relevant art. I have also considered the materials listed in **Appendix B.**

4. SUMMARY OF OPINIONS

8. In my opinion, none of the claims 1–8 of U.S. Patent No. 9,130,074 (the “’074 Patent”) is rendered obvious by any of Grounds 1–6 in view of various combinations of EP 1732142 A1 (“Froitzheim”) with (a) Yablonovitch, *et al.*, *A 720 mV open circuit voltage SiO_x:c-Si:SiO_x double heterostructure solar cell*, Appl. Phys. Lett. 47 (11) (Dec. 1, 1985) (“Yablonovitch”); (b) Solar Cell, 2nd Ed. (Elsevier 1995) (“Neville”); (c) Kwark *et al.*, “*SIPOS Heterojunction contacts to silicon*,” International Electron Devices Meeting (1984): 742-745 (“Kwark”); and (d) Sasaki, *et al.*, *Light Trapping for Thin-Film Silicon Solar Cells Fabricated on Insulator*, Jpn. J. Appl. Phys., Vol. 33, pp. 3389-3392 (1994) (“Sasaki”).

9. I have considered Dr. Stephen P. Shea’s assertions that a person of ordinary skill in the art (“POSA”) would have found the claims of the ’074 Patent to be obvious based on applying the teachings of Froitzheim in combination with Yablonovitch, Neville, Kwark, and/or Sasaki. Ex. 1003 (Shea Declaration) ¶¶ 107–328. As explained below, these assertions are incorrect. In my opinion, a

POSA in 2009 would have understood that Froitzheim discloses a very different type of solar cell and fabrication process than the process claimed in the '074 Patent. Also, in my opinion, a POSA would not have combined the teaching of Froitzheim with the teachings of Yablonovitch, Neville, Kwark, and/or Sasaki because each reference teaches a very different type of solar cell and fabrication process. In addition, it is my opinion that both Froitzheim and Yablonovitch teach away from the proposed modifications to their solar cell structures or their manufacturing methods, and a POSA would not be motivated to modify Froitzheim with Yablonovitch to make the changes proposed by Canadian Solar to arrive at the solar cell and the process for making such cell as claimed in the '074 Patent. Also, I disagree with Dr. Shea that a POSA would be motivated to use interchangeably the p- and n-type doped layers based on the teaching of Neville.

5. LEVEL OF ORDINARY SKILL IN THE ART

10. I have been informed that claims should be understood from the vantage point of a person of ordinary skill in the art to which the patented subject matter pertains, as of the patent's priority date. I understand the priority date of the '074 Patent to be April 21, 2009.¹

¹ I have not independently reached a separate opinion about the priority date of the '074 Patent.

11. I understand a POSA to be a hypothetical person with an ordinary level of creativity that would have enabled that person to solve ordinary problems, *i.e.*, ones that would not have required any genuine innovation. I have been informed that a POSA possesses knowledge of all of the relevant publicly available art in the particular field, and the education and skills ordinarily associated with carrying out research in that particular field.

12. It is my understanding that Petitioner has taken the position that a POSA “would have been someone with an advanced degree involving the discipline of electrical engineering, applied physics, chemistry, or materials science, and at least two years of experience designing, developing, or researching in the field. Alternatively, that person would have had a bachelor’s degree in electrical engineering, applied physics, or materials science, and at least four years of experience designing, developing, or researching in the field.” Pet. 3–4. I understand that First Solar has accepted this definition for the purposes of its preliminary response. Thus, for the purposes of this declaration, I will apply this level of ordinary skill to my analysis. However, I have reached no independent view of the appropriate level of skill in the art for analyzing the ’074 Patent.

6. LEGAL STANDARDS

13. In rendering my analysis, I have been informed by counsel regarding various legal standards for determining patentability. I have applied those standards in forming my opinions expressed in this report.

14. I understand that the patent claims describe the invention made by the inventors, describe what the patent owner owns and what the owner may prevent others from using. I understand that an independent claim sets forth all the requirements that must be met to be covered by that claim. I further understand that a dependent claim does not itself recite all of the requirements of the claim, but refers to one or more other claims and incorporates all of the limitations of the claims to which it refers.

A. Claim Construction

15. I understand that, for purposes of my analysis in the IPR proceeding, the terms appearing in the patent claims should be interpreted according to their ordinary and customary meaning as understood by a POSA.

16. In determining the ordinary and customary meaning of a claim term, I understand that the words of the claim are first given their plain meaning, as the words would have been understood by a POSA at the time of the claimed invention, after reading the entire patent and prosecution history. I also understand that the structure of the claims, the patent specification, and prosecution history

may also be used to construe a claim. I understand that extrinsic evidence, such as treatises and dictionaries, may be used to determine the meaning understood by a POSA at the time of the claimed invention.

17. My analysis applies the plain meaning of the '074 Patent's claim terms. My understanding of the claims is based on the '074 Patent's priority date of April 21, 2009.

B. Obviousness

18. I understand that a claimed invention is not patentable if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious to a POSA at the time the invention was made. I understand that when evaluating obviousness, one must not consider whether the claimed invention would have been obvious to either a layman or to an expert.

19. Obviousness, as I understand it, is based on the scope and content of the prior art, the differences between the prior art and the claim, and the level of ordinary skill in the art.

20. For one or more references to render a claim obvious, there must be a reason (a motivation) for a POSA to modify the single prior art reference, or to combine two or more references, in a manner that provides the elements of the claimed invention. I understand that the Patent and Trademark Office can find a

claimed invention unpatentable for obviousness in an IPR proceeding only if there is a preponderance of evidence that a POSA would have had reason to combine the teaching of the prior art references to achieve the claimed invention, and would have had a reasonable expectation of success in doing so.

21. I understand that when evaluating obviousness, one must not use hindsight when comparing the prior art to the claimed invention and must not consider what was learned from the teachings of the patent. I understand that it is improper to use the patent claims as a road map for selecting and combining items of prior art. In other words, one should avoid using the challenged patent as a guide through the prior art references, combining the right references in the right way so as to achieve the result of the claims at issue. Instead, one must put oneself in the place of the defined POSA at the time the invention was made and consider only what was known before the invention was made and not consider what was only known after the invention was made.

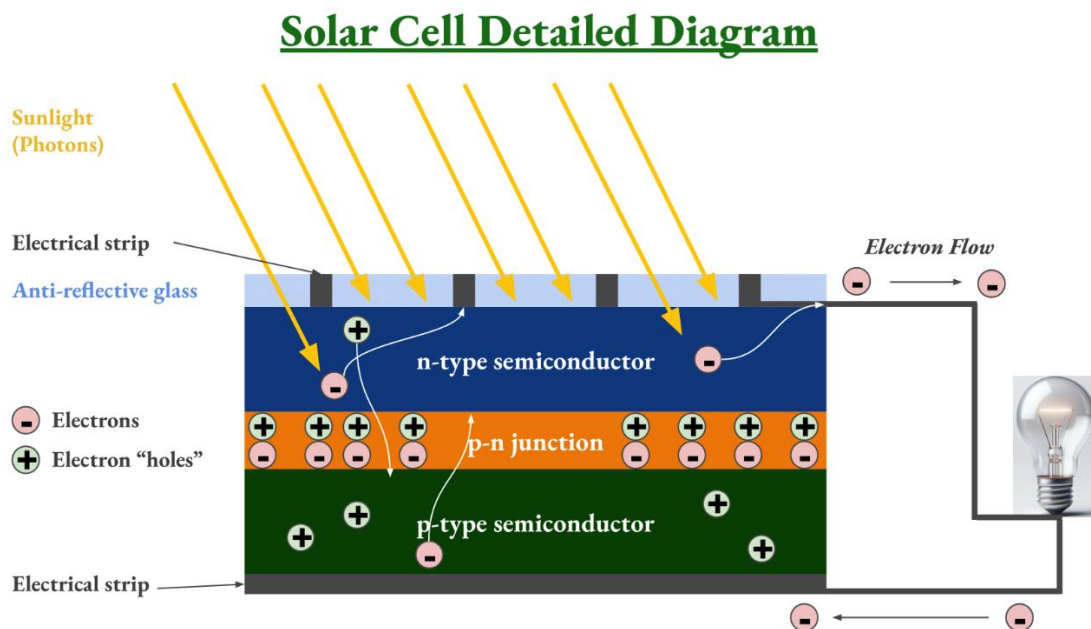
22. I understand that obviousness should be considered in light of the problems known to a POSA at the relevant time and the complexity of the alternatives for solving the problem. That individual elements of the claimed invention are disclosed in the prior art is not alone sufficient to reach a conclusion of obviousness.

7. BACKGROUND ON SOLAR TECHNOLOGY

23. The function of the solar cell is to absorb and convert sunlight (solar energy) into electrical energy. A solar cell is also called a photovoltaic (“PV”) cell. Solar cells are typically small and delicate; they are the building blocks of solar panels.

24. When sunlight strikes a solar cell, it can cause an electron in the solar cell to become excited (i.e., energized) and ejected from its atom. Electrons freed in this way are directed towards electrodes at one end of the solar cell, and the flow of electrons creates an electric current.

25. Below is a diagram of a solar cell showing how solar energy is converted into electricity:



26. Solar cells are typically manufactured from silicon, a semiconductor, due to its properties to excite and eject electrons more easily. Solar cells are generally composed of two different layers of silicon to facilitate the electron flow: an “N-doped layer” and a “P-doped layer”. N-type semiconductors are generally “doped” (mixed) with phosphorus to leave additional electrons free in the material. P-type semiconductors are doped with boron, which creates a lack of an electron, or an electron “hole”. The “n” stands for “negative” and “p” stands for “positive” because electrons have a negative charge.

27. When P-doped and N-doped silicon layers are put into contact, free electrons can move from the N-doped layer to the P-doped layer, where they settle in the holes of the P-doped layer, forming a “p-n junction” at the interface between the two layers (shown in orange on the diagram). At the center of the p-n junction is a “depletion zone” where the excess electrons from the n-type layer rush to find electron holes from the p-type layer. The depletion zone also produces a built-in electric field that acts to separate the charge carriers produced by sunlight and which can be used to drive the flow of current through an externally connected circuit. The p-n junction also prevents more electrons crossing over the border in a stable state. Effectively, a p-n junction acts as a one way barrier so that electrons excited by sunlight flow together from the n-doped side to the p-doped side forming an electrical current.

28. One of the factors that can affect the efficiency of a solar cell is recombination. Recombination is when light-excited electrons combine with atoms in the solar cell rather than flowing to the electrodes to generate electricity. Hence, reduced recombination improves solar cell efficiency. The reduction of recombination is called “passivation”.

29. TOPCon (Tunnel Oxide Passivated Contact) is an advanced PV cell technology that exhibits reduced recombination, which results in higher operational efficiency as compared to other solar cell technologies.

30. The methods claimed in the '074 Patent improve both upon the manufacturing efficiency and performance of solar cells.

8. OVERVIEW OF THE '074 PATENT

31. The '074 Patent is titled “High-Efficiency Solar Cell Structures and Methods of Manufacture”.

32. The '074 Patent has 8 claims, with claim 1 being the sole independent claim. Claim 1 of the '074 Patent recites:

1. (1[pre]) A method of fabricating a solar cell, comprising;
 - (1[a]) providing a wafer as a central substrate;
 - (1[b]) depositing or growing at least one amorphous interface passivation layer over the substrate;
 - (1[c]) depositing at least one conductive and passivating layer on the at least one interface passivation layer, the at least one conductive and passivating layer comprising a dopant;

(1[d]) providing thermal treatment at a temperature of about 500° C. or higher, the thermal treatment crystallizing, at least in part, the at least one conductive and passivating layer and facilitating diffusion of the dopant from the at least one conductive and passivating layer through the at least one interface passivation layer; and

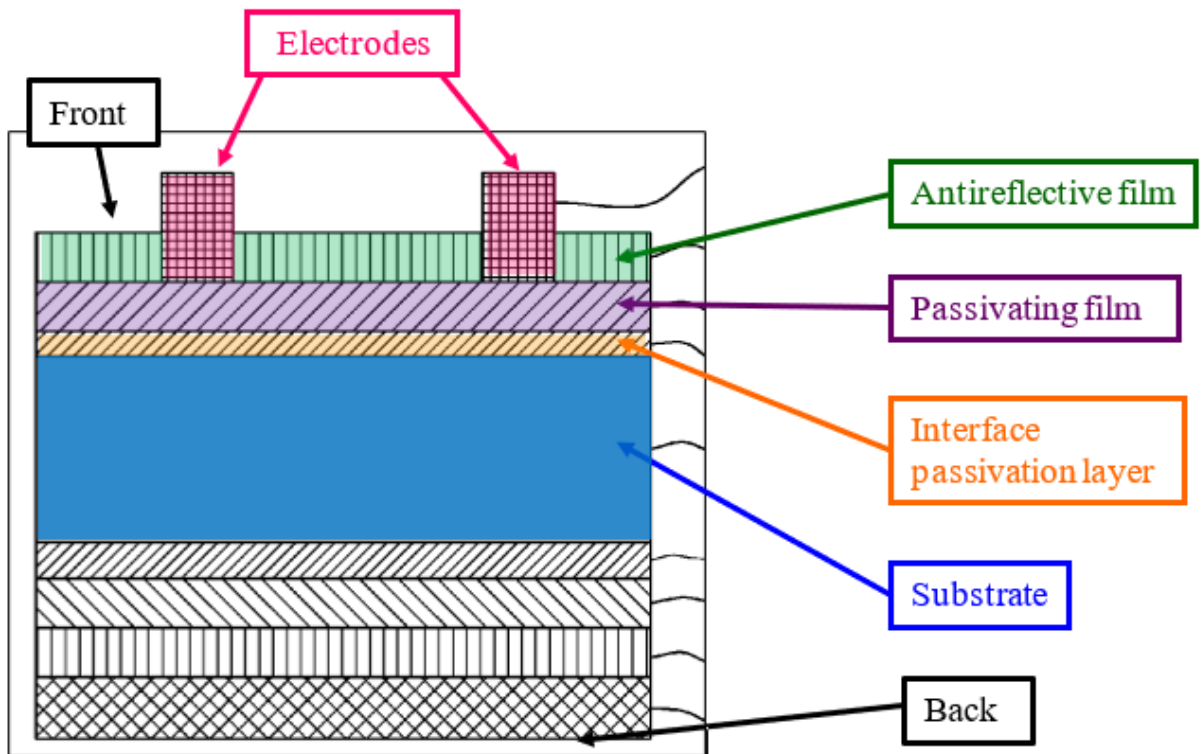
(1[e]) providing metallization as electrodes which directly contact the at least one conductive and passivating layer following the thermal treatment thereof, wherein the dopant diffused through the at least one interface passivation layer provides shortened charge carrier flow paths between the substrate and the electrodes through the at least one conductive and passivating layer and the at least one interface passivation layer.

Ex. 1001, 19:13–35.

33. Claims 1–8 of the '074 Patent recite improved, more efficient methods of manufacturing solar cells that yield more efficient solar cells in their generation of electricity compared to prior art solar cells.

34. The method of the '074 Patent can be used to fabricate TOPCon cells.

35. The '074 Patent describes several examples of solar cells fabricated using the claimed methods. The exemplary structure of Figure 8 is reproduced in the diagram below.



Ex. 1001 ('074 Patent), Fig. 8 (annotated).

36. The structure shown in Figure 8 includes a central silicon substrate (shown in blue), an interface passivation layer (orange) that covers the top surface of the substrate, a conductive and passivating layer (purple) that, in turn, covers the top surface of the interface passivation layer, and metal electrodes (pink).

9. OVERVIEW OF THE ASSERTED PRIOR ART

A. Froitzheim

37. Froitzheim is the European Patent Application, titled “Si solar cell and its manufacturing method.” It discloses “a new type of a silicon solar cell that shows improved stability and good efficiency.” Ex. 1008, ¶ 9. Froitzheim’s solar

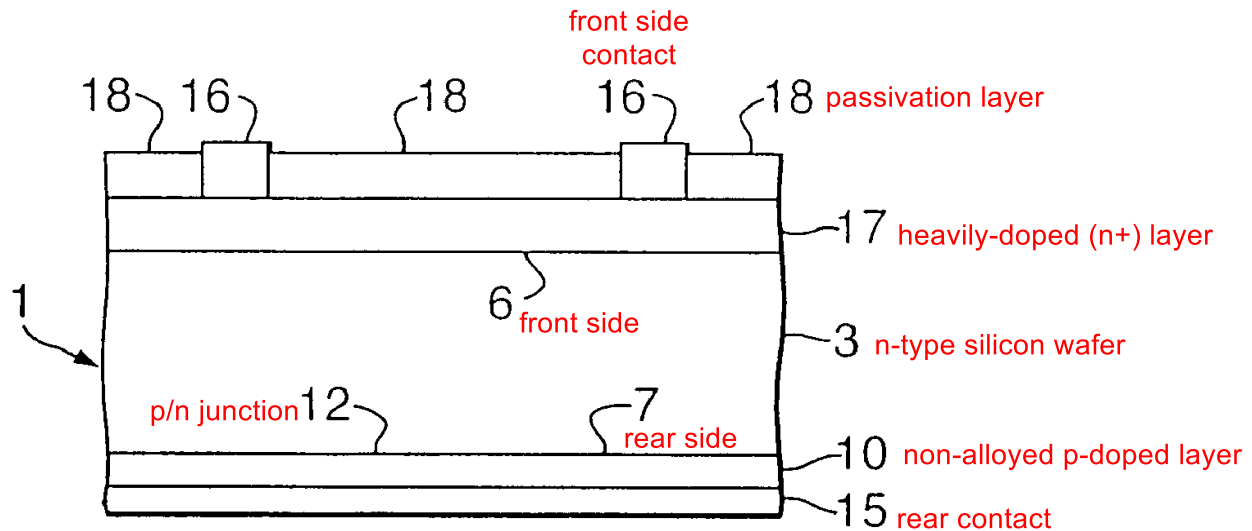
cell has “significantly higher efficiencies than known from cells based on an Al-Si alloy.” Ex. 1008, ¶ 11.

38. Froitzheim states that in conventional silicon-based solar cells “[f]ront and rear side contacts are arranged that are in electrical connection with the n-doped layer and the p-doped base layer, respectively, to withdraw a photocurrent from both sides of the p/n-junction.” Ex. 1008, ¶ 2. Froitzheim further states that a “known problem in such solar cells is degradation of the boron doped base layer, which is also referred to as light induced degradation (LID)” and that such degradation adversely affects the performance of the solar cell. *Id.* ¶ 3.

39. Froitzheim claims that its solar cell design addresses this problem of degradation and creates a cell with improved stability. *Id.* ¶¶ 8–11. Specifically, Froitzheim reduces degradation by having a boron doped p-type emitter on the back surface of the n-type substrate, which differs from traditional solar cells in which the emitter layer is on the front side of the substrate. *Id.* ¶ 11.

40. Froitzheim also teaches a method of fabricating such a solar cell in which a thin layer of silicon is deposited directly on the rear surface of the substrate and heated such that it adopts the same crystalline structure as the substrate (a phenomenon known as epitaxial growth). This fabrication method results in the formation of a homojunction (wherein the adjacent layers forming the junction have the same crystalline structure).

41. Specifically, Froitzheim teaches the solar cell of the following structure:



(Ex. 1008, Figure 1 (annotations in red).)

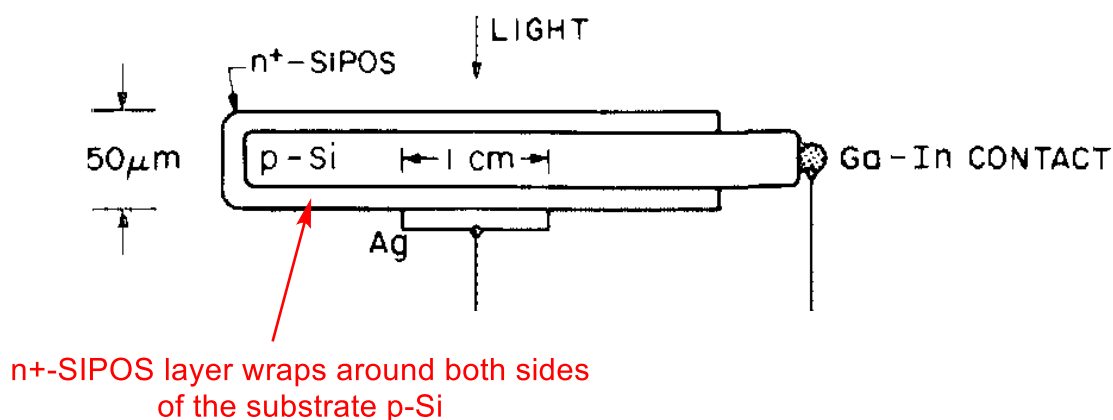
42. In Figure 1, (3) is a silicon body layer (wafer) of n-type bulk doping. n-dopes means that the wafer is negatively doped, for example, with phosphorus. The wafer (3) has a front (6) and rear (7) sides. Ex. 1008, ¶ 24. Froitzheim teaches that the “thickness of the body layer can be typically between 10 and 400 μm , suitably between 100 and 300 μm , preferably between 150-250 μm .” *Id.*

43. The rear emitter layer (10) is selectively doped between the electrodes (15) and the substrate (3). *Id.* ¶ 21. This dopant provides a conductive flow path between the substrate (10) and the electrodes (15). *Id.* The areas of layer (10) not directly above an electrode remain undoped because undoped to minimize recombination. *Id.* The emitter layer (10) is made of a highly transparent

monocrystalline silicon to maximize the absorption of sunlight from the back of the solar cell. *Id.* ¶ 12.

B. **Yablonovitch**

44. Yablonovitch is a publication entitled “A 720 mV open circuit voltage SiO_x:c-Si:SiO_x double heterostructure solar cell.” It discloses a heterojunction solar cell in which an oxidized silicon substrate is located between layers of semi-insulating polycrystalline silicon (known as “SIPOS”) and a process for making such cell. “Heterojunction” refers to the two adjacent layers forming the junction having different crystalline structures, where the SIPOS layer is polycrystalline and the substrate is monocrystalline. Yablonovitch teaches a “double heterostructure” design with two heterojunctions on respective opposite sides of the substrate. Ex. 1005, 1211. This design is shown on Figure 2 of Yablonovitch (reproduced below), where there is a central silicon substrate (“p-Si”) with a heavily (n-doped) silicon layer (“n⁺-SIPOS”) wrapped around both sides of the substrate.



(Ex. 1005, Fig. 2 (annotations in red).)

45. Yablonovitch teaches that this double heterojunction design creates electrical fields on both the top and bottom of the substrate, forming a “bipolar transistor structure” that “show[s] greatly enhanced current gains.” Ex. 1005, 1211. Specifically, the “enhanced current gains” refers to “forward saturation current” or J , which is a measure of recombination. *Id.*

46. Yablonovitch teaches that the specific configuration of its solar cell, *i.e.*, a doped silicon layer (SIPOS) that wraps around both sides of the substrate, and the method of fabrication of such cell are responsible for the superior quality of this cell, *i.e.*, the lower rates of recombination: “As a result of the fabrication sequence to be discussed below we now routinely produce $J_o = 10^{-14}$ A/cm² for n⁺-SIPOS heterocontacts on p-Si (or equivalently $G_e = 3.3 \times 10^{15}$ s/cm⁴). This is about two orders of magnitude superior to a conventional homojunction.” *Id.*, 1211 (emphasis added).

47. Table II of Yablonovitch, reproduced below, describes the steps for making the SIPOS solar cells.

TABLE II. Processing sequence.

1. Thin silicon wafers to 50 μm in aqueous KOH.
2. Getter in an oxidation furnace containing substantial chlorine.
3. Strip gettering oxide in HF acid.
4. Immediately load into cold APCVD furnace while purging with N_2 .
5. Ramp up to 650 $^{\circ}\text{C}$ while maintaining N_2 purge.
6. Oxidize for 5 min with 100 ppm O_2 .
7. Deposit SIPOS from 1000 ppm SiH_4 , 50 ppm PH_3 , and 10 ppm O_2 .
8. Ramp furnace to 900 $^{\circ}\text{C}$.
9. Anneal for 15 min.
10. Ramp furnace down to 450 $^{\circ}\text{C}$.
11. Anneal in forming gas for 2 h.
12. Pull wafers from cold furnace.

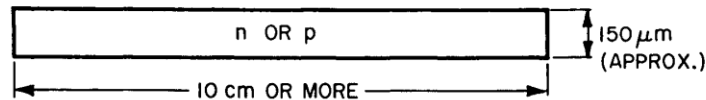
(Ex. 1005, Table II.)

48. Yablonovitch teaches heating the silicon substrate, *i.e.*, “Ramp[ing] up to 650 $^{\circ}\text{C}$. . .” (step 5), and exposing it to oxygen rich gas for five minutes, *i.e.*, “Oxidiz[ing] for 5 min with 100 ppm O_2 ” (step 6). Ex. 1005, 1212. Such steps are not present in the method claimed in the ’074 Patent. Yablonovitch further teaches that after the surface of the substrate is oxidized, SIPOS is deposited over the oxide layer, *i.e.*, “Deposit[ing] SIPOS . . .” (step 7). *Id.* The structure is then heated to 900 $^{\circ}\text{C}$, *i.e.*, “Ramp[ing] furnace to 900 $^{\circ}\text{C}$ ” (step 8) and “Anneal[ing] for 15 min” (step 9). *Id.*

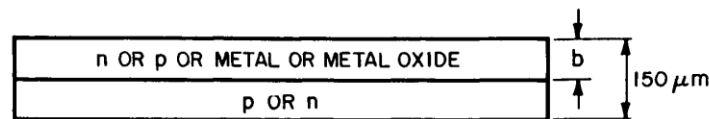
C. Neville

49. Neville is a textbook titled “Solar Energy Conversion. The Solar Cell,” that provides general teaching on solar cell configuration and performance. Neville also provides a method of fabricating “a standard [vertical] configuration

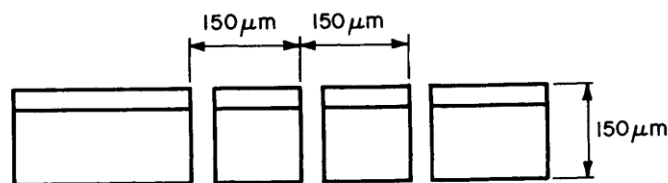
solar cell” that differs significantly from the solar cell disclosed and the method claimed in the '074 Patent. Neville, Ex. 1009, 202-204, Fig. VI.2.



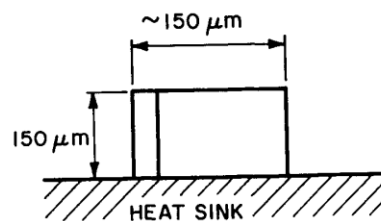
(a) A large slice, rectangular or round, of semiconductor



(b) Slice of semiconductor after junction fabrication



(c) Separation of slice into individual cells, two of which are detailed



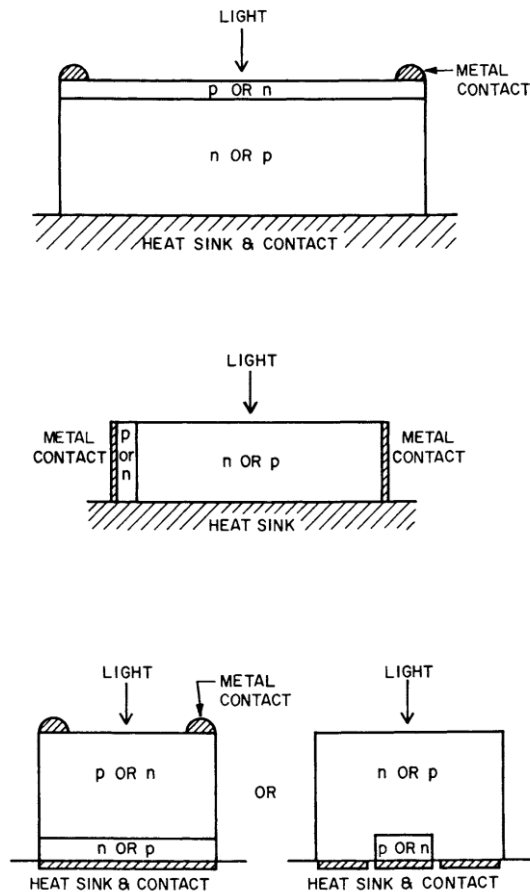
(d) Attachment of vertical solar cell to heat sink

(Ex. 1009, Fig. VI.2.)

50. Neville does not discuss advantages or disadvantages of the p- or n-type solar cell layers. Rather, it provides general configurations of solar cells and generally labels the solar cell layers as “p or n” type, without discussing any of the properties of these cells and configurations. Figure VI.1 of Neville also shows

general PN and heterojunction solar cell-light configurations and also generally

labels the solar cell layers as “p or n” type:



(Ex. 1009, Fig. VI.1.)

51. Neville teaches that the optimal thickness of the entire solar cell is no more than 150 μm , while Froitzheim teaches that the preferred thickness of the body layer (3) to be between 150 μm and 250 μm (Ex. 1008, ¶ 24) and Yablonovitch teaches the optimum thickness to be 50 μm (Ex. 1005, 1212). Specifically, Neville teaches: “a solar cell need only be some 150 μm thick, in the direction parallel to the incoming photons, to absorb in excess of 95% of the

incoming optical energy. Any increase in thickness beyond this value increases construction cost with little or no corresponding increase in electrical power produced. Any decrease in thickness makes for substantially increased handling difficulty during fabrication, as a result of the fragile nature of semiconductors. This increases the cost of fabrication while diminishing the output power.”

Ex. 1009, 204.

D. **Kwark**

52. Kwark is an article titled “SIPOS Heterojunction Contacts To Silicon.” It discloses SIPOS films. Kwark focuses on the bulk properties of the SIPOS films and reports the experimental results of the study on the values of the emitter saturation current (J_{oe}). Kwark does not disclose any assembled solar cell. Nor does Kwark disclose any method of fabrication of any solar cell.

53. Kwark discusses the material composition of SIPOS when used as an emitter in semiconductor devices. Ex. 1006. Kwark does not disclose any assembled solar cell, nor does Kwark disclose any method of fabrication of any specific solar cell. The limited disclosure of the solar cell states that SIPOS can be used in “VLSI [very large scale integrated] bipolar devices” which combine a very large number of bipolar junction transistors and other electronic components onto a single chip “and high concentration point contact solar cells,” wherein high concentration refers to the use of mirrors or lenses (concentrators) to dramatically

increase the intensity of the incident light while “point contact” describes a cell architecture where the metal contacts on the back surface are significantly reduced in size and number, making only “point” connections to the silicon material. In summary, a high concentration point contact solar cell is a highly efficient device that uses optics to focus intense sunlight onto a small cell with a specialized contact design to minimize energy losses. Ex. 1006, 742.

54. The authors of Kwark, Young H. Kwark and Richard M. Swanson, are also co-authors of Yablonovitch. The two papers were published within a year of each other and relate to the same solar cell design. Kwark provides significantly less detail than Yablonovitch about the solar cell itself, instead focusing on the effects of thermally treating the SIPOS used in the solar cell. However, the “bipolar devices” in Kwark are the “bipolar transistor structure” of the heterojunction solar cell taught by Yablonovitch.

**10. THE CHALLENGED CLAIMS ARE NOT OBVIOUS OVER
FROITZHEIM IN COMBINATION WITH YABLONOVITCH
(GROUND 1)**

A. A POSA Would Not Be Motivated To Combine Froitzheim and Yablonovitch

55. It is my opinion that a POSA would not have been motivated to combine Froitzheim and Yablonovitch in the manner asserted by Canadian Solar.

56. Dr. Shea asserts that a POSA would have been motivated to combine Froitzheim and Yablonovitch “because they are both in the same field of solar cell

design and fabrication.” Ex. 1003, ¶ 111. I disagree. Dr. Shea does not explain why a POSA would combine the solar cell structures of Froitzheim and Yablonovitch that are extremely different and are incompatible with each other.

- i. Both Froitzheim and Yablonovitch teach away from the proposed combination because the proposed modifications would eliminate their respective advantages

57. *First*, in my opinion, Froitzheim teaches a POSA away from modifying its solar cell structure or its manufacturing method. Froitzheim teaches that its solar cell structure has “improved stability” and “high efficiencies”. Ex. 1008, ¶¶ 9, 11, 51, 91–94. Froitzheim teaches that two features that are responsible for the “significantly higher efficiencies” of its solar cell are: (1) arranging the junction on the rear side of the substrate, which reduces degradation (*Id.* ¶ 11) and (2) limiting the dopant to areas directly between electrodes and the substrate, which reduces recombination (*Id.* ¶ 21).

58. Froitzheim further asserts that “a considerable advantage of the solar cell of the invention is that it can be produced with only minor adjustments of a known and industrially applied process for conventional p-type cells.” *Id.* ¶¶ 51, 94. It is my opinion that a POSA would not be motivated to undertake substantial changes to Froitzheim’s solar cell structure and its method of fabricating to obtain the combined solar cell described by Dr. Shea (Ex. 1003, ¶¶ 108-110) because such modifications would be against Froitzheim’s teachings.

59. *Second*, in my opinion, Yablonovitch also teaches a POSA away from modifying its solar cell structure or its manufacturing method. Similarly to Froitzheim, Yablonovitch teaches that its solar cell that has double heterojunction design is “superior” to other known cells. Ex. 1005, 1211. Yablonovitch teaches that the “superior quality of its solar cell is due to the specific configuration of its solar cell, *i.e.*, the double-heterojunction shape of a doped silicon layer (SIPOS) that wraps around both sides of the substrate, as well as the method of fabrication of such cell are responsible for the superior quality of this solar cell design.” Ex. 1005, 1211. As Yablonovitch expressly states, this “bipolar” (*i.e.*, having two p-n junctions situated on opposite sides of the substrate) design results in a reduction in recombination that is “two orders of magnitude superior” to conventional cells. *Id.*, 1211.

60. *Third*, although both Froitzheim and Yablonovitch state that their solar cells have reduced recombination, which is important for improvement of their solar cell efficiencies, they teach achieving such reduction in two very different and incompatible ways. Froitzheim teaches to reduce recombination by selectively applying dopant under only the electrodes. (Ex. 1008, ¶ 21.) Yablonovitch teaches applying doped SIPOS wrapping around the substrate to form the bipolar design (Ex. 1005, 1211.)

61. Dr. Shea's proposed combination does not employ any of these features (Ex. 1003, ¶¶ 108-110). The solar cell assembly proposed by Dr. Shea (i) has the SIPOS layer only on one side of the cell; this contradicts the teaching of Yablonovitch, and (ii) this SIPOS layer contains dopant throughout at the time of deposition rather than being selectively doped; this contradicts the teaching of Froitzheim.

62. Dr. Shea does not address these teachings of Froitzheim and Yablonovitch, and he does not explain why a POSA would have ignored these teachings and would undertake a substantial reconstruction of Froitzheim's solar cell and its method of manufacturing to arrive at the invention of the '074 Patent.

63. Dr. Shea identifies the improved reduction of solar cell recombination taught in Yablonovitch as the motivation to combine (Ex. 1003, ¶¶ 79-80). However, he ignores the Yablonovitch teaching and eliminates the very cause of that reduction in the proposed combination.

64. It is my opinion that a POSA motivated to reduce recombination of a solar cell would not combine the teachings of Froitzheim and Yablonovitch because the proposed combination eliminates both Froitzheim's and Yablonovitch's features responsible for reducing recombination.

- ii. A POSA would have no reasonable expectation of success in combining Froitzheim and Yablonovitch because their designs are incompatible

65. It is my opinion that the combination of Froitzheim and Yablonovitch would involve a significant redesign of the solar cell taught in Froitzheim.

66. Dr. Shea argues that a POSA would have reasonable expectation of success in “[r]eplacing the backside diffused emitter layer of Froitzheim with a SIPOS emitter and interfacial oxide layer, as formed by the oxidation and SIPOS deposition steps of Yablonovitch . . . would have been a simple substitution of two known elements for another to obtain predictable results.” Ex. 1003, ¶ 121.

However, this completely ignores the numerous design elements that must be optimized to make an efficient and stable solar cell.

67. As I discussed above, the Froitzheim/Yablonovitch combination eliminates key features of the solar cells in Froitzheim and Yablonovitch that, as they teach, are important to achieve desirable solar cell efficiency through reducing recombination. Dr. Shea provides no reason as to why a POSA would have a reasonable expectation of success in obtaining a working efficient and stable solar cell after eliminating these key features in the respective references.

68. Additionally, the combination ignores the differences between n-type and p-type solar cells. Dr. Shea concludes states that it “was well understood by 2009 that the polarity of a solar cell substrate and emitter could be reversed.” Ex.

1003, ¶¶ 124-125. Specifically, he argues that reversing the polarity of a back junction solar cell wafer and the emitter in Yablonovitch (*p*-type silicon substrate (p-Si) with *n*-doped silicon layer (n⁺-SIPOS)) to arrive at Froitzheim's polarity (*n*-type silicon substrate (3) and *p*-type layer (10)) would be obvious. I disagree.

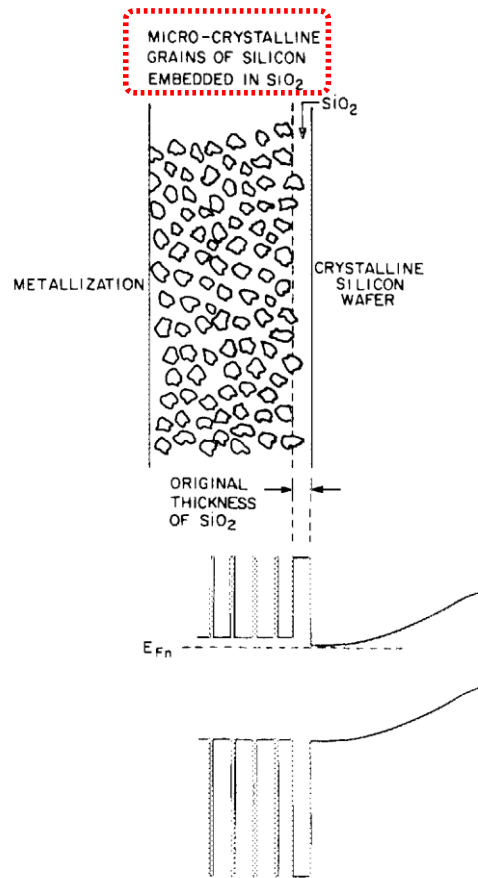
69. Froitzheim expressly teaches the advantages of a solar cell containing an n-type substrate (*e.g.*, phosphorus-doped) with a p-doped layer (*e.g.*, boron doped). (Ex. 1008 ¶ 7.) Specifically, the use of an n-type substrate and p-doped layer is chosen to achieve Froitzheim's stated goal of improving solar cell stability because the p-doped layer exhibits lower light induced degradation. (Ex. 1008, ¶ 7.) Contrary to Froitzheim, Yablonovitch teaches a solar cell comprising an opposite configuration: a p-type silicon substrate (*e.g.*, boron-doped) and an n⁺-type SIPOS layer (*e.g.*, heavily doped with phosphorus). (Ex. 1005, 1212.) In my opinion, a POSA would not have a reasonable expectation of success in using an n⁺-type SIPOS layer of Yablonovitch in making the Froitzheim solar cell assembly, because, according to Froitzheim, such an n-type layer would be inferior to the p-type layer.

70. Another feature eliminated in Dr. Shea's proposed combination is transparency. Froitzheim teaches that an important consideration of its solar cell designs is transparency of the emitter so that the rear-emitter cell can maximize absorption of the limited sunlight entering through the rear of the solar module.

Ex. 1008, ¶ 12. Froitzheim using a homojunction structure because it is highly transparent.

71. Dr. Shea proposes to replace Froitzheim's homojunction with a heterojunction of Yablonovitch. Such substitution will drastically reduce the transparency. As shown in Figure 3 of Yablonovitch (below), the SIPOS of the modified solar cell contains innumerable microscopic crystals with different orientations and shapes, not to mention separate silicon oxide and substrate layers.

Ex. 1005, 1213. Each of these different layers, having different crystalline structures, reduces transparency as light both scatters and refracts when passing from one crystal to the next. The Froitzheim and Yablonovitch structures could be compared to the differences between an intact windshield and the shattered one. Dr. Shea does not address the difference in transparency in his declaration. It is my opinion that a POSA would understand that when making a rear-emitter solar cell, such as the one in the proposed combination, transparency is a very important factor that would prevent a POSA replacing the homojunction of Froitzheim with the heterojunction of Yablonovitch.



(Ex. 1005, Figure 3 (annotation in red).)

72. Dr. Shea also ignores several other specific materially different details in the dimension of Froitzheim and Yablonovitch. For example, Dr. Shea does not address the thickness of the respective layers in Froitzheim with Yablonovitch's solar cells. However, Froitzheim and Yablonovitch teach very different preferred thicknesses optimized based on very different factors. Using the center substrate as an example, Yablonovitch teaches the optimum thickness of the central wafer to be 50 μm based on the spacing of a double heterojunction structure. Ex. 1005, 1212. Froitzheim, on the other hand, teaches the preferable thickness of the wafer

to be 150 μm -250 μm . Ex. 1008, ¶ 24. Such thicknesses are selected through experimentation to optimize stability (*i.e.*, minimized degradation over time) for the specific materials used. Ex. 1008, ¶¶ 54–56, 90. The thickness of the wafer in a solar cell affects both its performance and manufacturing cost. There is a trade-off, since on the one hand, thicker wafers are more expensive while on the other, they can allow for more light absorption. Because it affects so many aspects of solar cell performance, a POSA would understand that they could not simply take a substrate from one solar cell and plug it into an entirely different solar cell and expect success.

73. It is my opinion that a POSA would not be able to rely on the central wafer dimensions of either reference, because the features motivating those dimensions are absent from the proposed combination. Hence, it is my opinion that a POSA would not have a reasonable expectation of success in using a thin wafer taught in Yablonovitch in making the Froitzheim solar cell assembly.

74. In conclusion, it is my opinion that Froitzheim and Yablonovitch teach very different solar cells and methods of fabricating such solar cells. The solar cells taught in the references have different shapes, different dimensions, different crystalline structures, different levels of transparency, different dopants, different methods of manufacturing, and different passivation layers. Each of these features is specifically taught by their respective authors as being important to

achieving some performance goal specific to that solar cell structure. Dr. Shea ignores these critical differences by arguing that the Froitzheim/Yablonovitch combination “would have been well within the level of the Skilled Artisan by 2009 [and] would have been a simple substitution of two known elements for another to obtain predictable results.” Ex. 1003, ¶ 121.

75. It is also my opinion that Dr. Shea uses the challenged claims of the '074 Patent as a roadmap and is attempting to mix and match various elements of the Froitzheim and Yablonovitch combination disclosing very different solar cells in order to arrive at the invention of the '074 Patent. Ex. 1003, ¶¶ 108-110. However, in my opinion, it would not have been obvious to a POSA in 2009 to use and modify the combination of Froitzheim and Yablonovitch to arrive at the invention of the '074 Patent, and a POSA would not have a reasonable expectation of success in doing so.

76. I understand that claims 2–8 of the '074 Patent depend from claim 1. I further understand that claims 2–8 being dependent from claim 1 incorporate all of the limitations of claim 1. It is my opinion that claims 2–8 are non-obvious over Froitzheim in view of Yablonovitch for at least the reasons given above with respect to claim 1.

11. THE CHALLENGED CLAIMS ARE NOT OBVIOUS OVER FROITZHEIM IN COMBINATION WITH YABLONOVITCH AND NEVILLE (GROUND 2)

77. Dr. Shea states that “the combination of Froitzheim and Yablonovitch discloses each and every limitation of claims 1, 2, and 4–8, and renders these claims obvious,” but cites Neville to argue that “to the extent Patent Owner might argue that Yablonovitch does not disclose a p-type SIPOS emitter, Neville makes clear that [a POSA] would understand that the dopant type of Yablonovitch’s n-type SIPOS, or Froitzheim’s p-type substrate, could be reversed.” Ex. 1003, ¶¶ 202-203. I disagree.

78. As I discussed above in Ground 1, the Froitzheim and Yablonovitch combination does not render the challenged claims of the ’074 Patent obvious. It is my opinion that Neville does not remedy the deficiencies of Ground I either. Neville’s general acknowledgement that both n- and p-type substrates are possible in solar cells would not motivate a POSA to modify Froitzheim’s solar cell to make it less efficient and less stable.

79. Froitzheim also acknowledges that solar cells can be made with a p-type substrate. Ex. 1008, ¶¶ 2-3. However, as I explained above, Froitzheim teaches that these p-type substrate solar cells experience high levels of light-induced degradation (LID), causing their efficiency to quickly reduce over their lifetimes. *Id.* As I explained above in Ground 1, Froitzheim’s goal is an

improvement over these traditional solar cells that have improved efficiency and improved stability. *Id.* ¶ 7. Thus, in my opinion, simply because Neville acknowledges that it is possible to use a p-type substrate in solar cells would not motivate a POSA to ignore the teachings of Froitzheim to modify the solar cell in ways that Froitzheim expressly teaches are less efficient and less stable. *Id.*

80. Also, as I explained above in Ground 1, Froitzheim teaches that the preferred thickness of the body layer (**3**) to be between 150 μm and 250 μm (Ex. 1008, ¶ 24) and Yablonovitch teaches the optimum thickness to be 50 μm (Ex. 1005, 1212). In addition, Neville teaches that the optimal thickness of the entire solar cell is no more than 150 μm . Specifically, Neville teaches: “a solar cell need only be some 150 μm thick, in the direction parallel to the incoming photons, to absorb in excess of 95% of the incoming optical energy. Any increase in thickness beyond this value increases construction cost with little or no corresponding increase in electrical power produced. Any decrease in thickness makes for substantially increased handling difficulty during fabrication, as a result of the fragile nature of semiconductors. This increases the cost of fabrication while diminishing the output power.” Ex. 1009, 204. Dr. Shea does not address this issue.

81. As I explained above in Ground 1, the thickness of the wafer in a solar cell and, as a result, of the entire cell, affects the properties and manufacturing cost

of the solar cell. It is my opinion that a POSA would not be able to rely on the dimensions of Neville, Froitzheim, and/or Yablonovitch, because the combination proposed by Dr. Shea lacks the features motivating the dimensions as taught in the above references. Hence, a POSA would not have a reasonable expectation of success in using a thin wafer taught in Yablonovitch in making the Froitzheim solar cell assembly, while using the teaching of Neville about the type of the substrate.

12. THE CHALLENGED CLAIMS ARE NOT OBVIOUS OVER FROITZHEIM IN COMBINATION WITH KWARK (GROUND 3)

82. It is my opinion that the combination of Froitzheim and Kwark does not render obvious any of the challenged claims of the '074 Patent.

83. Dr. Shea states that the “combination of Froitzheim and Kwark is very similar to the combination of Froitzheim and Yablonovitch.” Ex. 1003, ¶ 222.

Dr. Shea treats the disclosure of Kwark as duplicative of the disclosure of Yablonovitch and provides no additional arguments that are different from Ground 1. Ex. 1003, ¶¶ 222-225.

84. As discussed above, Kwark does describe the same solar cell as Yablonovitch, just is much less detail. Kwark merely discusses the material composition of SIPOS when used as an emitter in semiconductor devices. Ex. 1006. Kwark does not disclose any assembled solar cell, nor does Kwark disclose any method of fabrication of any specific solar cell. Kwark makes a passing

reference to a solar cell, stating that SIPOS can be used in “VLSI [very large scale integrated] bipolar devices and high concentration point contact solar cells.” Ex. 1006, 742. This is a reference to the solar cell of Yablonovitch which is about a “bipolar” solar cells and was written by the same authors at around the same time. As such, there is nothing in Kwark that addresses any of the deficiencies in the combination of Froitzheim and Yablonovitch.

85. It is my opinion that because the Froitzheim and Yablonovitch combination does not render obvious any of the challenged claims, the Froitzheim/Kwark combination, with Kwark’s even more limited disclosure than Yablonovitch, would not render the challenged claims obvious. There would be no motivation for a POSA to combine Froitzheim and Kwark and there would be no reasonable expectation of success in doing so.

13. THE CHALLENGED CLAIMS ARE NOT OBVIOUS OVER FROITZHEIM, NEVILL AND KWARK (GROUND 4)

86. For Ground 4, Dr. Shea relied on Ground 3 for all of the elements of claim 1, except, as Dr. Shea states: “to the extent Patent Owner might argue that Kwark does not disclose a p-type SIPOS/polysilicon emitter, Neville makes clear that the Skilled Artisan would understand that the dopant type of Froitzheim’s n-type substrate, could be reversed.” Ex. 1003, ¶ 315.

87. However, as I explained in Grounds 1-3, it is my opinion that a POSA would not have a reasonable expectation of success in combining Froitzheim, Neville and Kwark.

14. CLAIM 2 IS NOT OBVIOUS OVER FROITZHEIM (WITH OR WITHOUT NEVILLE), YABLONOVITCH AND SASAKI (GROUND 5)

88. For Ground 5, Dr. Shea relies on Grounds 1 and 2 for all of the elements of claim 1. Ex. 1003, ¶¶ 317-328. As I explained above in Grounds 1 and 2, the combinations of Froitzheim (with or without Neville) and Yablonovitch do not render obvious claim 1 of the '074 Patent. I understand that claim 2 of the '074 Patent depends from claim 1 and incorporates all of the limitations of claim 1. It is my opinion that claim 2 is non-obvious over Froitzheim (with or without Neville) in view of Yablonovitch and Sasaki for at least the reasons given above with respect to claim 1.

15. CLAIM 2 IS NOT OBVIOUS OVER FROITZHEIM (WITH OR WITHOUT NEVILLE), KWARK AND SASAKI (GROUND 6)

89. Dr. Shea relies on Grounds 3 and 4 for all of the elements of claim 1. Ex. 1003, ¶¶ 318-319. As explained above, Grounds 3 and 4, the combinations of Froitzheim (with or without Neville), and Kwark do not render obvious claim 1 of the '074 Patent. Claim 2 depends from claim 1 and incorporates all of the limitations of claim 1. It is my opinion that claim 2 is non-obvious over

Froitzheim (with or without Neville) in view of Yablonovitch and Sasaki for at least the reasons given above with respect to claim 1.

16. CONCLUSION

For the reasons set forth above, it is my opinion that none of the challenged claims of the '074 Patent is obvious under the asserted grounds.

Dated: December 1, 2025

A handwritten signature in cursive script, reading "Michael Dudley", positioned above a horizontal line.

Michael Dudley, Ph.D.

APPENDIX A

CURRICULUM VITAE OF MICHAEL DUDLEY

Address:	Dept. of Materials Science & Chemical Engineering State University of New York at Stony Brook Stony Brook, NY 11794, USA (631) 632-8500 FAX: (631) 632-8052 michael.dudley@stonybrook.edu https://you.stonybrook.edu/xraycharacterization/
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Hirsch Index (11/16/2025) 49; 9,900 citations,
<https://scholar.google.com/citations?user=GlhfAy0AAAAJ&hl=en>

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1.1 Tertiary Education

Undergraduate Student, University of Warwick, Coventry, U.K. B.Sc.(Hons) in Materials Science and Physics, (graduated top of class).

Graduate Student, University of Warwick. Ph.D. in Engineering Science. Thesis Advisor, Prof. D.K. Bowen. Thesis Title: "Deformation Studies on Fe 3.5 wt % Si by X-ray Topography".

Graduate Student Visitor at Prof. A. Authier's Laboratory, Laboratoire de Mineralogie - Crystallographie, Universite de Paris VI, working with Prof. J. Miltat.

1.2 Career Appointments

Postdoctoral Research Assistant, Dept. of Pure & Applied Chemistry, University of Strathclyde, Glasgow, Scotland, working with Prof. J.N. Sherwood.

Assistant Professor, Dept. of Materials Science & Engineering, College of Engineering & Applied Science(CEAS), State University of New York (SUNY) at Stony Brook.

Associate Professor, Dept. of Materials Science & Engineering, College of Engineering & Applied Science(CEAS), State University of New York (SUNY) at Stony Brook.

Chairman, Dept. of Materials Science & Engineering, College of Engineering & Applied Science (CEAS), State University of New York (SUNY) at Stony Brook.

Professor, Dept. of Materials Science & Engineering, College of Engineering & Applied Science (CEAS), State University of New York (SUNY) at Stony Brook.

1.3 Research Interests

Dudley's research interests focus on crystal growth and characterization of defect structures in crystals with a view to determining their origins. The primary technique used is Synchrotron Topography which enables analysis of defects and generalized strain fields in single crystals in general, with particular emphasis on semiconductor, optoelectronic, and optical crystals, especially SiC, GaN, AlN, InP CdZnTe, HgCdTe, AlN, B₁₂As₂, ZnSe, and sapphire as well as proteins and other related materials. Establishing the relationship between crystal growth conditions and resulting defect distributions is a particular thrust area of interest to Dudley, as is the correlation between electronic/optoelectronic device performance and defect distribution. Also of interest is the understanding of the origins and extent of damage introduced during crystal surface preparation. Current in situ studies of defect formation during PVT and CVD crystal growth of SiC are consistent with these themes. Other techniques routinely used in such analysis include Transmission Electron Microscopy, High Resolution Triple-Axis X-ray Diffraction, Atomic Force Microscopy, Scanning Electron Microscopy, Nomarski Optical Microscopy, Conventional Optical Microscopy, IR Microscopy and Fluorescent Laser Scanning Confocal Microscopy. Dudley's group is playing a prominent role in the development of SiC growth, helping to characterize crystals grown by many of the commercial entities involved.

2 PROFESSIONAL ACTIVITIES

2.1 Research Related

1986 Session Chairman at "Symposium on Solid State Polymerization and the Structure and Properties of Polymers Produced by Lattice Controlled Processes", ACS Spring Meeting, New York, NY.

1987-92 Faculty Sponsor of The Metallurgical Society (TMS) Student Chapter (The Materials Science Club), SUNY at Stony Brook.

Spring, 1989 Organizer and Chair of joint seminar series entitled "Interfaces Between Materials and Solid Mechanics Research", coordinated with Department of Mechanical Engineering at Stony Brook.

Feb. 1989 Invited lecturer in the "Sundays at Stony Brook" lecture series (organized by Provost Schubel). Contribution, entitled, "Materials That Changed the World", organized by Prof. H. Herman, Dept. of Materials Science & Engineering. Lecture title, "Synchrotron Radiation and the Characterization of Materials".

1991 Co-organizer of 1991 NSLS User's Meeting.

1991 Organizer of 1991 NSLS User's Meeting Poster Session.

1993 - Member of Organizing Committee for 5th International Conference on Synchrotron Radiation Instrumentation, held at SUNY Stony Brook, July, 1994.

1993 - Member of International Advisory Committee for the International Conference on the Chemistry of the Organic Solid State (ICCOSS).

1993 Appointed chairman of ICCOSS XIII, held at Stony Brook, July 1997.

1996 Co-Chairman of Electronic Materials Conference Symposium on Non-Destructive Testing, Santa Barbara, CA, June 26-28, 1996.

1997 Chairman of ICCOSS XIII, held at Stony Brook, July 13-18, 1997.

1997 Co-Chairman of "X-TOP U.S. '97" satellite symposium to the "Denver X-ray Conference" held in Steamboat Springs, CO, August 4-8, 1997.

1997-2005 Appointed Consultant Member of International Union of Crystallography Commission on Crystal Growth and Characterization of Materials.

2001 Chairman of "ONR Workshop on Challenges in Porous and Amorphous Semiconductors", held in Corner Brook, Newfoundland, June 10-14, 2001.

2001 Co-Chair of "Symposium on X-ray Diffraction for Crystal Perfection and Growth" at the "Thirteenth American Conference on Crystal Growth and Epitaxy", held in Burlington, VT, August 12-16, 2001.

2003 Chairman of "ONR Workshop on Extended Defects in Wide Gap Semiconductors" held in Irvington, VA, July 13-17, (2003).

2004 Co-Chair of Spring Materials Research Society Symposium on "SiC: Materials, Processing and Devices", held in San Francisco, CA, April 14-15, (2004).

2005 Chair of "ONR MURI review Meeting on Growth of Wide Bandgap Substrates", held at Stony Brook, April 21-22, (2005).

2005 Session Chair, Fall MRS Meeting Symposium on GaN, AlN, InN and Related Materials, held in Boston, MA, November 28-December 2, (2005).

2006 Co-Chair of Spring Materials Research Society Symposium on "SiC: Materials, Processing and Devices", held in San Francisco, CA, April 18-20, (2006).

2006 Session Chair, Spring Materials Research Society Symposium on "SiC: Materials, Processing and Devices", held in San Francisco, CA, April 18-20, (2006).

2007 Appointed to Program Committee (Characterization) of 20th Indium Phosphide and Related Materials Conference, held in Versailles, France, May 25-29, (2008).

2008 Co-Chair of Spring Materials Research Society Symposium on “SiC: Materials, Processing and Devices”, held in San Francisco, CA, March 24-28, (2008).

2008 -2011 Appointed to Editorial Board of Applied Physics Letters and Journal of Applied Physics

2008 Appointed to Advisory Committee for X-TOP 2008 (9th Biennial Conference on High Resolution X-ray Diffraction and Imaging) held in Linz, Austria, September 15-19, 2008.

2008 Appointed joint Program Chair of XIII International Conference on Defects: Recognition, Imaging and Physics (DRIP) in Semiconductors held in Oglebay Resort and Conference Center, Wheeling, West VA, September 13-17, 2009.

2008 Appointed to the Technical Program Committee for the 2009 International Conference on Silicon Carbide and Related Materials (ICSCRM) held in Nurnberg, Germany, October 11-16, 2009.

2008 Appointed to the Organizing Committee for the 2011 International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Cleveland, OH, September 11-16, 2011.

2010 Co-Chair of Spring Materials Research Society Symposium on “SiC: Materials, Processing and Devices”, held in San Francisco, CA, April 5-9, (2010).

2010 Co-Chair of 52nd Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at University of Notre Dame, Indiana, June 23-25, (2010).

2010 Co-Chair of Fall Materials Research Society Symposium on “Boron and Boron Compounds – From Fundamentals to Applications”, held in Boston, MA, November 29-30, (2010).

2011 Co-Chair of 53rd Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at University of California Santa Barbara, CA, June 22-24, (2011).

2011 Co-Chair of 220th Electrochemical Society Meeting Symposium on GaN and SiC Power Technologies, held in Boston, MA, October 9-14, 2011.

2012 Co-Chair of 54th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at Penn. State University, June 20-22, 2012.

2012 Co-Chair of 222nd Electrochemical Society Meeting Symposium on GaN and SiC Power Technologies, held in Honolulu, HI, October 7-12, 2012.

2012 Appointed to the Technical Program Committee for the 2013 International Conference on Silicon Carbide and Related Materials (ICSCRM) held in Miyazaki, Japan September 29 - October 4, 2013.

2013 Co-Chair of 55th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at University of Notre Dame, Indiana, June 26-28, (2013).

2013 Co-Chair of 224th Electrochemical Society Meeting Symposium on GaN and SiC Power Technologies, held in San Francisco, CA, October 27 – November 1, 2013.

1990-2013: X-ray Topography Subgroup Representative on User's Executive Committee at NSLS.

2014 Co-Chair European Materials Research Society Meeting Symposium on “Crystal Growth Related Twins and Point Defects”, held in Lille, France, May 25-30, (2014).

2014 Co-Chair of 56th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at University of California, Santa Barbara, June 26-28, (2014).

2014 Co-Chair of 226th Electrochemical Society Meeting Symposium on GaN and SiC Power Technologies, held in Cancun, Mexico, October 5 - 9, 2014.

2015 Appointed to the Technical Program Committee for the 2015 International Conference on Silicon Carbide and Related Materials (ICSCRM) held in Giardini Naxos, Sicily, Italy, October 4-9, 2015.

1987- 2014 Spokesperson and Contact Person, Stony Brook X-ray Topography Facility (beamline X-19C), NSLS, BNL.

1987-2014: Director of National Consortium for Synchrotron X-ray Topography, beamline X-19C, at the NSLS, BNL.

2014 Co-Chair of 57th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at Columbus, OH, June 24-26, (2015).

2015 Co-Chair of 228th Electrochemical Society Meeting Symposium on GaN and SiC Power Technologies, held in Phoenix, AZ, October 11 - 16, 2015

2016 Co-Chair of 58th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at Newark, DE, June 22-24, (2016)

2016 Co-Chair of 229th Electrochemical Society Meeting Symposium on GaN and SiC Power Technologies, held in Honolulu, HI, October 2-7, 2016

2017 Co-Chair of 59th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” Co-Chair of Symposium on 59th Electronic Materials Conference, held at University of Notre Dame, South Bend, Indiana, US, June 28-30, (2017),

2017 Co-Chair (with B. Raghoeamachar) of Symposium on “Bulk Growth and Epitaxy for Power Electronics”, at 21st American Conference on Crystal Growth and Epitaxy (ACCGE-21) and 18th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-18) and 3rd Symposium on 2D Electronic Materials and Symposium on Epitaxy of Complex Oxides, held in Santa Fe, NM, July 30 - August 4, 2017.

2017 Appointed to the Technical Program Committee for the 2017 International Conference on Silicon Carbide and Related Materials (ICSCRM) held in Washington DC, September 17-22, 2017.

2017 Co-Chair of 232nd Electrochemical Society Meeting Symposium on GaN and SiC Power Technologies, held in National Harbor, MD, October 1-5, 2017

2018 Co-Chair of 60th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at University of Santa Barbara, Santa Barbara, CA, June 27-29, (2018).

2018 Appointed to the Technical Program Committee for the 2018 European Conference on Silicon Carbide and Related Materials (ECSCRM) held in Birmingham, UK, September 2-6, 2018.

2018 Co-Chair of AiMES 2018, ECS and SMEQ Joint International Meeting Symposium on GaN and SiC Power Technologies, Held in Cancun, Mexico, September 30 - October 4, 2018

2018 Appointed to the Technical Program Committee for the 2019 International Conference on Silicon Carbide and Related Materials (ICSCRM) to be held in Kyoto, Japan, September 29 – October 4, 2019.

2019 Co-Chair of 61st Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at University of Michigan, Ann Harbor, MI, June 26-28, (2019).

2019 Co-Chair of Symposium on Characterization Techniques for Bulk and Epitaxial Crystals at the 19th International Conference on Crystal Growth and Epitaxy (ICCGE-19) and the 19th US Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-19), held at Keystone, CO, July 28 - August 2, 2019.

2019 Co-Chair of Symposium on Silicon Carbide Materials and Devices at the 19th International Conference on Crystal Growth and Epitaxy (ICCGE-19) and the 19th US Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-19), held at Keystone, CO, July 28 - August 2, 2019.

2019 Appointed to the Technical Program Committee for the 2019 European Conference on Silicon Carbide and Related Materials (ECSCRM) held in Tours, France, September 13-17, 2020 Postponed until 2021 due to Covid.

2019 Recipient of SUNY Chancellor's Award for Excellence in Faculty Service.

2020 Co-Chair of 62nd Electronic Materials Conference (EMC) Symposium on "Silicon Carbide: Growth, Processing, Characterization, Theory and Devices," held Online due to Covid, June 24-26, (2020).

2021 Co-Chair of 63rd Electronic Materials Conference (EMC) Symposium on "Silicon Carbide: Growth, Processing, Characterization, Theory and Devices," held Online due to Covid, June 23-25, (2021).

2021 Appointed to the Technical Program Committee for the 2022 International Conference on Silicon Carbide and Related Materials (ICSCRM) be held in Davos, Switzerland, September 11-16, 2022.

2022 Co-Chair of 64th Electronic Materials Conference (EMC) Symposium on "Silicon Carbide: Growth, Processing, Characterization, Theory and Devices," held at Ohio State University, June 29- July 1, (2022).

2023 Co-Chair of 65th Electronic Materials Conference (EMC) Symposium on "Silicon Carbide: Growth, Processing, Characterization, Theory and Devices," held at University of California, Santa Barbara, June 28- June 30, (2023).

2023: Co-Chair of 23rd American Conference on Crystal Growth and Epitaxy (ACCGE-23) and 21st US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-21) held in Tucson, Arizona, USA, August 13-18, 2023.

2024: Co-Chair of Defect Recognition and Imaging in Physics (DRIP) Conference, to be held in Stony Brook, NY, August 18-22, 2024.

2025: Appointed Director of the Onsemi Research Center for Wide Bandgap Materials at Stony Brook University (<https://www.governor.ny.gov/news/governor-hochul-announces-20-million-state-art-semiconductor-research-facility-stony-brook> ; <https://www.onsemi.com/company/news-media/press-announcements/en/onsemi-to-establish-research-center-for-wide-bandgap-materials-at-stony-brook-university>; <https://news.stonybrook.edu/university/20m-state-of-the-art-semiconductor-research-facility-coming-to-stony-brook-university/>)

Ongoing Activities

1984-Present: Referee for several scientific journals, including: Materials Science & Engineering, Journal of Polymer Science, Materials Letters, Materials Research Society Symposium Proceedings, Journal of Applied Crystallography, Nature, Philosophical Magazine, Journal of Crystal Growth, Journal of Applied Physics, Physical Review B, Physical Review Letters, Applied Physics Letters, and Nature Materials.

1985-Present: Referee for several funding agencies, including: National Science Foundation, Department of Energy, Petroleum Research Fund of the American Chemical Society.

1986-Present: Consultant for various companies, including SGS-Thomson Microelectronics (1986-1987), Texas Instruments (1986-1990), General Electric (2001-2007), II-VI Corporation (2002-2009), Saint-Gobain Crystals (2012), GrafTech (2014), and Dow Corning (2014).

2006-2010: Appointed to Technical Advisory Board of Amberwave Systems Corporation.

2006-Present: Appointed to International Steering Committee for European Conference on Silicon Carbide and Related Materials (ECSCRM).

2018-Present: Appointed to the Steering Committee for the Defect Recognition and Imaging in Physics (DRIP) Conference.

2022-Present: Appointed to International Steering Committee for the Newly Merged European Conference on Silicon Carbide and Related Materials (ECSCRM) and International Conference on Silicon Carbide and Related Materials (ICSCRM) Now Simply Known at ICSCRM.

2024 Vincent W Huang, High School senior student, unsupported, A Smart Computer Program *LauePt4* for Recognizing and Simulating Laue Patterns and Its Applications, Regeneron Science Talent Search Semifinalist

2.2 Society Memberships

1984 - Member, Materials Research Society.

1985 - Member, American Chemical Society;

Member, The Metallurgical Society (TMS) of AIME.

1988 - Member, Sigma Xi.

1989 - Member, American Society of Metals;

Member, American Association for the Advancement of Science.

2.3 Expert Witness Experience

2010-2011 Expert (engaged by Quinn, Emanuel, Urquhart and Sullivan LLP; Weil, Gotshal and Manges LLP on behalf of Cree Inc.) in patent case Fox Group versus Cree Inc. Was Deposed. Case brought to Summary Judgement prior to trial.

2010-2011 Expert (engaged by Orrick LLP on behalf of Dow Corning) in patent case Fox Group versus Dow Corning.

2012 Expert (engaged by Finnegan, Henderson, Farabow, Garrett and Dunner LLP on behalf of Charles and Colvard) regarding patent application relating to SiC gemstones.

2013 Expert (engaged by White & Case LLP via IMS Expert Services on behalf of Tera Xtal Technology Corporation) on case GTAT Inc. versus Tera Xtal Technology Corporation. Provided reports.

2022 Expert (engaged by Corrs, Chambers, Westgarth) in patent case Hanwha Solutions Corporation versus Jinko Solar Australia Holdings Co Pty Limited.

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3 PUBLICATIONS

3.1 Patents Granted

1. J. Edgar, M. Dudley, M. Kuball, Y. Zhang, G. Wang, H. Chen, and Y. Zhang, "Off-Axis Silicon Carbide Substrates," **Application Number: US 12/966,753, Publication Number: US20110220915 A1**, Sept. 15, (2011).

3.2 Monographs, Edited Proceedings and Chapters in Books

1. M. Dudley, " **Deformation Studies on Fe 3.5 wt % Si by X-ray Topography**", Ph.D. Thesis, University of Warwick, (1982).
2. J. Miltat and M. Dudley, "X-ray Topography", Chapter 3 in " **Applications of Synchrotron Radiation**", C.R.A. Catlow and G.N. Greaves (Editors), Blackie and Son Ltd., Glasgow, U.K., 65-99, (1990).

3. M. Dudley, "Characterization by X-ray Topography", in **"Encyclopedia of Advanced Materials"**, Vol. 4, D. Bloor, R.J. Brook, M.C. Flemings and S. Mahajan (Eds.), Pergamon, 2950-2956, (1994) (*Commissioned Review Article*).
4. M. Dudley, "Topography, X-ray", in **"Encyclopedia of Applied Physics"**, G.L. Trigg (Ed.), Wiley-VCH Verlag GmbH, Weinheim, Germany, Vol. 21, pp. 533-547, (1997) (*Commissioned Review Article*).
5. M. Dudley, Guest Editor, **Proceedings of the Thirteenth International Conference on the Chemistry of the Organic Solid State**, SUNY at Stony Brook, NY, USA, July 13-18, 1997, **Mol. Cryst. Liq. Cryst.**, **313**, 1-372, (1998).
6. M. Dudley and X.R. Huang, "X-ray Characterization of Epitaxial Layers", in **"Encyclopedia of Materials: Science and Technology"**, K.J.H. Buschow, R.W. Cahn, M.C. Flemings, B. Ilschner, E.J. Kramer and S. Mahajan (Eds.), Elsevier Science, New York, (2001), (*Commissioned Review Article*).
7. M. Dudley and X.R. Huang, "X-ray Topography", in **"Encyclopedia of Materials: Science and Technology"**, K.J.H. Buschow, R.W. Cahn, M.C. Flemings, B. Ilschner, E.J. Kramer and S. Mahajan (Eds.), Elsevier Science, New York, (2001), (*Commissioned Review Article*).
8. M. Dudley and Xianrong Huang, "X-ray Topography", Chapter 7 in **"Microprobe Characterisation of Optoelectronic Materials"**, J. Jimenez (Ed.), Volume 17 of the series: Optoelectronic Properties of Semiconductors and Superlattices, O. Manasreh (series Ed.), Taylor and Francis, New York, 531-594, (2003).
9. M. Dudley, X.-R. Huang, and W.M. Vetter, "Synchrotron White Beam X-ray Topography and High Resolution Diffraction Studies of Defects in SiC Substrates, Epilayers and Device Structures", in **"Silicon Carbide; Recent Major Advances"**, W.J. Choyke, H. Matsunami, and G. Pensl (Eds.), Springer-Verlag, Berlin, Heidelberg, New York, 629-648, (2003).
10. G. Dhanaraj, X.R. Huang, M. Dudley, V. Prasad, R.-H. Ma, "Silicon Carbide Crystals—part I: growth and characterization", in **"Crystal Growth for Modern Technology"**, K. Byrappa, T. Ohachi (Eds.), WIT Press, Southampton, UK, p. 181 (2003).
11. "Silicon Carbide 2004 - Materials, Processing and Devices", Materials Research Society Symposium Proceedings, Vol. **815**, Michael Dudley, Perena Gouma, Tsunenobu Kimoto, Philip G. Neudeck, and Stephen E. Saddow (Editors), Materials Research Society, Warrendale, PA (2004).
12. "Silicon Carbide 2006 - Materials, Processing and Devices", Materials Research Society Symposium Proceedings, Vol. **911**, Michael Dudley, Michael A. Capano, Tsunenobu Kimoto, Adrian R. Powell and Shaoping Wang (Editors), Materials Research Society, Warrendale, PA (2006).
13. "Silicon Carbide 2008 - Materials, Processing and Devices", Materials Research Society Symposium Proceedings, Vol. **1069**, M. Dudley, C.M. Johnson, A.R. Powell, and S.H. Ryu (Editors), Materials Research Society, Warrendale, PA (2008).
14. Springer Handbook of Crystal Growth (Hardcover), G. Dhanaraj, K. Byrappa, V. Prasad, and M. Dudley (Editors), Springer, (2010).
15. G. Dhanaraj, K. Byrappa, V. Prasad, and M. Dudley, "Crystal Growth Techniques and Characterization: An Overview", in Springer Handbook of Crystal Growth (Hardcover), G. Dhanaraj, K. Byrappa, V. Prasad, and M. Dudley (Editors), Springer, pp. 3-16, (2010).
16. G. Dhanaraj, B. Raghathamachar, and M. Dudley, "Growth and Characterization of Silicon Carbide Crystals", in Springer Handbook of Crystal Growth (Hardcover), G. Dhanaraj, K. Byrappa, V. Prasad, and M. Dudley (Editors), Springer, pp. 797-820, (2010).
17. B. Raghathamachar, M. Dudley and G. Dhanaraj, "X-ray Topography Techniques for Defect Characterization of Crystals", in Springer Handbook of Crystal Growth (Hardcover), G. Dhanaraj, K. Byrappa, V. Prasad, and M. Dudley (Editors), Springer, pp. 1425-1451, (2010).

18. J. Bai, S. Wang, L.-M. Wang, and M. Dudley, "Transmission electron Microscopy Characterization of Crystals", in Springer Handbook of Crystal Growth (Hardcover), G. Dhanaraj, K. Byrappa, V. Prasad, and M. Dudley (Editors), Springer, pp. 1477-1519, (2010).
19. "Silicon Carbide 2010 - Materials, Processing and Devices", Materials Research Society Symposium Proceedings, Vol. **1246**, S.E. Saddow, E. Sanchez, F. Zhao, M. Dudley (Editors), Materials Research Society, Warrendale, PA (2010).
20. "Gallium Nitride and Silicon Carbide Power Technologies," ECS Transactions, Vol. **41**, No. 8, K. Shenai, M. Dudley, R. Garg, A. Khan, and R. Ma (Eds.), The Electrochemical Society, Pennington, NJ, (2011).
21. "Silicon Carbide and Related Materials 2011," R.P. Devaty, M. Dudley, T. P. Chow and P.G. Neudeck (Eds.), **Materials Science Forum**, **717-720**, Trans Tech Publications, Switzerland, (2012) (Volumes 1 and 2).
22. "Gallium Nitride and Silicon Carbide Power Technologies 2", ECS Transactions, Vol. **50**, No.3, K. Shenai, M. Bakowski, M. Dudley, R. Garg, N. Ohtani (Eds.), The Electrochemical Society, Pennington, NJ, (2012).
23. "Gallium Nitride and Silicon Carbide Power Technologies 3", ECS Transactions, Vol. **58**, No.4, K. Shenai, M. Bakowski, M. Dudley, R. Garg, N. Ohtani (Eds.), The Electrochemical Society, Pennington, NJ, (2013).
24. "Gallium Nitride and Silicon Carbide Power Technologies 4", ECS Transactions, Vol. **64**, No.7, K. Shenai, M. Bakowski, M. Dudley, N. Ohtani (Eds.), The Electrochemical Society, Pennington, NJ, (2014).
25. "Gallium Nitride and Silicon Carbide Power Technologies 5", ECS Transactions, Vol. **69**, No.11, K. Shenai, M. Dudley, N. Ohtani, M. Bakowski (Eds.), The Electrochemical Society, Pennington, NJ, (2015).
26. "Gallium Nitride and Silicon Carbide Power Technologies 6", ECS Transactions, Vol. **75**, No.12, M. Dudley, M. Bakowski, N. Ohtani, B. Raghathamachar, K. Shenai (Eds.), The Electrochemical Society, Pennington, NJ, (2016).
27. "Gallium Nitride and Silicon Carbide Power Technologies 7", ECS Transactions, Vol. **80**, No.7, M. Dudley, M. Bakowski, N. Ohtani, B. Raghathamachar, K. Shenai (Eds.), The Electrochemical Society, Pennington, NJ, (2017).
28. "Silicon Carbide and Related Materials 2017," R.P. Devaty, M. Dudley, T. P. Chow and P.G. Neudeck (Eds.), **Materials Science Forum**, **924**, Trans Tech Publications, Switzerland, (2018).
29. "Gallium Nitride and Silicon Carbide Power Technologies 8", ECS Transactions, Volume **86**, No 12, M. Dudley, M. Bakowski, K. Shenai, N. Ohtani, B. Raghathamachar (Eds.), The Electrochemical Society, Pennington, NJ, (2018).
30. "Gallium Nitride and Silicon Carbide Power Technologies 9", ECS Transactions, Volume **92**, No 7, M. Dudley, M. Bakowski, K. Shenai, N. Ohtani, B. Raghathamachar (Eds.), The Electrochemical Society, Pennington, NJ, (2019).
31. "State-of-the-Art Program on Compound Semiconductors 63 (SOTAPOCS 63) and GaN and SiC Power Technologies 10," ECS Transactions, Volume **98**, No 6, T. Anderson, J. K. Hite, R. P. Lynch, C. O'Dwyer, E. A. Douglas, Y. Zhao, M. Dudley, B. Raghathamachar, M. Bakowski, and N. Ohtani (Eds.), The Electrochemical Society, Pennington, NJ, (2020).
32. Special Section: 18th Conference on Defect Recognition and Imaging and Physics in Semiconductors (DRIP XIII), Journal of Electronic Materials, Guest Editors: A. Mogatilenko, C. Bougerol, M. Bickermann, J. Smalc-Koziorowska and M Dudley, **Journal of Electronic Materials**, **49** (9), Sept., 2020.
33. B. Raghathamachar, M. Dudley, Dislocations in SiC Bulk Wafers and Epitaxial Layers: Characterization Using X-Ray Techniques, Wide Bandgap Semiconductors for Power Electronics: Materials, Devices, Applications, Edited by Peter Wellmann, Noboru Ohtani, Roland Rupp, First Edition, Wiley –VCH GmbH (2021).
34. "Gallium Nitride and Silicon Carbide Power Technologies 11", ECS Transactions, Volume **104**, No 7, M. Dudley, M. Bakowski, N. Ohtani, B. Raghathamachar (Eds.), The Electrochemical Society, Pennington, NJ, (2021).
35. "Gallium Nitride and Silicon Carbide Power Technologies 12", ECS Transactions, Volume **109**, No 8, M. Dudley, M. Bakowski, N. Ohtani, B. Raghathamachar (Eds.), The Electrochemical Society, Pennington, NJ, (2022).

36. "State-of-the-Art Program on Compound Semiconductors 66 (SOTAPOCS 66) & Gallium Nitride and Silicon Carbide Power Technologies 13", ECS Transactions, Volume **112**, No 2, M. Dudley, M. Bakowski, N. Ohtani, B. Raghothamachar and others (Eds.), The Electrochemical Society, Pennington, NJ, (2023).

3.3 Book Reviews

1. Book: "Advances in Materials Characterization, II", Materials Science Research Vol. 19, Edited by R.L. Snyder, R.A. Condrate, Sr., and P.F. Johnson, Plenum, (1985), Review Appears in **Mater. Sci & Engin.**, 96, 326, (1987).

3.4 Citations Link to Google Scholar Page:

<https://scholar.google.com/citations?user=GlhfAy0AAAAJ&hl=en>, 9,900 Citations to my work (as of November 16, 2025), h-index of 49 (meaning I have at least 49 papers that have received at least 49 citations).

3.5 Refereed Articles

1. J. Miltat and M. Dudley, "Projective Properties of Laue Topographs", **J. Appl. Cryst.**, **13**, 555-562, (1980).
2. M. Dudley, J.N. Sherwood, D. Bloor and D.J. Ando, "A Comparison of the Dislocation Sub-Structure of PTS Monomer and Polymer", **J. Mater. Sci. Letts.**, **1**, 479-481, (1982).
3. M. Dudley, J.N. Sherwood, D. Bloor and D.J. Ando, "SRS radiation Induced Polymerization of 2,4-Hexadiynediol-bis-(p-toluene sulphonate) (PTS)", **Mol. Cryst. Liq. Cryst.**, **93**, 223-237, (1983).
4. M. Dudley, J.N. Sherwood, D.J. Ando and D. Bloor, "SRS Radiation Induced Polymerization of Diacetylene Monomers", in " **Application of Synchrotron Radiation to Problems in Materials Science**", D.K. Bowen (Editor), Science and Engineering Research Council, Daresbury Laboratory, **DL/SCI/R19**, (1983), pp.78-83.
5. M. Dudley, J. Miltat and D.K. Bowen, "A Study of Slip Nucleation in Fe 3.5 wt % Si Single Crystals by Synchrotron Radiation Topography", **Phil. Mag.**, **A50**, 487-504, (1984).
6. M. Dudley, J.N. Sherwood, D. Bloor and D.J. Ando, "X-ray Topographic Studies of the Solid State Polymerization of Pts (2,4-HexadiyneDiol Bis(p -Toluene Sulphonate))", in " **Polydiacetylenes**", Nato-ASI Series E, Applied Sciences - No 102, R.R. Chance and D. Bloor (Editors), M. Nijhoff Publishers, Dordrecht, NL, (1985), pp. 87-93.
7. M. Dudley, J.N. Sherwood and D. Bloor, "X-ray Topographic Studies of the Polymerization Process in PTS Single Crystals", **Polymeric Materials: Science & Engineering** (Proceedings of ACS Division of), **54**, 426-430, (1986).
8. M. Dudley, "Applications of Synchrotron Radiation Topography to Dynamic Processes in Single Crystals", **Nucl. Inst. & Meth.**, **B24/25**, 1068-1072, (1987).
9. M. Dudley, "Application of Synchrotron Topography to Solid State Reactions", in " **Chemical Applications of Synchrotron Radiation**", Workshop Report **ANL/-APS-TM 4**, M. Beno and S. Rice (Editors), Argonne National Laboratory, Argonne, Illinois, (1989), pp. 157-198.
10. M. Dudley, "White Beam Topographic Studies of the Effects of Localized Stress Fields on the Kinetics of Single Crystal Solid State Reactions", in "Synchrotron Radiation in Materials Research", J.H. Weaver, R. Clarke and J. Gland (Eds.), **Mat. Res. Soc. Symp. Proc.**, **143**, 253-258, (1989).
11. M. Dudley, J. Wu and G.-D. Yao, "Determination of Penetration Depths and Analysis of Strains in Single Crystals by White Beam Synchrotron X-ray Topography in Grazing Bragg-Laue Geometries", **Nucl. Inst. & Meth.**, **B40/41**, 388-392, (1989).

12. M. Dudley and J. Miltat, "Synchrotron Topographic Studies of the Influence of Applied Elastic Stress on Magnetic Domain Configurations in Fe 3.5 wt % Si Single Crystals", **Nucl. Inst. & Meth.**, **B40/41**, 393-397, (1989).
13. M. Dudley, "The Application of Neutron Topography to the Study of X-ray Sensitive Organic Single Crystals - A Possible Alternative to X-ray Topography", in "Neutron Scattering for Materials Science", S. Shapiro, S.C. Moss and J.D. Jorgensen (Eds.), **Mat. Res. Soc. Symp. Proc.**, **166**, 55-60, (1990).
14. M. Dudley, J. Wu, G.-D. Yao, H.-Y. Liu and Y.C. Kao, "Determination of 3-Dimensional Defect Structures in Gallium Arsenide Epilayers on Silicon Using White Beam Synchrotron Radiation Topography in both Transmission and Grazing Bragg-Laue Geometry", in "Layered Structures, Heteroepitaxy, Superlattices, Strain and Metastability", B.W. Dodson, L.J. Schowalter, J.E. Cunningham and F.H. Pollak (Eds.), **Mat. Res. Soc. Symp. Proc.**, **160**, 469-474, (1990).
15. M. Dudley, G.-D. Yao, J. Wu and H.-Y. Liu, "Depth Sensitive Imaging of Defects in Epilayers and Single Crystals Using White Beam Synchrotron Radiation Topography in Grazing Bragg-Laue Geometry", in "Impurities, Defects and Diffusion in Semiconductors: Bulk and Layered Structures", J. Bernholc, E.E. Haller and D.J. Wolford (Eds.), **Mat. Res. Soc. Symp. Proc.**, **163**, 1031-1036, (1990).
16. A.P. Jardine, M. Dudley, G.-D. Yao and G. Tolis, "X-ray Topographic Analysis of Strain Fields Associated with Micron-Sized Gratings on Si (100) Surfaces", in "Layered Structures, Heteroepitaxy, Superlattices, Strain and Metastability", B.W. Dodson, L.J. Schowalter, J.E. Cunningham and F.H. Pollak (Eds.), **Mat. Res. Soc. Symp. Proc.**, **160**, 533-538, (1990).
17. M. Dudley, J. Baruchel and J.N. Sherwood, "Neutron Topography as a Tool for Studying Reactive Organic Crystals: A Feasibility Study", **J. Appl. Cryst.**, **23**, 186-198, (1990).
18. M. Dudley, S.Y. Hou and B.M. Foxman, "Synchrotron White Radiation Topographic Studies of the X-ray Induced Solid State Polymerization of Bis (Propiolato) TetraAquoZinc(II) Single Crystals", **Mol. Cryst. Liq. Cryst.**, **187**, 207-213, (1990).
19. G.-D. Yao, M. Dudley and J. Wu, "Synchrotron White Beam Topographic Imaging in Grazing Bragg-Laue Geometries", **J. X-ray Science & Technology**, **2**, 195-213, (1990).
20. M. Dudley, G. Tolis, D. Gordon-Smith and C. Fazi, "Synchrotron X-ray Topographic Investigation of Electromagnetic Breakdown Induced in p-n Junctions on Silicon", **Government Microcircuit Applications Conference Digest of Papers**, Vol. XVI, 651-654, (1990), (Restricted Distribution).
21. M. Dudley, F.F.Y. Wang, T. Fanning, G. Tolis, J. Wu, and D.T. Hodul, "Synchrotron X-ray Topographic Studies of the Changes in Defect Microstructure Induced by Rapid Thermal Processing of Silicon", **Mater. Letts.**, **10**, 87-92, (1990).
22. Y. Wang, X. Liu, G.-D. Yao, R.C. Liebermann and M. Dudley, "High Temperature TEM and X-ray Diffraction Studies on Twinning and the Phase Transition at 145°C in LaGaO₃", **Mater. Sci. & Engin.**, **A132**, 13-21, (1991).
23. G.-D. Yao, M. Dudley, Y. Wang, X. Liu and R.C. Liebermann, "Synchrotron X-ray Topographic Studies of Twinning and the Phase Transition at 145°C in LaGaO₃ Single Crystals", **Mater. Sci. & Engin.**, **A132**, 23-30, (1991).
24. G.-D. Yao, M. Dudley, S.-Y. Hou and R. DiSalvo, "Application of White Beam Synchrotron Radiation Topography to the Analysis of Twins", **Nucl. Instr. & Meth.**, **B56/57**, 400-404, (1991).
25. G.-D. Yao, M. Dudley, Y. Wang, X. Liu and R.C. Liebermann, "Synchrotron Radiation Topography Studies of the Phase Transition in LaGaO₃ Single Crystals", **Nucl. Instr. & Meth.**, **B56/57**, 405-409, (1991).
26. M. Dudley, F.F.Y. Wang, T. Fanning, G. Tolis and J. Wu, "Synchrotron Topographic Studies of the Influence of Rapid Thermal Annealing on Defect Structures in Single Crystal Silicon", in "Defects in Materials", P.D. Bristowe, J.E. Epperson, J.E. Griffith and Z. Liliental-Weber (Eds.), **Mat. Res. Soc. Symp. Proc.**, **209**, 511-516, (1991).

27. G.-D. Yao, J. Wu, M. Dudley, V. Shastry and P. Anderson, "Influence of Surface Relaxation on X-ray Topographic Imaging of Interfacial Dislocations in Heterosystems", in "Defects in Materials", P.D. Bristowe, J.E. Epperson, J.E. Griffith and Z. Liliental-Weber (Eds.), **Mat. Res. Soc. Symp. Proc.**, **209**, 707-712, (1991).
28. M. Dudley, G.-D. Yao, D. Paine, D. Howard and R.N. Sacks, "Combined TEM and X-ray Topographic Characterization of $\text{In}_x\text{Ga}_{1-x}\text{As}$ Strained Layer Systems", in "Defects in Materials", P.D. Bristowe, J.E. Epperson, J.E. Griffith and Z. Liliental-Weber (Eds.), **Mat. Res. Soc. Symp. Proc.**, **209**, 655-660, (1991).
29. M. Dudley, J.N. Sherwood and D. Bloor, "X-ray Topographic Studies of Solid State Reactions. 2. Solid State Polymerization of 2,4-HexadiyneDiol-Bis-(p-Toluene Sulphonate) [PTS], **Proc. R. Soc. Lond.**, **A434**, 243-261, (1991).
30. M. Dudley, F.F.Y. Wang, T. Fanning and D. Gordon-Smith, "Synchrotron X-ray Topography as a Non-Destructive Testing (NDT) Monitor of I.C. Processing", in "Rapid Thermal and Integrated Processing", M.L. Green, J.C. Gelpey, J. Wortman, and R. Singh (Eds.), **Mat. Res. Soc. Symp. Proc.**, **224**, 61-66, (1991).
31. T. Fanning, M. Dudley, F.F.Y. Wang, D. Gordon-Smith and D.T. Hodul, "Synchrotron X-ray Topographic Study of Defects in High Carbon-Containing Si Wafers", in "Materials Reliability Issues in Microelectronics", J.R. Lloyd, T.S. Ho, C.T. Sah, and E. Yost (Eds.), **Mat. Res. Soc. Symp. Proc.**, **225**, 301-306, (1991).
32. M. Dudley, G.-D. Yao, D. Paine, D. Howard and R.N. Sacks, "A Characterization of $\text{In}_x\text{Ga}_{1-x}\text{As}$ Strained Layer Systems Using a Combination of Synchrotron X-Ray Topography and TEM", **Mater. Sci. & Engin.** **B10**, 75-84, (1991).
33. M. Dudley, R. DiSalvo, S.-Y. Hou, B.M. Foxman, and W. Jones, "Characterization of Defects in p-terphenyl Single Crystals", **Mol. Cryst. Liq. Cryst.**, **211**, 35-42, (1992).
34. M. Dudley, R. DiSalvo, Jun Wu, D. Gordon-Smith and W. Jones, "Synchrotron Topography Observations of a Low Temperature Phase Transition in an Organic Single Crystal", **Mol. Cryst. Liq. Cryst.**, **211**, 43-49, (1992).
35. D. Yuan and M. Dudley, "Dislocation Line Direction Determination in Pyrene Single Crystals", **Mol. Cryst. Liq. Cryst.**, **211**, 51-58, (1992).
36. G.-D. Yao, S.-Y. Hou, M. Dudley, and J.M. Phillips, "Synchrotron X-ray Topography Studies of Twin Configurations in Lanthanum Aluminate Single Crystals", **J. Mater. Res.**, **7**, 1847-1855, (1992).
37. F. Liu, I. Baker, G.-D. Yao and M. Dudley, "Dislocations and Grain Boundaries in Polycrystalline Ice: A Preliminary Study by Synchrotron X-ray Topography", **J. Mater. Sci.**, **27**, 2719-2725, (1992).
38. F. Liu, I. Baker, G.-D. Yao and M. Dudley, "Dynamic Observation of Dislocation Sources at Grain Boundaries in Ice", **Phil. Mag. Lett.**, **65**, 279-281, (1992).
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4. PRESENTATIONS

Invited Scholarly Lectures and Symposia Presentations

1. "Synchrotron Radiation Symposium", Crystallography Conference, University of Manchester Institute of Science and Technology (UMIST), Manchester, England, April, (1981): "Synchrotron Radiation Topography of Deformation in Iron-Silicon Crystals", (with D.K. Bowen and J. Miltat - Poster presented by M. Dudley and D.K. Bowen).
2. "Applications of White Beam Synchrotron Radiation Topography in Materials Science": Dept. of Physics, Polymer Physics Group, Queen Mary College, London, England, September, (1981), (Invited Lecture).
3. "VI International Conference on the Chemistry of the Organic Solid State (ICCOSS)", University of Freiburg, Freiburg, West Germany, August, (1982): "SRS Radiation Induced Polymerization of 2,4-Hexadiyne Diol-Bis-(*p* -Toluene Sulphonate) (PTS)", (Invited Lecture, with J.N. Sherwood, D.J. Ando and D. Bloor - Lecture Presented by M. Dudley).
4. "The Application of Synchrotron Radiation to Problems in Materials Science", Daresbury Study Weekend, Daresbury Laboratory, England, November, (1982): "SRS Radiation Induced Polymerization of Diacetylene Monomers", (with J.N. Sherwood, D.J. Ando and D. Bloor - Lecture, Presented by M. Dudley).
5. "Synchrotron White Beam Topographic Studies of Plastic Deformation in Fe 3.5 wt % Si Single Crystals": Dept. of Pure and Applied Chemistry, Strathclyde University, Glasgow, Scotland, June, (1983), (Invited Lecture).
6. "A Study of Slip Nucleation in Iron 3.5 wt % Si Single Crystals by Synchrotron Radiation Topography": Dept. of Materials Science and Engineering, SUNY at Stony Brook, June, (1984), (Invited Lecture).
7. "NATO Advanced Research Workshop (ARW) on Polydiacetylenes" Stratford, England, July, (1984): "X-Ray Topography Studies of the Solid State Polymerization of PTS (2,4-Hexadiyne Diol Bis (*p* -Toluene Sulphonate))", (Invited Lecture, with J.N. Sherwood and D. Bloor - Lecture Presented by M. Dudley).
8. "X-ray Topographic Studies of the Polymerization Process in PTS Single Crystals": Materials Research Center, Allied Corporation, Morristown, NJ, July, (1985), (Invited Lecture).

9. "Symposium on Solid State Polymerization and the Structure and Properties of Polymers Produced by Lattice Controlled Processes", ACS Spring Meeting, New York, NY, April, (1986), (with J.N. Sherwood and D. Bloor - Lecture, Presented by M. Dudley).
10. "Ninth International Conference on the Application of Accelerators in Research and Industry", North Texas State University, Denton, Texas, November, (1986): "Applications of Synchrotron Radiation Topography to Dynamic Processes in Single Crystal Materials", (Invited Lecture).
11. "X-ray Topography and Its Applications in the Semiconductor Industry": General Instruments, Hicksville, NY, November, (1986), (Invited Lecture).
12. "Symposium on the Materials Science of High Temperature Superconductors", Metallurgical Society of AIME, Fall Meeting, Cincinnati, Ohio, October, (1987): "Morphology, Microstructure and Superconductivity in the system Y_2O_3 -BaO-CuO", (Lecture with F.F.Y. Wang, C.R. Clayton, Y.H. Kao and S.M. Ohr - Lecture, Presented by F.F.Y. Wang).
13. "New Opportunities in Chemistry: An International Symposium on the Uses of Synchrotron Radiation in Chemistry", BNL, November, (1987): "Synchrotron X-ray Topographic Studies of the Solid State Polymerization Process in the Diacetylene PTS", (Poster).
14. "Workshop on Chemical Applications for Synchrotron Radiation", Argonne National Laboratory, Argonne, Illinois, October, (1988): "Application of Synchrotron Radiation Topography in Solid State Reactions", (Invited Lecture).
15. "Fall 1988 TMS Meeting", Chicago, October, (1988): "White Beam Synchrotron X-ray Topography Using Grazing Bragg- Laue Geometries", (Poster).
16. "Tenth Conference on the Application of Accelerators in Research and Industry", University of North Texas, Denton, Texas, November, (1988): "Determination of Penetration Depths and Analysis of Strains in Single Crystals by White Beam Synchrotron X-ray Topography in Grazing Bragg-Laue Geometries", (Invited Lecture, with J. Wu and G.-D. Yao - Lecture Presented by M. Dudley).
17. "Tenth Conference on the Application of Accelerators in Research and Industry", University of North Texas, Denton, Texas, November, (1988): "Synchrotron X-ray Topographic Studies of the Influence of Applied Elastic Stress on Magnetic Domain Configurations in Fe 3.5 wt % Si Single Crystals", (with J. Miltat - Poster, Presented by M. Dudley).
18. "Fall 1988 MRS Symposium: Synchrotron Radiation in Materials Science", Fall MRS Meeting, Boston, Nov./Dec., (1988): "White Beam Topographic Studies of the Effects of Localized Stress Fields on the Kinetics of Single Crystal Solid State Reactions", (Lecture).
19. "Determination and Characterization of 3 Dimensional Defect Structures Using Synchrotron Radiation Topography": Materials Science Laboratory, Texas Instruments Inc., Dallas, TX, May 25, (1989), (Invited Lecture).
20. "Synchrotron X-ray Topography and its Application to the Diagnosis of Electromagnetic Breakdown of P-N Junctions in Silicon", Harry Diamond Laboratory, Adelphi, MD, October 19, (1989), (Invited Lecture).
21. "Fall 1989 MRS Symposium: Neutron Scattering for Materials Science", Fall MRS Meeting, Boston, Nov./Dec., (1989): "The Application of Neutron Topography to the Study of X-ray Sensitive Organic Single Crystals - A Possible Alternative to X-ray Topography" (Lecture).
22. "Fall 1989 MRS Symposium: Layered Structures, Heteroepitaxy, Superlattices, Strain and Metastability", Fall MRS Meeting, Boston, Nov./Dec., (1989): "Determination of 3-Dimensional Defect Structures in Gallium Arsenide Epilayers on Silicon Using White Beam Synchrotron Radiation Topography in both Transmission and Grazing Bragg-Laue Geometry", (Lecture, with J. Wu, G.-D. Yao, H.-Y. Liu and Y.C. Kao, - lecture presented by M. Dudley).
23. "Fall 1989 MRS Symposium: Impurities, Defects and Diffusion in Semiconductors: Bulk and Layered Structures", Fall MRS Meeting, Boston, Nov./Dec., (1989): "Depth Sensitive Imaging of Defects in Epilayers and Single Crystals Using White Beam Synchrotron Radiation Topography in Grazing Bragg-Laue Geometry", (Poster, with G.-D. Yao, J. Wu and H.-Y. Liu).

24. "Fall 1989 MRS Symposium: Layered Structures, Heteroepitaxy, Superlattices, Strain and Metastability", Fall MRS Meeting, Boston, Nov./Dec., (1989): "X-ray Topographic Analysis of Strain Fields Associated with Micron-Sized Gratings on Si (100) Surfaces", (Poster, with A.P. Jardine, G.-D. Yao and G. Tolis).
25. "Determination of Three Dimensional Defect Structures in Single Crystals Using White Beam Synchrotron Radiation Topography", presented at the Thayer School of Engineering, Dartmouth College, Hanover, January 25, (1990), (Invited Lecture).
26. "ONR Workshop on Mechanics of Thin Films", Washington D.C., March 8-9, (1990): "Determination of Three Dimensional Defect Structures in Thin Films Using White Beam Synchrotron Radiation Topography", (Invited Lecture).
27. "U.S. Army Technology Demonstration", Aberdeen Proving Grounds, Aberdeen MD, Oct. 1-4, (1990): "Synchrotron X-ray Topographic Studies of the Damage Accompanying the Electromagnetic Breakdown of p-n Junctions on Silicon", (Poster, with G. Tolis, D. Gordon-Smith, and C. Fazi).
28. "U.S. Army Technology Demonstration", Aberdeen Proving Grounds, Aberdeen MD, Oct. 1-4, (1990): "X-ray Topography", (Poster, with G. Tolis and C. Fazi).
29. "Government Microcircuit Applications Conference 1990 (GOMAC-90)", Las Vegas, Nevada, Nov. 6-8, (1990): "Synchrotron X-ray Topographic Investigation of Electromagnetic Breakdown Induced in p-n Junctions on Silicon", (Lecture, with M. Dudley, G. Tolis, D. Gordon-Smith and C. Fazi - lecture presented by M. Dudley).
30. "Eleventh Conference on the Application of Accelerators in Research and Industry", University of North Texas, Denton, Texas, Nov. 5-8, (1990): "Synchrotron Radiation Topography Studies of the Phase Transition in LaGaO_3 Single Crystals", (Poster, with G.-D. Yao, Y. Wang, X. Liu and R.C. Liebermann - poster presented by G.-D. Yao).
31. "Eleventh Conference on the Application of Accelerators in Research and Industry", University of North Texas, Denton, Texas, Nov. 5-8, (1990): "Application of White Beam Synchrotron Radiation Topography to the Analysis of Twins", (Poster, with G.-D. Yao and S.-Y. Hou - poster presented by G.-D. Yao).
32. "Fall 1990 MRS Symposium on Defects in Materials" Fall 1990 MRS Meeting, Boston, Nov. 26-30, (1990): "Combined TEM and X-ray Topographic Characterization of $\text{In}_x\text{Ga}_{1-x}\text{As}$ Strained Layer Systems", (Lecture, with G.-D. Yao, D. Paine, D. Howard and R.N. Sacks - lecture presented by M. Dudley).
33. "Fall 1990 MRS Symposium on Defects in Materials" Fall 1990 MRS Meeting, Boston, Nov. 26-30, (1990): "Synchrotron Topographic Studies of the Influence of Rapid Thermal Annealing on Defect Structures in Single Crystal Silicon, accepted for publication in "Defects in Materials", (Poster with F.F.Y. Wang, T. Fanning, G. Tolis and J. Wu).
34. "Fall 1990 MRS Symposium on Defects in Materials" Fall 1990 MRS Meeting, Boston, Nov. 26-30, (1990): "Influence of Surface Relaxation on X-ray Topographic Imaging of Interfacial Dislocations in Heterosystems", (Poster, with G.-D. Yao, J. Wu, V. Shastry and P. Anderson).
35. "Determination of Three Dimensional Distributions of Defects in Single Crystals Using Synchrotron X-ray Topography", Grumman Corporate Research Center, February 8, (1991) (Invited Lecture).
36. "Non-Destructive Characterization of CdZnTe Single Crystals Using Synchrotron White Radiation Topography", NASA George C. Marshall Space Flight Center, Huntsville, Alabama, April 3, (1991) (Invited Lecture).
37. "Spring 1991 MRS Symposium on Defects in Materials" Spring 1991 MRS Meeting, Anaheim, April 29-May 3, (1991): "Synchrotron X-ray Topography as a Non-Destructive Testing (NDT) Monitor of I.C. Processing", (Lecture with F.F.Y. Wang and T. Fanning - Lecture presented by F.F.Y. Wang).
38. "Spring 1991 MRS Symposium on Defects in Materials" Spring 1991 MRS Meeting, Anaheim, April 29-May 3, (1991): "Synchrotron X-ray Topographic Study of Defects in High Carbon-Containing Si Wafers", (Lecture with F.F.Y. Wang and T. Fanning - Lecture presented by F.F.Y. Wang).

39. "Gulf Shores Conference - Future Directions for Measurement of X-ray Intensities from Single Crystals" Gulf Shores, Alabama, May 17-20, (1991): "X-ray Diffraction Imaging Experiments in Materials Science" (Invited Lecture).
40. "Workshop on Imaging", 1991 NSLS Users Meeting, BNL, May 20, (1991): "X-ray Diffraction Topography" (Invited Lecture).
41. "10th International Conference on the Chemistry of the Organic Solid State", Vancouver, July 7-12, (1991): "Dislocation Line Direction Determination in Pyrene Single Crystals", (Poster with D.Yuan).
42. "10th International Conference on the Chemistry of the Organic Solid State", Vancouver, July 7-12, (1991): "The Role of Defects in Low Temperature Phase Transitions in Organic Single Crystals", (Poster with R. DiSalvo, D. Gordon-Smith and W. Jones).
43. "10th International Conference on the Chemistry of the Organic Solid State", Vancouver, July 7-12, (1991): "Characterization of Defects in p-terphenyl Single Crystals", (Lecture with R. DiSalvo, B.M. Foxman, and W. Jones - Lecture Presented by M. Dudley).
44. "Pacific International Congress on X-ray Analytical Methods", Honolulu, August 12-16, (1991): "Investigation of Semiconductor Heterostructures by Synchrotron White Beam X-ray Topography in Grazing Bragg-Laue Geometries", (Poster with G.-D. Yao and J. Wu - Poster Presented by G.-D. Yao).
45. "Pacific International Congress on X-ray Analytical Methods", Honolulu, August 12-16, (1991): "Characterization of Superconductor Heterostructures Using Synchrotron X-ray Topography", (Poster with G.-D. Yao and J. Wu - Poster Presented by G.-D. Yao).
46. "NSLS Lunchtime Seminar", NSLS, September 27, (1991): "Recent Highlights in X-ray Topography, Beamline X-19C" (Invited Lecture).
47. "Synchrotron Topography Studies of Twinning and Phase Transitions in Single Crystals": Dept. of Materials Science & Engineering, SUNY at Stony Brook, October 16, (1991) (Invited Lecture).
48. "ONR Workshop on Energetic Materials", Dept. of Chemistry, Yale University, January 14, (1992): "X-ray Topography" (Invited Lecture).
49. "DARPA/ONR Workshop on Substrate Materials for High Temperature Superconductors", Williamsburg, Virginia, February 5-7, (1992): "Non-Destructive Assessment of Substrate Materials for High Temperature Superconductors Using Synchrotron White Beam X-ray Topography" (Invited Lecture).
50. Spring 1992 MRS Meeting Symposium on "Defect Engineering in Semiconductor Growth, Processing and Device Technology", San Francisco, April 27-May 1, (1992): "Rapid Structural Defect Mapping of Bulk II-VI Semiconductors Using White Beam Synchrotron Topography and X-ray Rocking Curve Analysis", (Lecture with D. DiMarzio, L.G. Casagrande, M.B. Lee, and T. Fanning - Lecture Presented by D. DiMarzio).
51. Spring 1992 MRS Meeting Symposium on "Defect Engineering in Semiconductor Growth, Processing and Device Technology", San Francisco, April 27-May 1, (1992): "Optimization of MBE Growth of CdTe/CdTe: A Recipe for Growing a 6 μm Thick CdTe Film with a 9 Arc Second DCRC", (Poster with M.B. Lee, T. Fanning, D. DiMarzio, and L.G. Casagrande).
52. Spring 1992 MRS Meeting Symposium on "Defect Engineering in Semiconductor Growth, Processing and Device Technology", San Francisco, April 27-May 1, (1992): "Influence of Surface Relaxation and Multidislocation Strain Field Interactions on X-ray Topographic Images of Dislocations in Semiconductor Materials", (Poster with J. Wu, V. Shastry, and P. Anderson).
53. 1st European Symposium on X-ray Topography and High Resolution Diffraction, Marseilles, France, July 8-10, 1992: "Synchrotron Topography of Phase Transitions in Perovskite-Like Crystals" (Poster with G.-D. Yao, Poster presented by M. Dudley).

54. Central Research and Development Dept., Experimental Station, E.I. DuPont de Nemours & Co, June 16, 1992: "Synchrotron White Beam X-ray Diffraction Topography and its Application to Defect Studies in KTP and KTA" (Invited Lecture).
55. Cree Research, Durham, NC, June 19, 1992: "White Beam Topographic Characterization of SiC Single Crystals" (Invited Lecture).
56. Army Science Conference, Orlando, June 21-26, (1992): "Observation of R-F Induced Failures in Silicon Bipolar Junctions Using Synchrotron X-ray Topographic Imaging" (Invited Poster with C. Fazi, S. Wang, and D. Gordon-Smith).
57. 1992 U.S. Workshop on the Physics and Chemistry of Mercury Cadmium Telluride and Other IR Materials, Danvers, MA, October 12-15, 1992: "White Beam X-ray Synchrotron Topography Analysis of CdTe(111) Substrates and Epilayers" (Lecture with T. Fanning, M.B. Lee, L.G. Casagrande, and D. DiMarzio, Lecture presented by M.B. Lee).
58. 1992 Workshop on Measurement Techniques for Characterization of HgCdTe Materials, Processing, and Detectors, Danvers, MA, October 15-16, 1992: "Compositional, Strain Contour and Defect Mapping of CdZnTe Boules and Wafers" (Poster with D.J. Larson, Jr., R.P. Silberstein, D. DiMarzio, A. Levy, M. Dudley, J.Wu, F.C. Carlson, D. Gillies, and G. Long).
59. "Synchrotron Topography Characterization of ZnTe", NASA George C. Marshall Space Flight Center, Huntsville, Alabama, January 12, (1993) (Invited Lecture).
60. Spring 1993 MRS Meeting Symposium on "Applications of Synchrotron Radiation Techniques to Materials Science", San Francisco, April 12-16, (1993): "X-ray Topography"(Invited Lecture).
61. Spring 1993 MRS Meeting Symposium on "Ferroelectric Domains III", San Francisco, April 12-16, (1993): "Imaging of Ferroelectric Domains in KTiOPO₄ Single Crystals by Synchrotron X-ray Topography" (Lecture with S. Wang, L.K. Cheng, J.D. Bierlein and W. Bindloss - Lecture presented by M. Dudley).
62. Spring 1993 MRS Meeting Symposium on "Applications of Synchrotron Radiation Techniques to Materials Science", San Francisco, April 12-16, (1993): "Synchrotron X-ray Topographic Study of Defects in High Quality, Flux Grown KTiOPO₄ Single Crystals" (Poster with S. Wang, M. Dudley, L.K. Cheng, and J.D. Bierlein).
63. Spring 1993 MRS Meeting Symposium on "Applications of Synchrotron Radiation Techniques to Materials Science", San Francisco, April 12-16, (1993): "Characterization of Defect Structures in SiC Single Crystals Using Synchrotron X-ray Topography" (Poster with S. Wang, C. Carter, Jr., D. Asbury and C. Fazi).
64. Spring 1993 MRS Meeting Symposium on "Applications of Synchrotron Radiation Techniques to Materials Science", San Francisco, April 12-16, (1993): "Investigation of Filamentation Damage Resulting from Electromagnetic Breakdown in Si Bi-Polar Diodes" (Lecture with S. Wang, M. Dudley, C. Fazi and D. Gordon-Smith - Lecture presented by M. Dudley).
65. Spring 1993 MRS Meeting Symposium on "Applications of Synchrotron Radiation Techniques to Materials Science", San Francisco, April 12-16, (1993): "Synchrotron White Radiation X-ray Topographic Investigation of Dislocation Configurations Developed in Indium Antimonide Single Crystals by Plastic Bending" (Lecture with J. Wu - Lecture presented by J. Wu).
66. Spring 1993 MRS Meeting Symposium on "Infrared Detectors - Materials, Processing, and Devices", San Francisco, April 12-16, (1993): "Characterization of Growth Defects in ZnTe Single Crystals" (Lecture with W. Zhou, C.H. Su, M.P. Volz, D. Gillies, F.R. Szofran, and S.L. Lehoczky - Lecture presented by W. Zhou).
67. Spring 1993 MRS Meeting Symposium on "Mechanisms of Deformation and Failure in Rocks and Ceramics", San Francisco, April 12-16, (1993): "Dynamic Observations of Dislocation- Grain Boundary Interactions in Ice" (Lecture with I. Baker and F. Liu - Lecture presented by I. Baker).
68. "X-ray Topography", Jet Propulsion Laboratories, Pasadena, CA, April 14, (1993), (Invited Lecture)

69. 11th International Conference on the Chemistry of the Organic Solid State (ICCOSS XI), Jerusalem, Israel, July 5-9, (1993): "Studies of Defect Behavior in Large-Grain, Polycrystalline Ice using Synchrotron X-ray Topography" (Lecture with I. Baker and F. Liu - Lecture presented by M. Dudley).
70. 9th American Conference on Crystal Growth, Baltimore, MD, August 1-6, (1993): "The Growth and Comparison of Large Diameter, Vertical Bridgman CdZnTe and CdTe" (Lecture with L.G. Casagrande, D.J. Larson, Jr., D. DiMarzio, and J. Wu - Lecture presented by L.G. Casagrande).
71. 9th American Conference on Crystal Growth, Baltimore, MD, August 1-6, (1993): "Preparation and Characterization of Single Domain KTA Crystals Suitable for Device Applications" (Poster with L.K. Cheng, L.T. Cheng, J.D. Bierlein, P.A. Morris, and S. Wang - Poster presented by L.K. Cheng).
72. 5th International Conference on SiC and Related Materials, Washington D.C., October 31-November 3, (1993): "High Field Breakdown Issues in SiC Junctions", (Poster with C. Fazi, S. Wang, and M. Ghezzi - Poster presented by C. Fazi, S. Wang, M. Dudley, and M. Ghezzi).
73. Fall 1993 MRS Meeting Symposium on "Diagnostic Techniques for Semiconductor Materials Processing", Boston, November 29-December 3, 1993: "Use of White Beam X-ray Topography to Characterize IR Detector Manufacturing Processes", (Poster with J. Wu, T. Fanning, D.J. Larson, D. DiMarzio, and M.B. Lee - Poster presented by M. Dudley, J. Wu and T. Fanning).
74. 1993 Meeting of the IRIS Specialty Group on Infrared Materials, Bedford, MA, August 16-17, 1993: "Defect Mapping of CdZnTe Substrates" (Lecture with D. DiMarzio, D.J. Larson, Jr., L.G. Casagrande, J. Wu, and P.-K. Liao - Lecture presented by D. DiMarzio).
75. 5th International Conference on SiC and Related Materials, Washington D.C. October 31-November 3, 1993: "High Field Breakdown Issues in SiC Junctions", (Lecture with C. Fazi, S. Wang, and M. Ghezzi - Lecture jointly presented by C. Fazi and M. Dudley).
76. Army Research Laboratory High-Power Microwave (HPM) Technology Program Review Meeting, Army Research Laboratory Woodbridge VA Site, November 9, 1993: "SiC Topography Studies", (Invited Lecture).
77. Fall 1993 MRS Meeting Symposium on "Diagnostic Techniques for Semiconductor Materials Processing", Boston MA, November 29-December 3, 1993: "Use of White Beam X-ray Topography to Characterize IR Detector Manufacturing Processes", (Poster with J. Wu, D. DiMarzio, and D. Larson - Poster presented by J. Wu and M. Dudley).
78. Loral Infrared and Imaging Systems, Lexington, MA, December 2, 1993: "White Beam Synchrotron Topography of II-VI Crystals", (Invited Lecture).
79. Westinghouse Science and Technology Center, Pittsburgh, PA, January 28, 1994: "Synchrotron Topography of Silicon Carbide Single Crystals", (Invited Lecture).
80. Cree Research, Inc., Durham, NC, February 9, 1994: "Synchrotron Topography of Silicon Carbide Single Crystals", (Invited Lecture).
81. SPIE Meeting on "Producibility of II-VI Materials and Devices", Orlando, FL, April 5-8, 1994: "Large Area X-ray Topographic Screening of II-VI Substrates and Epilayers" (Lecture with D. DiMarzio, D.J. Larson, Jr., L.G. Casagrande, J. Wu, S. Tobin and P. Norton - Lecture Presented by D. DiMarzio).
82. SPIE Meeting on "Producibility of II-VI Materials and Devices", Orlando, FL, April 5-8, 1994: "Growth of Large-Area, High Quality CdZnTe Substrates by the Computer Controlled Vertical Bridgman Method", (Lecture with L.G. Casagrande, D.J. Larson, Jr., D. DiMarzio, and J. Wu - Lecture Presented by D. DiMarzio).
83. SPIE Meeting on "Producibility of II-VI Materials and Devices", Orlando, FL, April 5-8, 1994: "Producibility Improvements Suggested by a Validated Process Model of Seeded CdZnTe Vertical Bridgman Growth", Lecture with D.J. Larson, Jr., D. DiMarzio, L.G. Casagrande, F.M. Carlson, T. Lee, B. Steiner, G. Long, D.G. Seiler, and J. Wu - Lecture presented by D. DiMarzio).

84. Santa Barbara Research Center, Santa Barbara, CA, April 6, 1994: "Synchrotron White Beam X-ray Topography of II-VI Crystals", (Invited Lecture).
85. Spring 1994 MRS Meeting Symposium on "Diamond, Silicon Carbide and Nitride Wide-Bandgap Semiconductors", San Francisco, CA, April 4-8, 1994: "X-ray Topographic Studies of Defects in PVT 6H-SiC Substrates and Epitaxial 6H-SiC Thin Films", (Poster with S. Wang, C.H. Carter, Jr., and H.S. Kong - Poster Presented by M. Dudley and S. Wang).
86. 19th Army Science Conference, Orlando, FL, June 20-23, (1994): "Silicon Carbide: An Emerging Electronics Technology for High Temperature, High-Electromagnetic-Field Environments", (Poster with C. Fazi and M. Ghezzi - Poster Presented by C. Fazi and M. Dudley).
87. Frequency Electronics Incorporated, August 26, 1994: "Characterization of Defects in Quartz Crystals, and of Damage Induced During Resonator Manufacture", (Invited Lecture).
88. IAHR Ice Symposium 1994, Trondheim, Norway, August 23-26, 1994: "In Situ Synchrotron X-ray Topographic Studies of Polycrystalline Ice", (Lecture with I. Baker, F. Liu and D Black - Lecture Presented by I. Baker).
89. IAHR Ice Symposium 1994, Trondheim, Norway, August 23-26, 1994: "Dislocation/Grain Boundary Interactions in Ice Under Creep Conditions", (Lecture with I. Baker, F. Liu and D Black - Lecture Presented by I. Baker).
90. 2nd European Symposium on X-ray Topography and High Resolution Diffraction, Berlin, Germany, September 5-7, 1994: "White Beam Synchrotron Topographic Studies of Defects in 6H-SiC Single Crystals", (Poster with S. Wang, W. Huang, C.H. Carter, Jr., and C. Fazi - Poster Presented by M. Dudley and S. Wang).
91. 2nd European Symposium on X-ray Topography and High Resolution Diffraction, Berlin, Germany, September 5-7, 1994: "White Beam Synchrotron Topographic Analysis of Multipolytype SiC Device Configurations", (Poster with W. Huang, S. Wang, J.A. Powell, P. Neudeck, and C. Fazi - Poster Presented by M. Dudley and S. Wang).
92. Advanced Technology Materials Inc., Danbury, CT, September 23, 1994: "Synchrotron Topography of SiC", (Invited Lecture).
93. The 1994 U.S. Workshop on the Physics and Chemistry of Mercury Cadmium Telluride and Other IR Materials, San Antonio Texas, October 4-6, 1994: "The Relationship Between Lattice Matching and Crosshatch in LPE HgCdTe on CdZnTe Substrates", (Lecture with S.P. Tobin, F.T.J. Smith, P.W. Norton, J. Wu, D. DiMarzio and L. Casagrande - Lecture Presented by S.P. Tobin).
94. The 1994 Government Microcircuit Applications Conference (GOMAC), (1994), San Diego, CA, November 7-10, 1994: "Silicon Carbide: An Emerging Electronics Technology for High Temperature, High-Electromagnetic-Field Environments", (Poster with C. Fazi, S. Wang and M. Ghezzi - Poster Presented by C. Fazi).
95. Fall 1994 MRS Meeting Symposium on "Applications of Synchrotron Radiation Techniques to Materials Science", Boston, MA, November 28 - December 2, 1994: "Synchrotron White Beam Topography Studies of Screw Dislocations in 6H-SiC Single Crystals", (Lecture with S. Wang, C.H. Carter, Jr., V.F. Tsvetkov and C. Fazi - Lecture Presented by S. Wang).
96. Fall 1994 MRS Meeting Symposium on "Applications of Synchrotron Radiation Techniques to Materials Science", Boston, MA, November 28 - December 2, 1994: "Characterization of Defect Structures in Lely 6H-SiC Single Crystals Using Synchrotron White Beam X-ray Topography", (Poster with W. Huang, S. Wang, P. Neudeck, J.A. Powell, and C. Fazi - Poster Presented by M. Dudley and W. Huang).
97. Fall 1994 MRS Meeting Symposium on "Applications of Synchrotron Radiation Techniques to Materials Science", Boston, MA, November 28 - December 2, 1994: "Computer Aided Synchrotron White Beam X-ray Topographic Analysis of Multipolytype SiC Device Configurations", (Poster with W. Huang, S. Wang, P. Neudeck, J.A. Powell, and C. Fazi - Poster Presented by M. Dudley and W. Huang).

98. Fall 1994 MRS Meeting Symposium on " Applications of Synchrotron Radiation Techniques to Materials Science", Boston, MA, November 28 - December 2, 1994: "A New Method to Characterize Dislocation Loops", (Poster with F. Liu and I. Baker - Poster Presented by M. Dudley and I. Baker).
99. Spring 1995 MRS Meeting Symposium on "Defect and Impurity-Engineered Semiconductors and Devices", San Francisco, CA, April 17-21, 1995: "Characterization of Growth Defects in CdZnTe Single Crystals by Synchrotron White Beam X-ray Topography", (Lecture with H. Chung, B. Raghathamachar, J. Wu, D.J. Larson, Jr., and D.C. Gillies - Lecture Presented by B. Raghathamachar).
100. "Imaging of SiC using Synchrotron Radiation", Brookhaven National Laboratory, "Informal SiC Meeting", April 19, 1995 (Invited Lecture).
101. 12th International Conference on the Chemistry of the Organic Solid State (ICCOSS XII), Matsuyama, Japan, July 9-14, 1995: "Growth Defect Studies in SiC Single Crystals", (Invited Lecture).
102. 12th International Conference on the Chemistry of the Organic Solid State (ICCOSS XII), Matsuyama, Japan, July 9-14, 1995: "Synchrotron White Beam X-ray Topography Characterization of Defect Structures in 2,10 Undecanedione/Urea Inclusion Compounds" (Poster with H. Chung, M.E. Brown and M.D. Hollingsworth - Poster Presented by H. Chung and M. Dudley).
103. Inauguration of the ARPA/AFOSR Consortium for Crystal Growth Research, SUNY Stony Brook, June 9, 1995: "X-ray Topography Studies of Crystal Growth Defects", (Invited Lecture).
104. ARPA/AFOSR MURI Kickoff Meeting for the Centers in Intelligent Design and Manufacturing in Electronics and Materials Processing, Arlington, VA, Sept. 28, 1995 "X-ray Topography Studies of Crystals Growth Defects in InP", (Invited Lecture).
105. Symposium on "Formation and Properties of Solids Surfaces and Thin Films", CUNY, Sept. 29, 1995, "Applications of Synchrotron Radiation to the Study of Interfaces and Thin Films" (Invited Lecture).
106. Fall 1995 MRS Symposium on "Evolution of Epitaxial Structure and Morphology", Boston, MA, November 27 - December 1 - "Synchrotron White Beam Topography Studies of Residual Stress in SiC Single Crystals Wafers with Epitaxial Thin Films" (Poster with W. Huang, Q. Wang, F.P. Chiang, J. Parsons, and C. Fazi - Poster presented by W. Huang, Q. Wang and M. Dudley).
107. Fall 1995 MRS Symposium on "Diagnostic Techniques for Semiconductor Materials Processing", Boston, MA, November 27 - December 1 - "Characterization of Micropipes and other Defect Structures in 6H-SiC Through Fluorescence Microscopy", (Poster with W.M. Vetter - Poster presented by W.M. Vetter and M. Dudley).
108. Fall 1995 MRS Symposium on "Thermodynamics and Kinetics of Phase Transformations", Boston, MA, November 27 - December 1 -, "Solid State Interfacial Reactions Between TiC Thin Films and Ti₃Al Substrates" (Poster with W. Si, P. Li and R. Wu - Poster presented by W. Si and M. Dudley).
109. Fall 1995 MRS Symposium on "Covalent Ceramics III-Science and Technology of Non-Oxides", Boston, MA, November 27 - December 1 -, "Microstructure and Interfaces in TiB₂/Ti-46Al-3Cr Alloy Composites", (Poster with W. Si, P. Li and R. Wu - Poster presented by W. Si and M. Dudley).
110. 2nd International Workshop on Semiconductor Research Using Synchrotron Radiation, March 14-15 1996: Applications of Synchrotron White Beam X-ray Topography in the Semiconductor Industry", (Invited Lecture)
111. Spring 1996 MRS Meeting Symposium on "III-Nitride, SiC and Diamond Materials for Electronic Devices", San Francisco CA, April 8-12, 1996, "Characterization of Defect Structures in 3C-SiC Single Crystals", (Poster with W. Huang and C. Fazi - Poster presented by W. Huang and M. Dudley).
112. Spring 1996 MRS Meeting Symposium on "Applications of Synchrotron Radiation to Materials Science", San Francisco CA, April 8-12, 1996, "Determination of Burgers Vectors of Screw Dislocations in 6H-SiC Single Crystals by Synchrotron White Beam X-ray Topography", (Lecture with W. Si, C.H. Carter, Jr., R. Glass, and V.F. Tsvetkov - Lecture presented by W. Si).

113. Spring 1996 MRS Meeting Symposium on “Applications of Synchrotron Radiation to Materials Science”, San Francisco CA, April 8-12, 1996, “Dynamic In Situ Synchrotron X-ray Topographic Observations of Dislocations in Notched Ice Crystals”, (Lecture with X. Hu and I. Baker, Lecture presented by M. Dudley).
114. Spring 1996 MRS Meeting Symposium on “Applications of Synchrotron Radiation to Materials Science”, San Francisco CA, April 8-12, 1996, “Studies of Interface Demarcation and Structural Defects in Ga doped Ge Single Crystals by Synchrotron White Beam X-Ray Topography” (Poster with H. Chung, B. Raghathamachar, W. Zhou, and D.C. Gillies - Poster presented by M. Dudley).
115. The Eighth International Conference on Indium Phosphide and Related Materials, April 21-25, 1996, Schwabisch Gmund, Germany, “Study of Defect Structures in MLEK Grown InP Single Crystals by Synchrotron White Beam X-ray Topography” (Poster with W. Si, H. Chung, V. Prasad, A. Anselmo, and D.F. Bliss - Poster presented by D.F. Bliss).
116. The Third European Symposium on X-ray Topography and High Resolution Diffraction, Palermo, Sicily, April 22-24, 1996 , “Quantitative Analysis of Screw Dislocations in 6H-SiC Single Crystals” (Poster with W. Si, S. Wang, C.H. Carter, Jr., R. Glass, and V.F. Tsvetkov - Poster presented by M. Dudley).
117. 2nd Microgravity Materials Science Conference, Huntsville, AL, June 10-11, 1996: “Combined Synchrotron White Beam X-ray Topography and High Resolution Triple Axis X-ray Diffraction Characterization and Analysis of Crystals Grown in Microgravity and Ground-Based Environments (Invited Lecture).
118. 38th Electronic Materials Conference Symposium on Non-Destructive Testing, Santa Barbara, CA, June 26-28, 1996, “Synchrotron White Beam X-ray Topography Characterization of Structural Defects in Liquid Encapsulated Kyropoulos Grown InP Single Crystals”, (Lecture with H. Chung, W. Si, M. Dudley, A. Anselmo, D. F. Bliss, A. Maniatty, H. Zhang and V. Prasad - Lecture presented by H. Chung).
119. 38th Electronic Materials Conference Symposium on Non-Destructive Testing, Santa Barbara, CA, June 26-28, 1996, “Applications of Synchrotron White Beam X-ray Topography to the Non-Destructive Characterization of Defect Structures in Semiconductor Crystals” (Lecture with W. Si - Lecture presented by W. Si).
120. 38th Electronic Materials Conference Symposium on SiC Epitaxy, Santa Barbara, CA, June 26-28, 1996 “Study of 3C-SiC inclusions in 4H-SiC epitaxial films grown on 4H-SiC single crystal substrates”, (Lecture with W. Si, H. S. Kong, J. Sumakeris, and C. H. Carter, Jr., - Lecture presented by W. Si).
121. 38th Electronic Materials Conference Symposium on SiC Epitaxy, Santa Barbara, CA, June 26-28, 1996, “Hollow-core screw dislocations in 6H-SiC single crystals: a test of Frank’s theory”, (Lecture with W. Si, M. Dudley, R. Glass, V. Tsvetkov, and C. H. Carter, Jr., - Lecture presented by W. Si).
122. 31st COSPAR Scientific Assembly, Birmingham, UK, July 14-21, 1996, “Characterization of Zn-Alloyed CdTe Compound Semiconductors Processed in Microgravity on USML-1 and USML-2”, Invited Lecture with D.J. Larson Jr., H. Chung, and B. Raghathamachar - Lecture presented by M. Dudley).
123. SPIE Meeting Symposium on Space Processing of Materials, Denver, CO, August 4-9, 1996, “Synchrotron White Beam X-Ray Topography Characterization of Structural Defects in Microgravity and Ground Based CdZnTe crystals”, (Lecture with H. Chung, B. Raghathamachar and D.J. Larson, Jr - Lecture presented by H. Chung).
124. IUCR Meeting, Seattle, WA, August 10-17, 1996, “Synchrotron Characterization of Zn-Alloyed CdTe Compound Semiconductors Processed in Microgravity on STS 50 and 73”, (Lecture with D.J. Larson Jr., H. Chung, and B. Raghathamachar - Lecture presented by D. Larson, Jr.).
125. ACCG Meeting, Vail, CO, August 4-11, 1996, “Characterization of Structural Defects in MLEK Grown InP Single Crystals Using Synchrotron White Beam X-Ray Topography” (Lecture with H. Chung, W. Si, A. Anselmo, D. F. Bliss, A. Maniatty, H. Zhang and V. Prasad - Lecture presented by H. Chung).

126. Annual Program Review for AFOSR/DARPA MURI Research Centers on Intelligent Design and Manufacturing in Electronic Materials, Ann Arbor, MI, Sept. 9-10, 1996, "Characterization of Structural Defects in MLEK Grown InP Single Crystals using Synchrotron White Beam X-ray Topography", (Invited Lecture).
127. Brookhaven National Laboratory (DEC Corporation Briefing), Sept. 18, 1996, "Synchrotron White Beam X-ray Topography of Semiconductors" (Invited Lecture).
128. Fall 1996 MRS Meeting Symposium on "Defects in Electronic Materials II", Boston, December 2-6, 1996, "X-ray Topography of a Single Superscrew Dislocation in 6H-SiC", (Poster with W.M. Vetter - Poster Presented by W.M. Vetter and M. Dudley).
129. M/A-COM, Lowell, MA, December 5, 1996, "Characterization of Structural Defects in Semiconductor Crystals Using Synchrotron White Beam X-ray Topography" (Invited Lecture)
130. Workshop on Compound Semiconductor Materials and Devices '97 (WOCSEMMAD '97), San Antonio, TX, February 16-18, 1997, "Quantitative Characterization of Structural Defects in Silicon Carbide Single Crystals Using Synchrotron White Beam X-ray Topography" (Invited Lecture)
131. SEMATECH Analytical Laboratory Managers Working Group, April 16-17, 1997, Brookhaven National Laboratory "Synchrotron White Beam X-ray Diffraction Topography of Semiconductors" (Invited Lecture).
132. 13th International Conference on the Chemistry of the Organic Solid State (ICCOSS XIII), SUNY Stony Brook, NY, USA, July 13-18, 1997, "Characterization of Defects in *p*-Quaterphenyl Single Crystals" (Poster with W.M. Vetter - Poster Presented by W.M. Vetter and M. Dudley).
133. Annual Program Review for DARPA/AFOSR MURI Research Centers in Intelligent Design and Manufacturing in Electronics and Materials Processing, DARPA/AFOSR MURI Consortium for Crystal Growth Research, SUNY Stony Brook, July 24-25, 1997: "Characterization of Structural Defects in MLEK Grown InP Single Crystals Using Synchrotron White Beam X-ray Topography" (Invited Lecture).
134. U.S. X-TOP'97 Symposium at the 46th Annual Denver X-ray Conference, Steamboat Springs, CO, August 4-8, 1997, "Synchrotron White Beam Topography Studies of Semiconductor Substrate Crystals", (Invited Plenary Lecture).
135. U.S. X-TOP'97 Symposium at the 46th Annual Denver X-ray Conference, Steamboat Springs, CO, August 4-8, 1997, "Characterization of Microgravity and Ground-Based Grown Crystals Using Synchrotron White Beam X-ray Topography and High Resolution Triple Axis X-ray Diffraction", (Poster with J. Su, H. Chung, Y. Guo, H.M. Volz, C. Salles, and R.J. Matyi - Poster Presented by M. Dudley, Y. Guo, H. Chung, H.M. Volz and R.J. Matyi).
136. U.S. X-TOP'97 Symposium at the 46th Annual Denver X-ray Conference, Steamboat Springs, CO, August 4-8, 1997, "Studies of Structural Defects in InP Single Crystals Using Synchrotron White Beam X-ray Topography", (Lecture with H. Chung, W. Si, D.F. Bliss, H. Zhang, and V. Prasad - Lecture Presented by H. Chung).
137. U.S. X-TOP'97 Symposium at the 46th Annual Denver X-ray Conference, Steamboat Springs, CO, August 4-8, 1997, "Dislocation Structures in High Quality 4H-SiC Single Crystals by Synchrotron White Beam X-ray Topography", (Lecture with W. Si, C. Carter, Jr., R. Glass, and V. Tsvetkov - Lecture Presented by W. Si).
138. U.S. X-TOP'97 Symposium at the 46th Annual Denver X-ray Conference, Steamboat Springs, CO, August 4-8, 1997, "Studies of X-ray Topographic Contrast of Growth Striations in Sulfur-Doped InP Single Crystals" (Lecture with H. Chung, W. Si, D.F. Bliss, H. Zhang, and V. Prasad - Lecture Presented by H. Chung).
139. U.S. X-TOP'97 Symposium at the 46th Annual Denver X-ray Conference, Steamboat Springs, CO, August 4-8, 1997, "Synchrotron White Beam X-ray Topography Studies of Structural Defects in Microgravity Grown CdZnTe Single Crystals", (Lecture with B. Raghothamachar, H. Chung, D. Larson, Jr. - Lecture Presented by B. Raghothamachar).
140. U.S. X-TOP'97 Symposium at the 46th Annual Denver X-ray Conference, Steamboat Springs, CO, August 4-8, 1997, "Comparisons Between Lang and Synchrotron White Beam X-ray Topographs of 6H-Silicon Carbide", (Lecture with W.M. Vetter - Lecture Presented by W.M. Vetter).

141. Department of Materials Science, Liverpool University, UK, August 28, 1997, "Study of Hollow Core Dislocations in 6H-SiC and 4H-SiC Single Crystals", (Invited Lecture).
142. International Conference on Silicon Carbide, III-Nitrides and Related Materials - 1997, Stockholm, Sweden, August 31 - September 5, 1997, "Study of Hollow Core Dislocations in 6H-SiC and 4H-SiC Single Crystals" (Lecture with W. Si, R. Glass, V. Tsvetkov, and C. Carter, Jr. - Lecture Presented by M. Dudley).
143. Eastern Regional Conference on Crystal Growth and Epitaxy, ACCGE/east-97, Atlantic City New Jersey, September 28 - October 1, 1997, "Studies of Defect Generation in LEC Grown InP Single Crystals Using Synchrotron White Beam X-ray Topography" (Lecture with H. Chung, Y. Guo, D. Larson, Y. Guo, D.F. Bliss, R. Kalan and A. Maniatty - Lecture Presented by M. Dudley).
144. Eastern Regional Conference on Crystal Growth and Epitaxy, ACCGE/east-97, Atlantic City New Jersey, September 28 - October 1, 1997, "Crystals Growth and Characterization of Microgravity Grown CdZnTe Compound Semiconductors" (Lecture with B. Raghathamachar, H. Chung, and D. Larson - Lecture Presented by B. Raghathamachar).
145. Three Year Review of the 1994 MURI Research Center for Intelligent Design and Manufacturing in Electronics and Materials Processing, North Carolina State University, Raleigh, NC, January 12-14, 1998 "Defect Characterization and Studies of Twinning in InP Single Crystals using Synchrotron White Beam X-ray Topography" (Invited Lecture).
146. Spring 1998 MRS Meeting Symposium on "Applications of Synchrotron Radiation to Materials Science VI", San Francisco CA, April 13-17, 1998: "Contrast Mechanism in Superscrew Dislocation Images on Synchrotron Back-Reflection Topographs" (Lecture with X.R. Huang, W.M. Vetter, W. Huang and C.H. Carter, Jr.- Lecture presented by X.R. Huang).
147. Spring 1998 MRS Meeting Symposium on "Applications of Synchrotron Radiation to Materials Science VI", San Francisco CA, April 13-17, 1998: "The Mechanism of Twinning in Zincblende Structure Crystals: New Insights on Polarity Effects from a Study of Magnetic Liquid Encapsulated Czochralski Grown InP Single Crystals", (Lecture with B. Raghathamachar, Y. Guo, X.R. Huang, H. Chung, D.J. Larson, Jr., D.T.J. Hurle, D.F. Bliss, V. Prasad, and Z. Huang, - Lecture presented by M. Dudley).
148. Tenth International Conference on Indium Phosphide and Related Materials, Tsukuba Japan, May 11-15, 1998: "Growth Twinning in Zincblende Crystals: Further Insights from Studies of Magnetic Liquid Encapsulated Czochralski (MLEC) Grown InP Single Crystals, (Poster with H. Chung, D.J. Larson, Jr., V. Prasad, D.T.J. Hurle, and D.F. Bliss - poster presented by D. Bliss).
149. Microgravity Materials Science Conference, Huntsville, AL, July 14-16, 1998: "Combined Synchrotron White Beam X-ray Topography and High Resolution Triple Axis X-ray Diffraction Characterization and Analysis of Crystals Grown in Microgravity and Ground-Based Environments" (Invited Lecture).
150. 4th European Conference on High Resolution Diffraction and Topography "XTOP'98", Durham, Sept. 8-11, 1998: "Anomalous Scattering in InP Studied by Synchrotron White Beam X-ray Topography" (Poster and Short Oral Presentation with X.R. Huang, B. Raghathamachar, and J. Zhao - both presented by M. Dudley).
151. 4th European Conference on High Resolution Diffraction and Topography "XTOP'98", Durham, Sept. 8-11, 1998: "Assessment of Orientation and Extinction Contrast Contributions to the Direct Dislocation Image", (Poster and Short Oral Presentation - both presented by M. Dudley).
152. Eastern Regional Conference on Crystal Growth & Epitaxy/ ACCGE East-98, Atlantic City, NJ, September 28-30, 1998: "The Mechanism of Twinning in Zincblende Structures: New Insights on Polarity Effects from a Study of MLEC Grown InP Single Crystals" (Lecture presented by J. Zhao).
153. Emerging Materials Research Laboratory, Mississippi State University, October 15, 1998 "Characterization of Defects and Distortion in Semiconductor Crystals using Synchrotron White Beam X-ray Topography" (Invited Lecture).
154. MURI 94 Review, Davidson Conference Center, University of Southern California, May 16-19, 1999: "Synchrotron Topography of InP and SiC Crystals" (Invited Lecture).

155. Crystal Photonics Inc, Orlando, FL, "Synchrotron White Beam X-ray Topography of Langasite, Langanite and Langatate", June 30, 1999 (Invited Lecture).
156. 14th International Conference on the Chemistry of the Organic Solid State (ICCOSS XIV), Robinson College, Cambridge University, July 25-31, (1999), "*In Situ* Synchrotron White Beam X-ray Topography of Domain Switching in Ferroelastic Inclusion Compounds" (Invited Lecture).
157. International Union of Crystallography (IUCr) Congress, Microsymposium on X-ray Topography, August 4-13, (1999), Scottish Exhibition and Conference Center, Glasgow, Scotland, "Synchrotron White Beam X-ray Topographic Studies of Superscrew Dislocations in Silicon Carbide Single Crystals" (Invited Lecture).
158. International Symposium on the Verification of Cryospheric Models: Bringing Data and Modeling Scientists Together, 16-20 August, 1999 Zurich, Switzerland, "X-ray Topographic Observations of Dislocation/Grain Boundary Interactions in Ice", I. Baker, poster at. (Poster with F. Liu, K. Jia, X. Hu, and D. Cullen – Poster presented by I. Baker).
159. American Geophysical Union Spring Meeting, May 31-June 4, 1999."Synchrotron X-ray Topographic Observations of the Interactions of Dislocations with Grain Boundaries in Ice", (Oral Presentation with I. Baker*, F. Liu, K.Jia, X. Hu, D. Cullen, and D. Black – Paper presented by I. Baker).
160. International Conference on SiC and Related Materials, Research Triangle Park, NC, Oct. 10 – Oct. 15, 1999 "Characterization of SiC Using Synchrotron White Beam X-ray Topography" (Invited Lecture).
161. International Conference on SiC and Related Materials, Research Triangle Park, NC, Oct. 10 – Oct. 15, 1999, "Synchrotron White Beam Topography Studies of 2H SiC Crystals", Poster with W. Huang, W.M. Vetter, P. Neudeck and J.A. Powell – Poster presented by M. Dudley, W. Vetter, and P. Neudeck).
162. International Conference on SiC and Related Materials, Research Triangle Park, NC, Oct. 10 – Oct. 15, 1999, "Synchrotron White Beam X-ray Topography and Atomic Force Microscopy Studies of a 540R-SiC Lely Platelet" (Poster with, W.M. Vetter, W. Huang, P. Neudeck and J.A. Powell – Poster presented by M. Dudley, W.M. Vetter, and P. Neudeck).
163. International Conference on SiC and Related Materials, Research Triangle Park, NC, Oct. 10 – Oct. 15, 1999 "Correlation of EBIC and SWBXT Imaged Defects and Epilayer Growth Pits in 6H-SiC Schottky Diodes (Lecture with. C.M. Schnabel, M. Tabib-Azar, P.G. Neudeck, S.G. Bailey, H.B. Su, and R.P. Raffaele – Lecture presented by P. Neudeck)
164. International Conference on SiC and Related Materials, Research Triangle Park, NC, Oct. 10 – Oct. 15, 1999 "Structural Investigation on the Nature of Surface Defects Present in Silicon Carbide Wafers Containing Varying Amount of Micropipes", (Poster with M. Shamsuzzoha, S. E. Sadow, L. Jin, T. E. Schattner, S. V. Rendakova, and V. A. Dmitriev – Poster presented by M. Dudley and S. Sadow).
165. Fall 1999 MRS Meeting Symposium on "Applications of Synchrotron Radiation Techniques to Materials Science V", Boston, Nov. 28 - Dec. 3, 1999, "Dislocation Motion Around Loaded Notches in Ice Single Crystals", (Oral Presentation with D. Cullen, X. Hu, and I. Baker – Paper presented by D. Cullen).
166. Fall 1999 MRS Meeting Symposium on "Applications of Synchrotron Radiation Techniques to Materials Science V", Boston, Nov. 28 - Dec. 3, 1999, "Dislocation Motion Around Loaded Notches in Ice Single Crystals", (Oral Presentation with D. Cullen, X. Hu, and I. Baker – Paper presented by D. Cullen).
167. 14th European Frequency and Time Forum, Turin Italy, March 14-16, 2000, "Characterization of Defect and Strain Configurations in Langanite and Langatate Single Crystals using Synchrotron White Beam X-ray Topography and Assessment of their Influence on Resonator Performance" (Oral Presentation with C. Fazi, S. Tiddrow, and A. Khan – Paper presented by C. Fazi).

168. Spring 2000 MRS Meeting Symposium on “Wide-Bandgap Electronic Devices”, San Francisco, April 24-28, 2000, “Electrical Behavior of X-ray Imaged Crystal Defects in SiC High Field Devices” (Invited Oral Presentation with P. Neudeck, M.A. Kucsmarski, W.M. Vetter and H. Su – Lecture presented by P. Neudeck).
169. 12th International Conference on Indium Phosphide and Related Materials, Williamsburg, VA, May 14-18 (2000), “X-ray Characterization of Bulk InP:S Crystals Grown by LEC in a Low Thermal Gradient”, (Oral Presentation with D.F. Bliss, G. Bryant, G. Antypas, B. Rhaghothamachar, G. Dhanaraj, and J. Zhao – Paper Presented by D. Bliss).
170. Microgravity Materials Science Conference, Huntsville, AL, June 6-8, 2000: “Combined Synchrotron White Beam X-ray Topography and High Resolution Triple Axis X-ray Diffraction Characterization and Analysis of Crystals Grown in Microgravity and Ground-Based Environments” (Invited Lecture).
171. Electronic Materials Group, “, Litton-Airtron, Morris Plains, NJ, June 23, 2000, “Synchrotron X-ray Topography of Silicon Carbide Single Crystals” (Invited Lecture).
172. 12th American Conference on Crystal Growth and Epitaxy, Vail, CO, August 13-18, 2000: “Rearrangement of Dislocations and Formation of Micropipes in Silicon Carbide Crystals Due to the Movement of Hexagonal Voids” (Oral presentation with T.A. Kuhr, M. Skowronski, and W.M. Vetter – Paper presented by T.A. Kuhr).
173. 12th American Conference on Crystal Growth and Epitaxy, Vail, CO, August 13-18, 2000: “The Effect of Post-Growth Cool-Down Rate on Defects in Cadmium Telluride Crystals Grown by “Contactless” PVT” (Oral presentation with W. Palosz, K. Grasz, K. Durose, D. Halliday, N.M. Boyall, B. Raghothamachar and L. Cai – Lecture presented by W. Palosz).
174. X-TOP 2000, 5th Biennial Conference on High Resolution X-ray Diffraction and Topography, Ustron-Jaszowiec, Poland, September 13-15, 2000: “The Electron Microscopy and X-ray Topography of Micropipes in Hexagonal Silicon Carbide: a Comparative Study” (Oral presentation with W.M. Vetter – Lecture presented by W.M. Vetter).
175. Final Review of 1994 MURI Centers on Intelligent Manufacturing in Electronics and Materials Processing, Marymount University, Ballston VA, September 19-20, 2000: “Characterization of InP and SiC Crystals” (Invited Lecture).
176. 3rd International Workshop on Modeling in Crystal Growth, Hauppauge, NY, October 18-20, 2000: “Synchrotron White Beam X-ray Topography Characterization of Single Crystals and its Application to Crystal Growth Model Validation” (Invited Lecture).
177. Army Research Laboratory FY 01 Frequency Control Program Budget Meeting, Army Research Laboratory, Adelphi, MD, November 7, 2000: “Diagnostic Imaging of Defects in LGX Resonators using Synchrotron White Beam X-ray Topography and High Resolution Triple-Axis X-ray Diffraction and Assessment of Their Influence on Resonator Performance” (Invited Lecture).
178. International Workshop on Preparation and Characterization of Technologically Important Single Crystals, National Physical Laboratory, New Delhi, India, February 26-28, 2001: “Synchrotron White Beam X-ray Topography Characterization of Defects in Technologically Important SiC and InP Single Crystals” (Invited Lecture).
179. International Workshop on Preparation and Characterization of Technologically Important Single Crystals, National Physical Laboratory, New Delhi, India, February 26-28, 2001: “Role of Modeling in Process and System Development for Crystal Growth” (Oral presentation with V. Prasad, Q.-S. Chen, and H. Zhang – lecture presented by V. Prasad).
180. 15th European Frequency and Time Forum, Neuchatel, Switzerland, March 6-8, 2001, “Diagnostic Synchrotron X-Ray Topographic Imaging of Striations and Other Defects in Langanite and Langanite Single Crystals and Assessment of Their Influence on Resonator Performance (Poster Presentation with C. Fazi, S. Tiddrow, W. Johnson, and A. Khan – Poster presented by C. Fazi).
181. Inter University Consortium, Indore, India, March 5, 2001: “Synchrotron White Beam X-ray Topography Characterization of Defects in SiC and InP Single Crystals” (Invited Lecture).
182. Department of Physics, Indian Institute of Science, Bangalore, India, March 8, 2001: “Characterization of defects in SiC Single Crystals” (Invited Lecture).

183. Department of Physics, Anna University, Chennai, India, March 9, 2001: “Synchrotron White Beam X-ray Topography Characterization of Defects in SiC Single Crystals” (Invited Lecture).
184. Materials Science Center, Dept. of Nuclear Physics, University of Madras, Chennai, India, March 9, 2001: “Synchrotron White Beam X-ray Topography Characterization of Defects in SiC and InP Single Crystals” (Invited Lecture).
185. Photonic Materials, Strathclyde Business Park, Bellshill, Scotland, UK, April 23, 2001: “Synchrotron White Beam X-ray Topography Characterization of YVO₄ Single Crystals” (Invited Lecture).
186. MURI Nitrides Kick-Off Meeting, Dept. of Materials Science & Engineering, North Carolina State University, Raleigh, NC, May 20-22, 2001: “SWBXT and HRTXD of Widebandgap Semiconductors” (Invited Lecture).
187. ONR Workshop on Challenges in Porous and Amorphous Widebandgap Semiconductors, Corner Brook, Newfoundland, Canada, June 10-14, 2001: “Synchrotron Topography Characterization of Porous Materials” (Invited Lecture).
188. ONR Workshop on Near Surface Effects in Semiconductor Substrates, Kodiak Island, Alaska, August 5-10, 2001: “Simultaneous Structural and Microstructural Analysis of Polytype Distributions in 3C-SiC Epitaxial Films Grown on Atomically Flat 4H-SiC Mesas using Synchrotron White Beam X-ray Topography” (Invited Lecture).
189. Thirteenth American Conference on Crystal Growth and Epitaxy, Burlington, VT, August 12-16, 2001: “Polytype Identification in Heteroepitaxial 3C/4H SiC using Synchrotron White Beam X-ray Topography” (Invited Lecture).
190. Thirteenth American Conference on Crystal Growth and Epitaxy, Burlington, VT, August 12-16, 2001: “X-ray Topographic Characterization of Hydrothermally Grown ZnO Crystals”, (oral presentation with G. Dhanaraj, D. Bliss, M. Callahan, and M. Harris – Paper presented by G. Dhanaraj).
191. Thirteenth American Conference on Crystal Growth and Epitaxy, Burlington, VT, August 12-16, 2001: “X-ray Characterization of THM-Grown HgCdTe Crystals in a Rotating Magnetic Field”, (Poster with B. Raghothamachar, R. Matyi, H. Volz, S. Motakef, and D. Gillies – Poster presented by B. Raghothamachar and M. Dudley).
192. International Conference on SiC and Related Materials 2001, Tsukuba, Japan, October 28-November 2, 2001: “Polytype Identification and Mapping in Heteroepitaxial Growth of 3C on Atomically Flat 4H-SiC Mesas Using Synchrotron White Beam X-ray Topography,” (Lecture with W.M. Vetter, P.G. Neudeck, and J.A. Powell – Lecture Presented by P. Neudeck).
193. International Conference on SiC and Related Materials 2001, Tsukuba, Japan, October 28-November 2, 2001: “Growth of defect-free 3C-SiC on 4H- and 6H-SiC Mesas Using Step-Free Surface Heteroepitaxy”, Homoepitaxial “Web Growth” of SiC to Terminate c-axis Screw Dislocations and Enlarge Step-Free Surfaces”, (Lecture with P.G. Neudeck, J.A. Powell, A. Trunek, and X.R. Huang –Lecture Presented by P. Neudeck).
194. International Conference on SiC and Related Materials 2001, Tsukuba, Japan, October 28-November 2, 2001: “Homoepitaxial “Web Growth” of SiC to Terminate c-axis Screw Dislocations and Enlarge Step-Free Surfaces”, (Lecture with P.G. Neudeck, J.A. Powell, A. Trunek, D. Spry, G.M. Beheim, E. Benavage, P. Abel, and W.M. Vetter – Lecture Presented by P. Neudeck).
195. International Conference on SiC and Related Materials 2001, Tsukuba, Japan, October 28-November 2, 2001: “A Simple Mapping Method for Elementary Screw Dislocations in Homoepitaxial SiC Layers”, (Lecture with S. Ha, W.M. Vetter, and M. Skowronski – Lecture Presented by S. Ha).
196. International Conference on SiC and Related Materials 2001, Tsukuba, Japan, October 28-November 2, 2001: “Oxidation-Induced Crystallographic Transformation in Heavily N-Doped 4H-SiC Wafers”, (Lecture with B.J. Skromme, K.C. Palle, C.D. Poweleit, L.R. Bryant, W.M. Vetter, K. Moore, and T. Gehoski – Lecture Presented by B.J. Skromme).

197. Los Alamos National Laboratory, Feb 19, 2002: “Synchrotron White Beam X-ray Topography and High Resolution Triple-Axis X-ray Diffraction Studies of Defects in SiC Substrates, Epilayers and Device Structures (Invited Lecture).
198. 7th International Workshop on Wide Bandgap III-Nitrides, Richmond, VA, March 10-14, 2002: “Synchrotron White Beam Topography Characterization of Physical Vapor Transport Grown AlN and Ammonothermal GaN” (Lecture with B. Raghathamachar, W.M. Vetter, H. Zhang, R. Ma, Z. Sitar, R. Schlessner, and J.W. Kolis – Lecture Presented by M. Dudley).
199. 7th International Workshop on Wide Bandgap III-Nitrides, Richmond, VA, March 10-14, 2002: “Structural Characterization of Epitaxial Layers Grown on Porous SiC Substrates” (Poster with P. Gouma, B. Raghathamachar, J. Bai, S. Sadow, and M. Smith – Poster Presented by P. Gouma, B. Raghathamachar, J. Bie, and M. Dudley).
200. 1st Annual MURI Review for “An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering”, Cornell University, Ithaca, NY, April 25-26, (2002): “Synchrotron White Beam X-ray Topography Characterization of Ammonothermally Grown GaN” (Invited Lecture with B. Raghathamachar, W.M. Vetter, J.W. Kolis and E. Michaels – Lecture Presented by B. Raghathamachar).
201. 1st Annual MURI Review for “An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering”, Cornell University, Ithaca, NY, April 25-26, (2002): “Synchrotron White Beam X-ray Topography Characterization of Physical Vapor Transport Grown AlN” (Invited Lecture with B. Raghathamachar, W.M. Vetter, Z. Sitar and R. Schlessner – Lecture Presented by B. Raghathamachar).
202. International Workshop on Bulk Nitride Semiconductors, Amazonas Brazil, May 18-23, 2002: “Synchrotron White Beam X-ray Topography Characterization of Physical Vapor Transport Grown AlN and Ammonothermal GaN” (Invited Lecture).
203. International Workshop on Challenges in Semi-Insulating Nitrides and SiC, Laugarvatn Iceland, July 14-18, 2002: “Synchrotron White Beam X-ray Topography Characterization of Semi-Insulating, Physical Vapor Transport Grown SiC and AlN ” (Invited Lecture).
204. Wide Bandgap/II-VI Inc, Pine Brook, NJ, July 26, 2002: “Synchrotron White Beam X-ray Topography and High Resolution Triple-Axis X-ray Diffraction Studies of Defects in SiC Substrates, Epilayers and Device Structures”, (Invited Lecture).
205. XIX Congress and General Assembly of International Union of Crystallography, Geneva, Switzerland, August 6-15, 2002: “Synchrotron White Beam X-ray Topography and High Resolution Triple-Axis X-ray Diffraction Studies of Defects in SiC Substrates, Epilayers and Device Structures”, (Invited Lecture).
206. European Conference on SiC and Related Materials, Linköping, Sweden, September 1-5, 2002: “Synchrotron White Beam X-ray Topography and High Resolution Triple-Axis X-ray Diffraction Studies of Defects in SiC Substrates, Epilayers and Devices”, (Invited Lecture).
207. 6th Biennial Conference on High Resolution Diffraction and Imaging (X-Top 2002), Grenoble/Aussois, France, September 10-14, 2002: “Contribution of X-ray Topography and High resolution X-ray Diffraction to the Study of Defects in SiC”, (Invited Lecture).
208. 2nd Annual MURI Review for “An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering”, Arizona State University, Tempe, AZ, November 18-19, (2002): “Synchrotron White Beam X-ray Topography Characterization of Ammonothermally Grown GaN” (Invited Lecture with B. Raghathamachar, W.M. Vetter, J.W. Kolis and E. Michaels – Lecture Presented by B. Raghathamachar).
209. 2nd Annual MURI Review for “An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering”, Arizona State University, Tempe, AZ, November 18-19, (2002): “Synchrotron White Beam X-ray Topography Characterization of Physical Vapor Transport Grown AlN” (Invited Lecture with B. Raghathamachar, W.M. Vetter, Z. Sitar and R. Schlessner – Lecture Presented by B. Raghathamachar).

210. Fall 2002 MRS Symposium on “Silicon Carbide – Materials, Processing, and Devices”, Boston, MA, December 2-6, 2002: “Characterization of Porous SiC Substrates and the Epilayer Structures Grown on Them” (Poster with J. Bai, P. Gouma, M. Mynbaeva, and S. Sadow – poster presented by J. Bai, P. Gouma, M. Mynbaeva, and S. Sadow).
211. Fall 2002 MRS Symposium on “Silicon Carbide – Materials, Processing, and Devices”, Boston, MA, December 2-6, 2002: “Effects of Structural Defects on Diode Properties in 4H-SiC (Lecture with B.J. Skromme, K. Palle, H. Meidia, S. Mahajan, W.M. Vetter, K. Moore, S. Smith and T. Gehoski – Lecture presented by B.J. Skromme).
212. Fall 2002 MRS Symposium on “Silicon Carbide – Materials, Processing, and Devices”, Boston, MA, December 2-6, 2002: Accurate Lattice Constant and Mismatch Measurements of SiC Heterostructures using Harmonic X-ray Reflections” (Lecture with X. Huang, P.G. Neudeck and J.A. Powell – Lecture presented by X. Huang).
213. ONR Workshop on Characterization of Widebandgap Semiconductors, Maui, Hawaii, March 16-20, (2003): “Synchrotron Topography and High Resolution Diffraction Studies of Widebandgap Semiconductors” (Invited Lecture).
214. 3rd Biannual MURI Review for “An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering”, North Carolina State University, Durham, NC, April 28-29, (2003): “Synchrotron White Beam X-ray Topography Characterization of Ammonothermally Grown GaN” (Invited Lecture with B. Raghathamachar, W.M. Vetter, J.W. Kolis and E. Michaels – Lecture Presented by B. Raghathamachar).
215. 3rd Biannual MURI Review for “An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering”, North Carolina State University, Durham, NC, April 28-29, (2003): “Synchrotron White Beam X-ray Topography Characterization of Physical Vapor Transport Grown AlN” (Invited Lecture with B. Raghathamachar, W.M. Vetter, Z. Sitar and R. Schlessner – Lecture Presented by B. Raghathamachar).
216. 2003 Society for Experimental Mechanics Annual Conference and Exposition on Experimental and Applied Mechanics, Charlotte, NC, June 2-4, (2003): “Studies of defects and Strains using X-ray Topography and Diffraction” (Invited Lecture).
217. Cree Inc., Durham, NC, June 5, (2003): “Synchrotron Topography and High Resolution Diffraction of SiC” (Invited lecture).
218. ONR Workshop on “Extended Defects in Wide Gap Semiconductors” held in Irvington, VA, July 13-17,(2003) (Invited Lecture; Workshop Chair).
219. 8th International Workshop on Wide Bandgap III-Nitrides, Richmond, VA, September 29 – October 1, 2003: “Combined TEM and Photoluminescence Spectroscopy of Bulk GaN Grown by the Ammonothermal method” (Poster with J. Bai, B. Raghathamachar, P. Gouma, B. Skromme, L. Chen, J. Kolis and E. Michaels – Poster Presented by B. Raghathamachar, J. Bai, and M. Dudley).
220. 8th International Workshop on Wide Bandgap III-Nitrides, Richmond, VA, September 29 – October 1, 2003: “X-ray Characterization of Bulk grown AlN Crystals” (Invited Lecture with B. Raghathamachar, R. Dalmau, V. Noveski, R. Sclesser, L. Schowalter, and Z. Sitar – Lecture Presented by M. Dudley).
221. International Conference on SiC and Related Materials 2003, Lyon, France, October 5-10, 2003: “Characterization of SiC Epitaxial Structures using High-Resolution X-ray Diffraction Techniques” (Invited Lecture with X.-R. Huang, W. Cho, R.S. Okojie, and P.G. Neudeck – Lecture Presented by X. Huang).
222. International Conference on SiC and Related Materials 2003, Lyon, France, October 5-10, 2003: , “Nondestructive Defect Characterization of SiC Epilayers and its Significance for SiC Device Research” (Invited Lecture with X.Ma, M. Dudley, T. Sudarshan – Lecture presented by T. Sudarshan).
223. International Conference on SiC and Related Materials 2003, Lyon, France, October 5-10, 2003: “Porous SiC for HT Chemical Sensing Devices: An Assessment of its Thermal Stability” (Poster with J. Bai, G. Dhanaraj, P. Gouma, and M. Mynbaeva – Poster presented by P. Gouma and M. Dudley).

224. National Research Facilities Workshop, NRL, October 20-21, 2003: "Synchrotron Radiations for Studies of defects in Solids" (Invited lecture with C. Fazi – Lecture presented by M. Dudley).
225. 4th Biannual MURI Review for "An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering", Miami International University, October 27-28, 2003: "Synchrotron White Beam X-ray Topography Characterization of Physical Vapor Transport Grown AlN" (Invited Lecture with B. Raghathamachar, W.M. Vetter, Z. Sitar, J. Bai, B. Skromme and R. Schlesser – Lecture Presented by B. Raghathamachar).
226. Case Western Reserve University, Cleveland, OH, November 18, 2003: "Synchrotron White Beam X-ray Topography Studies and High Resolution X-ray Diffraction Studies of Silicon Carbide, Substrates Epilayers and Devices" (Invited Lecture).
227. St Gobain Crystals, Solon, OH, November 19, 2003: "Application of Synchrotron White beam X-ray Topography to CaF₂ and other Technologically Significant Crystals" (Invited Lecture with B. Raghathamachar – lecture presented by M. Dudley.)
228. 2003 Fall MRS Meeting, Boston, MA, November 30 – December 5, 2003: Planning Meeting for Symposium Organizers for Spring 2004 MRS Meeting in San Francisco.
229. 2004 Spring MRS Meeting, April 11-16, 2004, San Francisco, CA: "SiC: Materials, Processing and Devices" Symposium Co-Chair.
230. 5th Biannual MURI Review for "An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering", Cornell University, April 19-21, 2004: "Synchrotron White Beam X-ray Topography Characterization of Physical Vapor Transport Grown AlN" (Invited Lecture with B. Raghathamachar, W.M. Vetter, Z. Sitar, J. Bai, B. Skromme and R. Schlesser – Lecture Presented by B. Raghathamachar).
231. St Gobain, May 27-28, 2004: "Application of Synchrotron White beam X-ray Topography to CaF₂ and other Technologically Significant Crystals" (Invited Lecture with B. Raghathamachar – lecture presented by M. Dudley.)
232. ONR Progress Review, Monterey, CA, August 1-4, 2004: "Synchrotron X-ray Studies of Wide Bandgap Semiconductors" (Invited lecture).
233. Fall 2004, MRS Meeting Symposium on GaN, Boston, November 29, 2004: "Relationship of basal plane and prismatic stacking faults in GaN to low temperature photoluminescence peaks at ~3.4eV and ~3.2eV", (Poster with J. Bai, M. Dudley, L. Chen, B. J. Skromme, P. J. Hartlieb, E. Michaels, J. W. Kolis, B. Wagner, R. F. Davis, U. Chowdhury and R. D. Dupuis - Poster presented by J. Bai and M. Dudley).
234. 2004 Fall MRS Meeting Symposium on GaN, Boston, November 29, 2004: "X-ray Characterization of GaN Single Crystal Layers Grown by the Ammonothermal Technique on HVPE GaN Seeds and by the Sublimation Technique on Sapphire Seeds" (Poster with Balaji Raghathamachar, Buguo Wang, Michael Callahan, David Bliss, Phanikumar Konkapaka, Huaqiang Wu, and Michael Spencer - poster presented by Balaji Raghathamachar and M. Dudley).
235. 2004 Fall MRS Meeting, Boston, November 29, 2004, "Synchrotron White Beam X-ray Topography (SWBXT) and High Resolution Triple Axis Diffraction Studies on AlN layers Grown on 4H- and 6H-SiC Seeds" (Poster with Balaji Raghathamachar, Michael Dudley, Rafael Dalmau, Raoul Schlesser, and Zlatko Sitar - poster presented by Balaji Raghathamachar and M. Dudley).
236. St. Gobain Crystals, Milford, NH, "SWBXT of CaF₂, Sapphire, Spinel and KDP Crystals", January 17-18, 2005 (Invited Lecture).
237. MURI Review for "An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering", Stony Brook University, April 21-22, 2005, "TEM, High Resolution X-ray Diffraction (HRXRD), Synchrotron White Beam X-ray Topography (SWBXT), SEM and AFM Studies of Ammonothermal- GaN/HVPE-GaN and MOCVD-Grown AlN and GaN/AlN Epilayers", (Invited Lecture with J. Bai, X. Huang, B. Raghathamachar, L. Chen, B. Skromme, R.F. Davis, B. Wagner, B. Wang, M. Callahan and D. Bliss).

238. MURI Review for “An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering”, Stony Brook University, April 21-22, 2005, “Characterization of AlN and GaN crystals by SWBXT and HRXRD”, (Invited Lecture with B. Raghathamachar, J. Bai, X. Huang, M. Dudley, R. Dalmau, D. Zhuang, Z. Herro, R. Schlessler, Z. Sitar, B. Wang, M. Callahan, D. Bliss, P. Konkapaka, H. Wu and M. Spencer).
239. 17th International Conference on InP and related Materials, Glasgow, Scotland, May 8-12, 2005: “Synchrotron X-ray topographic characterization of defects in InP bulk crystals”, (Invited lecture).
240. II-VI Corporation, Pine Brook, NJ, June 21, 2005: “SWBXT, HRXRD, TEM and AFM Studies of Defects in Wide Bandgap Substrates, Epilayers and Device Structures” (Invited Lecture).
241. 16th American Conference on Crystal Growth and Epitaxy, Big Sky Resort, Montana (Journal of Crystal Growth special issue), July 10 - 14, 2005, “Epitaxial Growth and Characterization of Silicon Carbide Films”, (Talk with G. Dhanaraj, M. Dudley, Y. Chen, B. Raghathamachar, B. Wu and H. Zhang).
242. 16th American Conference on Crystal Growth and Epitaxy, Big Sky Resort, Montana (Journal of Crystal Growth special issue), July 10 - 14, 2005, “Stress Evolution During the Early Stages of AlN Vapor Growth” , (Poster with Bei Wu, Jie Bai, Vladimir L. Tassev, Xianrong Huang, Hui Zhang, David F. Bliss, Mim Lal Nakarmi, Jingyu Lin, Wenhong Sun, Jinwei Yang, M. Asif Khan).
243. 16th American Conference on Crystal Growth and Epitaxy, Big Sky Resort, Montana (Journal of Crystal Growth special issue), July 10 - 14, 2005, “Characterization of Bulk Grown GaN and AlN Single Crystal Materials” (Talk with B. Raghathamachar Balaji Raghathamachar, Jie Bai, Michael Dudley, Rafael Dalmau, Dejin Zhuang, Ziad Herro, Raoul Schlessler, Zlatko Sitar, Buguo Wang, Michael Callahan, David Bliss Phanikumar Konkapaka and Michael Spencer).
244. ONR Progress Review, Red Bank, NJ, August 21-24, 2005: “Halo-Precursor CVD Growth of SiC: Ex Situ and In Situ Studies” (Invited lecture).
245. 11th International Conference on defect Recognition and Imaging in Physics, Beijing, China September 15-19, 2005, “Synchrotron White Beam X-ray Topography, Transmission Electron Microscopy and High Resolution X-ray Diffraction Studies of Defects and Strain Relaxation Processes in Wide Bandgap Semiconductor Crystals and Thin Films”, M. Dudley, J. Bai, X. Huang, W.M. Vetter, G. Dhanaraj and B. Raghathamachar (Invited Lecture - Presented by M. Dudley).
246. 11th International Conference on defect Recognition and Imaging in Physics, Beijing, China September 15-19, 2005, “High Resolution TEM Observation of AlN grown on SiC and Sapphire Substrates”, J. Bai, X. Huang, M. Dudley (Oral Presentation - Presented by J. Bai).
247. St. Gobain Crystals, Solon, OH, October 4-5, 2005, “SWBXT of CaF₂, Sapphire, Spinel and other Technologically Significant Crystals of Interest to St. Gobain”, (Invited Lecture).
248. 2005 Fall MRS Symposium on GaN, AlN, InN and Related Materials, Boston, November 27 - December 2, 2005: Intersecting Basal Plane and Prismatic Plane Stacking Fault Structures in GaN/AlN epilayers on on-axis and off-cut 6H-SiC substrates (Oral Presentation with J. Bai and X. Huang -Lecture Presented by J. Bai).
249. 2005 Fall MRS Symposium on GaN, AlN, InN and Related Materials, Boston, November 27 - December 2, 2005: Stress Evolution during the Early Stages of AlN Vapor Growth (Poster with B. Wu, J. Bai, V. L. Tassev, M. Lal Nakarmi, W. Sun, X. Huang, H. Zhang, D. F. Bliss, J. Lin, H. Jiang, J. Yang, and M. Asif Khan -Poster Presented by J. Bai and M. Dudley).
250. 2005 Fall MRS Symposium on GaN, AlN, InN and Related Materials, Boston, November 27 - December 2, 2005: Crystal Growth and Defect Characterization of AlN Single Crystals (Poster with S. Wang, and A. Timmerman -Poster Presented by S. Wang and M. Dudley).
251. 2005 Fall MRS Symposium on GaN, AlN, InN and Related Materials, Boston, November 27 - December 2, 2005: , “Structural Chracterization of GaN Single Crystal Layers Grown by Vapor Transport from a Gallium Oxide Powder

Source (Poster with B. Raghothamachar, P. Konkapaka, and M. Spencer - Poster presented by B. Raghothamachar, P. Konkapaka, M. Dudley and M. Spencer).

252. BP Solar, Frederick, MD December 14, 2005: “Synchrotron White Beam X-ray Topography Characterization of Large Grain Polycrystalline Silicon for Solar Cell Applications” (Invited Lecture).
253. Naval Research Laboratory, Arlington, VA, December 15, 2005: “Halo-Precursor CVD Growth of SiC: Ex Situ and In Situ Studies” (Invited Lecture).
254. II-VI Corporation, Pine Brook, NJ, December 16, 2005: “SWBXT and AFM Studies of Carrot Defects in SiC” (Invited Lecture).
255. “Dow Corning Known Good Substrates Contract Kick-Off Meeting”, Dow Corning, Midland, MI, February 16, 2006: “Known Good Substrates” (Invited Lecture).
256. 2006 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, April 18-20, 2006: “Multiplication of Basal Plane Dislocations via Interaction with c-Axis Threading Dislocations in 4H-SiC” (Lecture with Y. Chen, G. Dhanaraj, H. Zhang, R. Ma, Y. Shishkin and S. Sadow - Lecture Presented by Y. Chen).
257. 2006 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, April 18-20, 2006: “High- Resolution X-Ray Topography of Dislocations in 4H-SiC Epilayers” (Poster with I. Kamata, H. Tsuchida, and W. Vetter - Poster Presented by H. Tsuchida).
258. 2006 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, April 18-20, 2006: “The Formation Mechanism of Carrot Defects in SiC Epifilms ” (Poster with H. Chen, G. Wang, Y. Chen, X. Jia, and J. Bai - Poster Presented by M. Dudley and H. Chen).
259. 2006 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, April 18-20, 2006: “Growth and Mechanism in Halide Chemical Vapor Deposition of Silicon Carbide” (Poster with Y. Chen, J. Dhanaraj, H. Chen, and H. Zhang - Poster Presented by M. Dudley, Y. Chen and G. Dhanaraj).
260. 2006 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, April 18-20, 2006: “Process-induced Deformations and Stacking Faults in 4H-SiC” (Lecture with R. Okojie, X. Huang, M. Zhang, and P. Pirouz - Lecture Presented by R. Okojie).
261. 2006 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, April 18-20, 2006: “Studies of the Effect of Different Dislocation Types On the Performance of Devices Fabricated On 4H-SiC Homoeptaxial Layers Using Synchrotron White Beam X-Ray Topography Based Techniques” (Lecture with H. Chen, B. Raghothamachar, W. Vetter, Y. Wang, and B.J. Skromme, - Lecture Presented by H. Chen).
262. 2006 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, April 18-20, 2006: “Electrospun Tungsten Oxide Nanofibers: Fabrication and Characterization”, (Poster with G. Wang, X. Huang, P.I. Gouma, and X. Yang, - Poster Presented by G. Wang and M. Dudley).
263. MURI Review for “An Integrated Approach to Bulk III-Nitride Crystal Growth and Wafering”, Stony Brook University, May 8-9, 2006, “Characterization of AlN and GaN crystals by SWBXT and HRXRD”, (Invited Lecture with B. Raghothamachar, J. Bai, X. Huang, M. Dudley, R. Dalmau, D. Zhuang, Z. Herro, R. Schlessner, Z. Sitar, B. Wang, M. Callahan, D. Bliss, P. Konkapaka, H. Wu and M. Spencer).
264. St. Gobain Crystals, Milford, NH, “SWBXT of CaF₂, Sapphire, Spinel and KDP Crystals”, June 6-7, 2006 (Invited Lecture).
265. ECSCRM 2006, Newcastle, UK, September 3-7, 2006: “Multiplication of Basal Plane Dislocations and Grain Boundary Formation in SiC (Lecture with Yi Chen, G. Dhanaraj - Lecture Presented by M. Dudley).
266. 2006 Fall MRS Symposium on Advances in III-V Nitride Semiconductor Materials and Devices, Boston, November 26 – December 1, 2006: , “Electrical and Optical Activity of Folded Prismatic Stacking Faults in GaN Grown on

Vicinal SiC Substrates”, (Poster with B. J. Skromme, M. Mikhov, L. Chen, J. Bai, X. Huang, M. Dudley, B. Wagner, and R. F. Davis – Poster presented by M. Dudley and J. Bai).

267. 2006 Fall MRS Symposium on Advances in III-V Nitride Semiconductor Materials and Devices, Boston, November 26 – December 1, 2006: , “Investigation and Properties of Grain Boundaries in Silicon Carbide” (Poster with Y. Chen, G. Dhanaraj, and R. Ma – Poster presented by Y. Chen and M. Dudley).
268. 2006 Fall MRS Symposium on Nanowires and Carbon Nanotubes-Science and Applications, Boston, November 26 – December 1, 2006: “Conductive MWNT/Poly (Vinyl Acetate) Composite Nanofibers by Electrospinning” (Poster with G. Wang, V. Samuilov, J.-S. Koo, Z. Tan, and X. Liu Poster presented by G. Wang and M. Dudley).
269. 2006 Fall MRS Symposium on Advances Advances in In Situ Characterization of Film Growth and Interface Processes, Boston, November 26 – December 1, 2006: “Study on the Growth of Metal Oxide Nanowires by Synchrotron-based In-situ X-ray Diffraction” (Poster with G. Wang, X.-Q. Yang, J. Hanson, and X.R. Huang – Poster presented by G. Wang and M. Dudley).
270. 2006 Fall MRS Symposium on Zinc Oxide and Related Materials, Boston, November 26 – December 1, 2006: “Defect Characterization of Zinc Oxide Bulk Crystals” (Lecture with G. Dhanaraj, B. Raghathamachar, M. Callahan, B. Wang, and D. Bliss –Lecture presented by G. Dhanaraj).
271. Amberwave Systems Corp., Salem, NH, December 1, 2006: “Origin of Defect Configurations in Crystals” (Invited Lecture).
272. Dow Corning, Midland MI, December 13, 2006: “ONR/Dow Corning Known Good Substrates” (Invited Lecture).
273. ONR/Dow Corning Known Good Substrates Program Review”, Chicago, IL, December 14, 2006: “ONR/Dow Corning Known Good Substrates” (Invited Lecture).
274. St. Gobain Crystals, Milford, NH, “SWBXT of CaF₂, Sapphire, Spinel and KDP Crystals”, December 19-20, 2006 (Invited Lecture).
275. Norstel AB, Norrköping, Sweden, January 8-9, 2007: “Origins of Dislocation Configurations in SiC Crystals” (Invited Lecture).
276. Linköping University, Sweden, January 9, 2007: “Origins of Dislocation Configurations in SiC Crystals” (Invited Lecture).
277. 2007 Spring MRS Meeting, San Francisco, CA, April 9-13, 2007: “Interaction between Basal Stacking Faults and Threading Dislocations in 4H-Silicon Carbide Epitaxial Layer” (Lecture with Y. Chen, K.X. Liu and R. Stahlbush - Lecture Presented by Y. Chen).
278. 2007 Spring MRS Meeting, San Francisco, CA, April 9-13, 2007: “Physical Properties of Electrospun PVAc/MWNT Composite Nanofibers and Their Gas Sensing Applications” (Poster with G. Wang-Poster Presented by G. Wang).
279. 2007 Spring MRS Meeting, San Francisco, CA, April 9-13, 2007: “Defect Structures in B₁₂As₂ Epitaxial Films Grown on c-Plane and a-Plane 6H-SiC Substrates” (Poster with H. Chen, G. Wang, L. Zhang, Y. Zhu, and J. Edgar - Poster Presented by G. Wang)
280. IEEE Components, Packaging and Manufacturing Technology, Phoenix Chapter, April 11, 2007: “Dislocations: Their Influence on Device Performance and How to Control Them” (Invited Lecture).
281. Intel Corporation, Assembly Technology Department, Chandler, AZ, April 12. 2007: “Strain (and stress mapping) of packaged silicon wafers using X-ray diffraction-based techniques” (Lecture with B. Raghathamachar – Lecture Presented by B. Raghathamachar).
282. International Conference on SiC and Related Materials 2007, Otsu, Japan, October 14-19, 2007:, “Aspects of Dislocation Behavior in SiC”, (Invited Lecture with Y. Chen and X. R. Huang – Lecture Presented by M. Dudley).

283. International Conference on SiC and Related Materials 2007, Otsu, Japan, October 14-19, 2007: “Studies of the Distribution of Elementary Threading Screw Dislocations In 4H Silicon Carbide Wafer” (Poster with Y. Chen, N. Zhang, X. R. Huang, D. R. Black and M. Dudley – Poster presented by Y. Chen and M. Dudley).
284. International Conference on SiC and Related Materials 2007, Otsu, Japan, October 14-19, 2007: “Sense Determination of Micropipes via Grazing-incidence Synchrotron White Beam X-ray Topography in 4H-Silicon Carbide” (Lecture with Y. Chen, M. Dudley, E. K. Sanchez and M. F. MacMillan –Lecture presented by Y. Chen).
285. International Conference on SiC and Related Materials 2007, Otsu, Japan, October 14-19, 2007: “Mapping of Defects in Large-Area Silicon Carbide Wafers via Photoluminescence and its Correlation with Synchrotron White Beam X-ray Topography” (Poster with Y. Chen, R. Balaji, M. Dudley, M. Murthy, J. A. Freitas Jr. and S. Maximenko – Poster presented by Y. Chen and M. Dudley).
286. International Conference on SiC and Related Materials 2007, Otsu, Japan, October 14-19, 2007: “Synchrotron X-ray Topographic Studies of Recombination Activated Shockley Partial Dislocations in 4H-SiC Epitaxial Layers” (Poster with Y. Chen, M. Dudley, K. X. Liu, J. D. Caldwell and R. E. Stahlbush – Poster presented by Y. Chen, M. Dudley and R.E. Stahlbush).
287. International Conference on SiC and Related Materials 2007, Otsu, Japan, October 14-19, 2007: “Micropipe Dissociation through Thick n+ Buffer Layer Growth” (Lecture with M. F. MacMillan, E. K. Sanchez, M. Dudley, Y. Chen and M. J. Loboda – Lecture presented by E. Sanchez).
288. International Conference on SiC and Related Materials 2007, Otsu, Japan, October 14-19, 2007: “Characterization of Dislocations and Micropipes in 4H n+ SiC Substrates” (Poster with P. Wu, M. Yoganathan, I. Zwieback, Y. Chen and M. Dudley – Poster presented by I. Zwieback, Y. Chen and M. Dudley).
289. International Conference on SiC and Related Materials 2007, Otsu, Japan, October 14-19, 2007: “High Resolution Topography Analysis on Threading Edge Dislocations in 4H-SiC Epilayers” (Lecture with I. Kamata, M. Nagano, H. Tsuchida, Y. Chen and M. Dudley – Lecture presented by I. Kamata).
290. St. Gobain Crystals, Milford, NH, November 29-30, 2007: “SWBXT of CaF₂, Sapphire, Spinel and KDP Crystals”, (Invited Lecture).
291. NSLS II Workshop on Materials Science and Engineering, January 17, 2008: “X-ray Topography at 3rd Generation Synchrotron Sources” (Invited Lecture).
292. 2008 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, March 23-28, 2008: “Studies of c-Axis Threading Screw Dislocations in Hexagonal SiC”, (Lecture with Y. Chen, N. Zhang, E.K. Sanchez, M.F. MacMillan, and X. Huang – Lecture presented by Y. Chen).
293. 2008 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, March 23-28, 2008: “Determination of Core-structure of Shockley Partial Dislocations in 4H-SiC”, (Lecture with Y. Chen, N. Zhang, J.D. Caldwell, K.X. Liu, R.E. Stahlbush, X. Huang, A.T. Macrander and D.R. Black – Lecture presented by Y. Chen).
294. 2008 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, March 23-28, 2008: “Stress Mapping of SiC Wafers by Synchrotron White Beam X-ray Reticulography” (Poster with N.Zhang and Y. Chen – Poster presented by N. Zhang and M. Dudley).
295. 2008 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, March 23-28, 2008: “Characterization and Growth Mechanism of B12As₂ Epitaxial Layer Grown on (1-100) 6H-SiC with (1-100) 15R-SiC Inclusions” (Lecture with H. Chen, G. Wang, L. Zhang, Y. Zhu, Z. Yu, Y. Zhang, J.H. Edgar, J. Gray, and M. Kuball – Lecture presented by H. Chen).
296. 2008 Spring MRS Symposium on SiC: Materials, Processing and Devices, San Francisco, CA, March 23-28, 2008: “Mapping Point and Extended Defects in Wide Bandgap Substrates, Epitaxial Films, and Device Structures by Luminescence Techniques” (Lecture with J.A. Freitas, M. Murthy, S. Maximenko, P. B. Klein, J. D. Caldwell, O. J. Glemboki, Y. Chen, R. Balaji, B. Vanmil, R. Myers-Ward, D. K. Gaskill, C. R. Eddy, G. Chung and M. J. Loboda – Lecture presented by J. Freitas).

297. Boride Group Meeting, Kansas State University, May 31 – June 6, 2008: “Studies of Defects in SiC Single Crystals”, (Invited Lecture).
298. Boride Group Meeting, Kansas State University, May 31 – June 6, 2008: “Origins of Defect Configurations In Crystals”, (Invited Lecture).
299. Arc Energy, Nashua NH, June 24, 2008: “SWBXT of SiC” (invited Lecture).
300. St. Gobain Crystals, Milford, NH, June 25, 2008: “SWBXT of CaF₂, Sapphire, Spinel and KDP Crystals”, (Invited Lecture).
301. ECSCRM 2008, Barcelona, Spain, September 7-11, 2008: “The Effect of 4H-SiC Substrate Surface Scratches on Chemical Vapor Deposition Grown Homo-Epitaxial Layer Quality” (Poster with N. Zhang, E. Sanchez, Y. Chen, M. MacMillan, and D.R. Black, - Poster Presented by N. Zhang and M. Dudley).
302. Universitat Rovira I Virgili, Tarragona, Spain, Sept. 15, 2008: “Applications of Synchrotron White Beam X-ray Topography In Materials Science” (Invited Lecture).
303. Intel Corporation, Assembly Technology Department, Chandler, AZ, October 16, 2008: “Strain (and stress mapping) of packaged silicon wafers using X-ray diffraction-based techniques” (Lecture with B. Raghathamachar – Lecture Presented by B. Raghathamachar).
304. 5th International Symposium on Advanced Science and Technology of Silicon Materials, Kona, Hawaii, Nov 10-14, 2008: “Analysis and Control of Structural Defects in Silicon Carbide Epitaxial Layers”, (Invited Lecture with N. Zhang, Y. Chen, and E.K. Sanchez – Lecture Presented by M. Dudley).
305. JPSI Symposium “Catalyzing Innovation; Microelectronics Research at the National Synchrotron Light Source”, College of Nanoscale Science and Engineering, Albany, March 23, 2009: “Microelectronics Research at NSLS and opportunities at NSLS II”, (Invited Lecture).
306. 2009 Spring MRS Symposium on “Packaging, Chip-Package Interactions, and Solder Materials Challenges”, San Francisco, CA, March 13-17, 2009: “A Novel X-ray Diffraction-based Technique for Complete Stress State Mapping of Packaged Silicon Dies ” (Lecture with B. Raghathamachar, V. Sarkar, V. Noveski, and S. Sharan – Lecture presented by B. Raghathamachar).
307. 2009 Spring MRS Symposium on “Nuclear Radiation Detection Materials-2009”, San Francisco, CA, March 13-17, 2009: “Origins of Twinned Microstructures in B₁₂As₂ Epilayers Grown on (0001) 6H-SiC and Their Influence on Physical Properties” (Poster with Y. Zhang, H. Chen, N. Zhang, Y. Gong, M. Kuball, Z. Xu, Y. Zhang, J.H. Edgar, L. Zhang, and Y. Zhu – Poster Presented by Y. Zhang and M. Dudley).
308. “International Workshop on 3C-SiC Heteroepitaxy and Workshop on Advanced Semiconductor Materials and Devices for Power Electronics Applications”, Catania, Italy, May 6-8, 2009 “Development of Methods for Dislocation Characterization in SiC Materials and Devices”, (Invited Lecture with N. Zhang, and Y. Chen – Lecture Presented by M. Dudley).
309. St. Gobain Crystals, Milford, NH, May 14-15, 2009: “SWBXT of CaF₂, Sapphire, Spinel and KDP Crystals”, (Invited Lecture).
310. Symposium on “Novel Routes of Solution Processing”, International Conference on Materials for Advanced Technologies (ICMAT 2009), Singapore, June 28 – July 3, 2009: “Application of Synchrotron X-ray Topography to the Development of Solution-Based, Bulk Crystal Growth of Technologically Important Materials”, (Invited Lecture with N. Zhang and Y. Chen – Lecture Presented by M. Dudley).
311. Symposium on “Single Crystals: Growth and Applications for Research and Industry”, International Conference on Materials for Advanced Technologies (ICMAT 2009), Singapore, June 28 – July 3, 2009: “Nucleation Mechanism of 6H-SiC Polytype Inclusions in PVT Grown 15R-SiC Crystals”, (Lecture with Y. Zhang N. Zhang, G. Choi, E. Tymizcki, and K. Graszka – Lecture Presented by Y. Zhang).

312. Institute for Crystal Materials, Shandong University, Jinan, China, July 6, 2009: “Characterization of Defects in SiC Substrates, Epilayers and Devices” (Invited Lecture).
313. Institute of Physics, Chinese Academy of Sciences, Beijing, China, July 7, 2009: “Characterization of Defects in SiC Substrates, Epilayers and Devices” (Invited Lecture).
314. The 17th American Conference on Crystal Growth and Epitaxy, Lake Geneva, Wisconsin, August 9 - 14, 2009: “The Role Played by Synchrotron Topography in the Industrial Crystal Growth of Silicon Carbide” (Lecture with N. Zhang, B. Raghathamachar, Y. Chen, and G. Dhanaraj – Lecture Presented by M. Dudley).
315. The 17th American Conference on Crystal Growth and Epitaxy, Lake Geneva, Wisconsin, August 9 - 14, 2009: “Liquid Phase Epitaxial Growth and Characterization of $\text{KLu}_{1-x}\text{Tm}_x(\text{WO}_4)_2$ / $\text{KLu}(\text{WO}_4)_2$ for Thin-Disk Lasers” (Lecture with R. Solé, J. Carvajal, B. Raghathamachar, M. Pujol, X. Mateos, M. Aguiló, and F. Diaz – Lecture Presented by B. Raghathamachar).
316. The 17th American Conference on Crystal Growth and Epitaxy, Lake Geneva, Wisconsin, August 9 - 14, 2009: “Nucleation Mechanism of Polytype Transformation in 6H-SiC Polytype Inclusions inside 15R-SiC Crystals During Growth” (Lecture with Y. Zhang, H. Chen, J. Edgar, K. Grasz, E. Tymicki, and Y. Zhu – Lecture Presented by Y. Zhang).
317. 13th International Conference on Defects - Recognition, Imaging and Physics in Semiconductors (DRIP XIII), Wheeling, West Virginia, September 13-17, 2009: “Stress Mapping Analysis by Ray Tracing (SMART): A New Technique for Residual Strain/Stress Measurement of Single Crystal Material Using Synchrotron White Beam” (Lecture with V. Sarkar, B. Raghathamachar, S. Byrappa – Lecture Presented by B. Raghathamachar).
318. 13th International Conference on Defects - Recognition, Imaging and Physics in Semiconductors (DRIP XIII), Wheeling, West Virginia, September 13-17, 2009: “Synchrotron X-Ray Topography Study of Structural Defects and Strain in Epitaxial Structures of Yb- and Tm- Doped Potassium Rare Earth Double Tungstates and Their Influence on Laser Performance” (Lecture with J. Carvajal, B. Raghathamachar, M. Pujol, X. Mateos, M. Aguiló, and F. Díaz – Lecture Presented by B. Raghathamachar).
319. 13th International Conference on Defects - Recognition, Imaging and Physics in Semiconductors (DRIP XIII), Wheeling, West Virginia, September 13-17, 2009: “Study on Nucleation Mechanism of Polytype Transformation in 6H and 15R SiC Crystals”, (Lecture with Y. Zhang, H. Chen, J. Edgar; K. Grasz, E. Tymicki and Y. Zhu - Lecture Presented by Y. Zhang)
320. Intel Corporation, Assembly Technology Department, Chandler, AZ, October 2, 2009: “Strain (and stress mapping) of packaged silicon wafers using X-ray diffraction-based techniques” (Lecture with B. Raghathamachar – Lecture Presented by B. Raghathamachar).
321. International Conference on SiC and Related Materials (ICSCRM) 2009, Nuremburg, Germany, October 11-16, 2009: “Characterization of 100 mm Diameter 4H-Silicon Carbide Crystals With Extremely Low Basal Plane Dislocation Density” (Lecture with N. Zhang, Y. Zhang, B. Raghathamachar, S. Byrappa, G. Choi, E. K. Sanchez, D. Hansen, R. Drachev, and M.J. Loboda – Lecture Presented by M. Dudley).
322. International Conference on SiC and Related Materials (ICSCRM) 2009, Nuremburg, Germany, October 11-16, 2009: “Nucleation of c-axis Screw Dislocations at Substrate Surface Damage During 4H-Silicon Carbide Homo-Epitaxy” (Lecture with N. Zhang, Y. Zhang, and E. Sanchez – Lecture Presented by M. Dudley).
323. II-VI Corporation, Wide Bandgap Group, Pine Brook, NJ, November 12, 2009: “The Role Played by Synchrotron Topography in the Industrial Crystal Growth of Silicon Carbide” (Invited Lecture).
324. 2009 Fall MRS Symposium on “Packaging, Chip-Package Interactions, and Solder Materials Challenges”, Boston, MA, Nov. 30 – Dec. 4, 2009: “A Novel X-ray Diffraction-based Technique for Complete Stress State Mapping of Packaged Silicon Dies ” Oral Presentation with B. Raghathamachar, V. Sarkar, V. Noveski, and S. Sharan – Lecture Presented by V. Sarkar).

325. 2009 Fall MRS Symposium on “Nuclear Radiation Detection Materials-2009”, Boston, MA, Nov. 30 – Dec. 4, 2010: “Origins of Twinned Microstructures in B₁₂As₂ Epilayers Grown on (0001) 6H-SiC and Their Influence on Physical Properties” (Poster with Y. Zhang, H. Chen, N. Zhang, Y. Gong, M. Kuball, Z. Xu, Y. Zhang, J.H. Edgar, L. Zhang, and Y. Zhu – Psoter presented by Y. Zhang).
326. 2010 Spring MRS Symposium on “Silicon Carbide 2010 — Materials, Processing, and Devices” San Francisco, CA, April 5-9, 2010, “Analysis of Dislocation Behavior in Low Dislocation Density, PVT-Grown, Four-Inch Silicon Carbide Single Crystals” (Oral Presentation with S. Byrappa, H. Wang, F. Wu, Y. Zhang, B. Raghathamachar, G. Choi, E. Sanchez, D. Hansen, R. Drachev, and M. Loboda – Lecture presented by M. Dudley).
327. 2010 Spring MRS Symposium on “Silicon Carbide 2010 — Materials, Processing, and Devices” San Francisco, CA, April 5-9, 2010: “Mechanism for Improved Quality B₁₂As₂ Epitaxial Films on (0001) 4H-SiC Substrates by Tilting toward [1-100] Direction”, (Lecture with Y. Zhang, H. Chen, Y. Zhang, J. Edgar, Y. Gong, S. Bakalova, M. Kuball, L. Zhang, D. Su, K. Kisslinger, and Y. Zhu – Lecture Presented by Y. Zhang).
328. Dow Corning Compound Semiconductor Solutions (DCCSS) – ARL Kick-Off Contract Meeting, May 27, 2010, Dow Corning, Midland, MI: “Mapping TSD’s in SiC Substrates, Epilayers and Devices” (Invited Presentation).
329. NSLS-II SAC Panel Meeting – July 13, 2010, BNL, Upton, NY: “Monochromatic and White Beam Topography (MWT)” (Invited Presentation).
330. ONR (Scott Coombe) – July, 28, 2010, Arlington, VA: ““Rugged SiC and GaN High-Power Devices” (Invited Presentation with Krishna Shenai).
331. DOE (Mike Sobaroff, Maria Mapes) – July 28, 2010: “Rugged SiC and GaN High-Power Devices” (Invited Presentation with Krishna Shenai).
332. DARPA (John Albrecht) – July 29, 2010, Arlington, VA: ““Rugged SiC and GaN High-Power Devices” (Invited Presentation with Krishna Shenai).
333. 16th International Conference on Crystal Growth, 14th International Conference on Vapor Growth and Epitaxy – August 8-13, 2010, Beijing Convention Center, Beijing, China: “Crystal growth and structural characterization of doped and undoped RTP crystals grown by the TSSG method” (Lecture with B. Raghathamachar, V. Sarkar, J. Carvajal, M. C. Pujol, X. Mateos, R. Solé, M. Aguiló and F. Díaz - Lecture presented by B. Raghathamachar).
334. 16th International Conference on Crystal Growth, 14th International Conference on Vapor Growth and Epitaxy – August 8-13, 2010, Beijing Convention Center, Beijing, China: “Structural Evaluation of CVD-grown Diamond Single Crystals for Detector Applications” (Lecture with B. Raghathamachar, M. Gaowei, Q. Wu, E. Muller, and J. Smedley – Lecture Presented by B. Raghathamachar).
335. ECSCRM 2010, Oslo, Norway – August 29 –September 2, 2010: “Formation Mechanism of Stacking Faults in PVT 4H-SiC Created by Deflection of Threading Dislocations with Burgers Vector c+a” (Lecture with S. Byrappa, H. Wang, F. Wu, B. Raghathamachar, G. Choi, S. Sun, E. K. Sanchez, D. Hansen, R. Drachev, S. Mueller, and M. J. Loboda – Lecture Presented by M. Dudley).
336. XTOP 2010, University of Warwick, UK – September 20-23, 2010: “Industrial Applications of X-ray Topography: Analysis of Defects in PVT-Grown SiC – A Case Study (Invited Lecture).
337. 2010 Fall MRS Symposium on “Diamond Electronics and Bioelectronics – Fundamentals to Applications IV”, Boston, MA, November 29 – December 3, 2010: “Numerical Simulation of X-ray Section Topography Images of Defects in CVD Diamond”, (Poster with M. Gaowei, B. Raghathamachar, E. Muller, J. Smedley, and Qiong Wu – presented by all authors).
338. 2010 Fall MRS Symposium on “Boron and Boron Compounds – from Fundamentals to Applications”, Boston, MA, November 29 – December 3, 2010: “Elimination of Degenerate Epitaxy in the Growth of High Quality B₁₂As₂ Single Crystalline Epitaxial Films”, (Lecture with Y. Zhang, H. Chen, Y. Zhang, J.H. Edgar, Y. Gong, S. Bakalova, M. Kuball, L. Zhang, D. Su and Y. Zhu – Lecture presented by Y. Zhang).

339. 2010 Fall MRS Symposium on “Boron and Boron Compounds – from Fundamentals to Applications”, Boston, MA, November 29 – December 3, 2010: “Solution Growth and Characterization of Icosahedral Boron Arsenide ($B_{12}As_2$)”, (Lecture with C. Whitely, A. Mayo, J.H. Edgar, Y. Gong, M. Kuball, and Y. Zhang – Lecture presented by C. Whitely).
340. 2010 Fall MRS Symposium on “Boron and Boron Compounds – from Fundamentals to Applications”, Boston, MA, November 29 – December 3, 2010: “Electrical Properties of Silicon Doped Icosahedral Boron Arsenide ($B_{12}As_2$) Epitaxial Layers on Silicon Carbide”, (Poster with Y. Zhang, J.H. Edgar, Y. Zhang, M. Dudley, Z. Zhu, Y. Gong, S. Bakalova, and M. Kuball – Poster presented by all authors).
341. 2010 Fall MRS Symposium on “Boron and Boron Compounds – from Fundamentals to Applications”, Boston, MA, November 29 – December 3, 2010: “Electrical Properties of $B_{12}As_2$ /SiC Heterojunction Diodes and their Dependence on Microstructure” (Lecture with Y. Gong, S. Bakalova, Y. Zhang, Y. Zhang, J.H. Edgar and M. Kuball – Lecture presented Y. Gong).
342. 2010 Fall MRS Symposium on “Boron and Boron Compounds – from Fundamentals to Applications”, Boston, MA, November 29 – December 3, 2010: “Anisotropic Dielectric Response of Epitaxial $B_{12}As_2$ Films”, (Lecture with S. Bakalova, Y. Gong, C. Cobet, N. Esser, Y. Zhang, J.H. Edgar, Y. Zhang and M. Kuball – Lecture presented by S. Bakalova).
343. St. Gobain Crystals, Milford, NH, October 7-8, 2010: “SWBXT of CaF_2 , Sapphire, Spinel and KDP Crystals”, (Invited Lecture).
344. St. Gobain Crystals, Milford, NH, December 1, 2010: “SWBXT of CaF_2 , Sapphire, Spinel and KDP Crystals”, (Invited Lecture).
345. Intel Corporation, Assembly Technology Department, Chandler, AZ, March 11, 2011: “Strain (and stress mapping) of packaged silicon wafers using X-ray diffraction-based techniques” (Lecture with B. Raghothamachar and V. Sarkar– Lecture Presented by V. Sarkar).
346. DARPA UV LEDs Kick-Off Meeting, Baltimore, Maryland, May 4-5, 2011: “AlN Growth and Characterization” (Invited Lecture with Balaji Raghothamachar, R. Schlessner and Z. Sitar - lecture presented by Z. Sitar).
347. St. Gobain Crystals, Milford, NH, May 17, 2011: “SWBXT of CaF_2 , Sapphire, Spinel and KDP Crystals”, (Invited Lecture).
348. Symposium on “Advanced Materials Supported by Synchrotron Radiation”, International Conference on Materials for Advanced Technologies (ICMAT 2011), SUNTEC, Singapore, June 27 – July 1, 2011: “Synchrotron X-ray Topography Studies of the Evolution of the Defect Microstructure in Physical Vapor Transport Grown 4H-SiC Single Crystals, (Invited Lecture).
349. Symposium on “Advanced Materials Supported by Synchrotron Radiation”, International Conference on Materials for Advanced Technologies (ICMAT 2011), SUNTEC, Singapore, June 27 – July 1, 2011: “Synchrotron X-ray Topography Studies the Hopping Frank Read Sources in 4H-SiC, (Lecture with H. Wang– Lecture Presented by H. Wang).
350. The 18th American Conference on Crystal Growth and Epitaxy, Monterey, CA, July 31 –August 5, 2011: “New Insights into Structural Defect Behavior in Bulk and Epitaxial Silicon Carbide” (Invited Lecture with S. Byrappa, H. Wang, F. Wu, B. Raghothamachar, G. Choi, S. Sun, E. K. Sanchez, D. Hansen, R. Drachev, S. Mueller, and M. J. Loboda – Lecture Presented by M. Dudley).
351. The 18th American Conference on Crystal Growth and Epitaxy, Monterey, CA, July 31 –August 5, 2011: “Volume Production of High Quality SiC Substrates and Epitaxial Layers: Defect Trends and Device Applications” (Invited Lecture with S. Byrappa, H. Wang, F. Wu, B. Raghothamachar, G. Choi, S. Sun, E. K. Sanchez, D. Hansen, R. Drachev, S. Mueller, and M. J. Loboda – Lecture Presented by S. Mueller).
352. The 18th American Conference on Crystal Growth and Epitaxy, Monterey, CA, July 31 –August 5, 2011: “A review of four Types of Stacking faults created by deflection of Threading Dislocations with Burgers vector $c/c+a$ in 4H-SiC

PVT –Grown Substrates” (Invited Lecture with S. Byrappa, H. Wang, F. Wu, B. Raghathamachar, G. Choi, S. Sun, E. K. Sanchez, D. Hansen, R. Drachev, S. Mueller, and M. J. Loboda Lecture Presented by F. Wu).

353. The 18th American Conference on Crystal Growth and Epitaxy, Monterey, CA, July 31 –August 5, 2011: “Synchrotron X-ray Topography Studies of the Behavior of Threading Growth Dislocations with c-component of Burgers Vector in PVT-Grown 4H-SiC” (Invited Lecture with S. Byrappa, H. Wang, F. Wu, B. Raghathamachar, G. Choi, S. Sun, E. K. Sanchez, D. Hansen, R. Drachev, S. Mueller, and M. J. Loboda – Lecture Presented by M. Dudley – Lecture Presented by F. Wu).
354. The 18th American Conference on Crystal Growth and Epitaxy, Monterey, CA, July 31 –August 5, 2011: “Basal Plane Dislocation Multiplication via the Hopping Frank-Read Source Mechanism in 4H-SiC and Observations of Threading Edge Dislocation Glide” (Lecture with S. Byrappa, H. Wang, F. Wu, B. Raghathamachar, G. Choi, S. Sun, E. K. Sanchez, D. Hansen, R. Drachev, S. Mueller, and M. J. Loboda –Lecture Presented by H. Wang).
355. The 18th American Conference on Crystal Growth and Epitaxy, Monterey, CA, July 31 –August 5, 2011: “Defect Structures of B₁₂As₂ Single Crystalline Epitaxial Layers on Off-axis (0001) 4H-SiC Substrates” (Lecture with Y. Zhang, J.H. Edgar, Y. Zhang, M. Dudley, Z. Zhu, Y. Gong, S. Bakalova, B. Raghathamachar and M. Kuball – Lecture Presented by B. Raghathamachar).
356. International Conference on SiC and Related Materials (ICSCRM) 2011, Cleveland, USA, September 11-16, 2011: “Synchrotron X-ray Topography Studies of the Propagation, and Post-Growth Mutual Interaction of Threading Growth Dislocations with c-component of Burgers Vector in PVT-Grown 4H-SiC” (Lecture with S. Byrappa, H. Wang, F. Wu, B. Raghathamachar, G. Choi, S. Sun, E. K. Sanchez, D. Hansen, R. Drachev, S. Mueller, and M. J. Loboda – Lecture Presented by M. Dudley).
357. International Conference on SiC and Related Materials (ICSCRM) 2011, Cleveland, USA, September 11-16, 2011: “Basal Plane Dislocation Multiplication via the Hopping Frank-Read Source Mechanism in 4H-SiC and Observations of Threading Edge Dislocation Glide” (Lecture with S. Byrappa, H. Wang, F. Wu, B. Raghathamachar, G. Choi, S. Sun, E. K. Sanchez, D. Hansen, R. Drachev, S. Mueller, and M. J. Loboda – Lecture Presented by H. Wang).
358. International Conference on SiC and Related Materials (ICSCRM) 2011, Cleveland, USA, September 11-16, 2011: “Low Defect Density Bulk AlN Substrates for High Performance Electronics & Optoelectronics” (Poster with S. Byrappa, H. Wang, F. Wu, B. Raghathamachar, G. Choi, S. Sun, E. K. Sanchez, D. Hansen, R. Drachev, S. Mueller, and M. J. Loboda – Poster Presented by B. Raghathamachar and M. Dudley).
359. 220th Electrochemical Society Meeting Symposium on GaN and SiC Power Technologies, held in Boston, MA, October 9-14, 2011: “Review of Current State of the Art of Defects in SiC,” (Invited Participation in Panel Discussion).
360. ARC Energy, October 13, 2011: “Synchrotron Topography Studies of Defects in Sapphire” (Invited Lecture with B. Raghathamachar).
361. 2011 Fall MRS Symposium on “Mobile Energy”, Boston, MA, November 28 – December 2, 2011: “GaN and SiC Materials Technology for Chipscale Mobile Power”, (Invited Lecture with K. Shenai – Lecture presented by M. Dudley).
362. ARC Energy, February 15-17, 2012: “Synchrotron Topography Studies of Defects in Sapphire” (Invited Lecture with B. Raghathamachar).
363. 2012 Spring MRS Symposium on “Silicon Carbide 2012 — Materials, Processing, and Devices” San Francisco, CA, April 9-13, 2012, “Synchrotron Topography Studies of Growth and Deformation-Induced Dislocations in 4H-SiC” (Invited Lecture with S. Byrappa, H. Wang, F. Wu, Y. Zhang, B. Raghathamachar, G. Choi, E. Sanchez, D. Hansen, R. Drachev, and M. Loboda – Lecture presented by M. Dudley).
364. 2012 Spring MRS Symposium on “Silicon Carbide 2012 — Materials, Processing, and Devices” San Francisco, CA, April 9-13, 2012, “Synchrotron Topography Studies of Growth and Deformation-Induced Dislocations in 4H-SiC” (Invited Lecture with S. Byrappa, H. Wang, F. Wu, Y. Zhang, B. Raghathamachar, G. Choi, E. Sanchez, D. Hansen, R. Drachev, and M. Loboda – Lecture presented by M. Dudley).

365. 2012 Spring MRS Symposium on “Silicon Carbide 2012 — Materials, Processing, and Devices” San Francisco, CA, April 9-13, 2012, “Combined Application of Section and Projection Topography to Defect Analysis in PVT-Grown 4H-SiC” (Invited Lecture with S. Byrappa, H. Wang, F. Wu, Y. Zhang, B. Raghathamachar, G. Choi, E. Sanchez, D. Hansen, R. Drachev, and M. Loboda – Lecture presented by H. Wang).
366. 2012 Spring MRS Symposium on “Silicon Carbide 2012 — Materials, Processing, and Devices” San Francisco, CA, April 9-13, 2012, “Simulation of Synchrotron X-ray Topography Images of Dislocations with Burgers Vector $c + a$ in 4H-SiC Single Crystals” (Invited Lecture with S. Byrappa, H. Wang, F. Wu, Y. Zhang, B. Raghathamachar, G. Choi, E. Sanchez, D. Hansen, R. Drachev, and M. Loboda – Lecture presented by S. Byrappa).
367. 54th Electronic Materials Conference, Symposium on SiC: Growth Processing and Characterization (Technical Session Co-Organizer (with R. Stahlbush, B. Hull, M. Capano and J. Caldwell)), Pennsylvania State University, June 20-22, 2012.
368. 54th Electronic Materials Conference, Symposium on SiC: Growth Processing and Characterization (Technical Session Co-Organizer (with R. Stahlbush, B. Hull, M. Capano and J. Caldwell)), Pennsylvania State University, June 20-22, 2012: “Characterization and Formation Mechanism of Six Pointed Star-Type Stacking Faults in 4H-SiC”, (Oral Presentation with F. Wu, H. Wang, S. Byrappa, B. Raghathamachar, P. Wu, X. Xu, and Ilya Zwieback – paper presented by F. Wu).
369. 54th Electronic Materials Conference, Symposium on SiC: Growth Processing and Characterization (Technical Session Co-Organizer (with R. Stahlbush, B. Hull, M. Capano and J. Caldwell)), Pennsylvania State University, June 20-22, 2012: “Quantitative Comparison Between Dislocation Densities in Offcut 4H-SiC Wafers Measured Using Synchrotron X-ray Topography and Molten KOH Etching,” (Oral Presentation with H. Wang, S. Shun, S. Byrappa, F. Wu, B. Raghathamachar, G. Chung, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by S. Shun).
370. 9th European Conference on Silicon Carbide and Related Materials (ECSCRM 2012), St. Petersburg, Russia, September 2-6, 2012: “Defect Generation Mechanisms in PVT-Grown AlN Single Crystal Boules” (Poster with B. Raghathamachar, Y. Yang, R. Dalmau, B. Moody, S. Craft, R. Schlessner, and Z. Sitar – Poster Presented by B. Raghathamachar, M. Dudley and F. Wu).
371. 9th European Conference on Silicon Carbide and Related Materials (ECSCRM 2012), St. Petersburg, Russia, September 2-6, 2012: “The Nucleation and Propagation of Threading Dislocations with c -Component of Burgers Vector in PVT-Grown 4H-SiC”, (Oral Presentation with F. Wu, S. Byrappa, H. Wang, Y. Chen, B. Raghathamachar, E.K. Sanchez, G. Chung, D. Hansen, S.G. Mueller and M. J. Loboda, – Paper Presented by F. Wu).
372. 222nd ECS Meeting, Honolulu, Hawaii PRiME 2012, October 7, 2012 - October 12, 2012: Co-Organizer of Gallium Nitride and Silicon Carbide Power Technologies 2 (with K. Shenai, M. Bakowski, R. Garg, and N. Ohtani).
373. Fall 2012 MRS Meeting, Symposium on Oxide Semiconductors and Thin Films, Boston, MA, November 25-30, 2012: “Grazing Incidence X-ray Topographic Studies of Threading Dislocations in Hydrothermal Grown ZnO Single Crystal Substrates,” (Oral Presentation with T. Zhou, B. Raghathamachar, and F. Wu – paper presented by T. Zhou).
374. St. Gobain Crystals, Devens, MA, April 12, 2013: “SWBXT of Sapphire Crystals”, (Invited Lecture with B. Raghathamachar).
375. 55th Electronic Materials Conference, Symposium on SiC: Growth Processing and Characterization (Technical Session Co-Organizer (with M. Spencer, R. Stahlbush, and J. Caldwell)), University of Notre Dame, South Bend, IN, June 26-28, 2013.
376. 55th Electronic Materials Conference, Symposium on SiC: Growth Processing and Characterization (Technical Session Co-Organizer (with M. Spencer, R. Stahlbush, and J. Caldwell)), University of Notre Dame, South Bend, IN, June 26-28, 2013: “Prismatic Glide of Threading Edge Dislocations and Pyramidal Glide of Threading $c+a$ Dislocations in PVT-Grown 4H-SiC”, (Oral Presentation with F. Wu, H. Wang, S. Byrappa, B. Raghathamachar, G. Chung, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by F. Wu).

377. 55th Electronic Materials Conference, Symposium on Oxide Semiconductors: University of Notre Dame, South Bend, IN, June 26-28, 2013: “Measurement of Critical Thickness for the Formation of Misfit Dislocations in 4H-SiC via X-ray Topography” (Oral Presentation with H. Wang, F. Wu, S. Byrappa, B. Raghathamachar, G. Chung, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by H. Wang).
378. 55th Electronic Materials Conference, Symposium on Group III-Nitrides: Growth and Characterization I: University of Notre Dame, South Bend, IN, June 26-28, 2013: “Characterization of Threading Dislocations in AlN Substrates via X-ray Topography and Ray Tracing Simulation” (Oral Presentation with T. Zhou, B. Raghathamachar, and F. Wu – lecture presented by T. Zhou).
379. 224th Electrochemical Society Meeting, San Francisco, CA, October 27 – November 1, 2013, Co-Organizer of Symposium on GaN and SiC Power Technologies, (with K. Shenai, M. Bakowski, and N. Ohtani).
380. 224th Electrochemical Society Meeting, San Francisco, CA, October 27 – November 1, 2013, Symposium on GaN and SiC Power Technologies, “Synchrotron X-ray Topography Studies of the Evolution of the Defect Microstructure in Physical Vapor Transport Grown 4H-SiC Single Crystals”, (Oral Presentation with H. Wang, F. Wu, S. Byrappa, B. Raghathamachar, G. Chung, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by M. Dudley).
381. The 19th American Conference on Crystal Growth and Epitaxy (ACCGE) in conjunction with the 16th US Biennial Workshop on Organometallic Vapor Phase Epitaxy, July 21-26, 2013, Keystone, CO: “Study of V and Y shape Frank-type Stacking Faults Formation in 4H-SiC epilayers,” (Oral Presentation with H. Wang, F. Wu., B. Raghathamachar, G. Chung, J. Zhang, B. Thomas, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by H. Wang).
382. 17th International Conference on Crystal Growth and Epitaxy ICCGE-17, August 11-16, 2013, Warsaw, Poland: “Synchrotron Topography Studies of the Operation of Double-Ended Frank-Read Partial Dislocation Sources in 4H-SiC,” (Oral Presentation with H. Wang, F. Wu, S. Byrappa, B. Raghathamachar, P. Wu, I. Zwieback, A. Souzis, G. Ruland, and T. Anderson - Paper presented by B. Raghathamachar).
383. International Conference on Silicon Carbide and Related Materials (ICSCRM 2013) held in Miyazaki, Japan September 29 - October 4, 2013: “Measurement of Critical Thickness for the Formation of Interfacial Dislocations and Half Loop Arrays in 4H-SiC Epilayer via X-ray Topography” (Oral Presentation with H. Wang, F. Wu., B. Raghathamachar, G. Chung, J. Zhang, B. Thomas, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by H. Wang).
384. International Conference on Silicon Carbide and Related Materials (ICSCRM 2013) held in Miyazaki, Japan September 29 - October 4, 2013, “Study of V and Y shape Frank-type Stacking Faults Formation in 4H-SiC Epilayer” (Invited Poster Presentation with H. Wang, F. Wu., B. Raghathamachar, G. Chung, J. Zhang, B. Thomas, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by F. Wu, H. Wang, and M. Dudley).
385. Argonne National Laboratory, IL: “Analysis of Defects in SiC Substrates, Epilayers and Devices”, December 12, 2013 (Invited Lecture).
386. A New Base for Future Advances in SiC Semiconductor Technology, held by Dow Corning in Tokyo, Japan, March 13, 2014: Characterization of Defect Structures in SiC Substrates and Homo-Epitaxial Layers,” (Invited Lecture presented by M. Dudley)
387. 2014 Spring MRS Symposium on “Silicon Carbide 2014 — Materials, Processing, and Devices” San Francisco, CA, April 21 - 25, 2014: “Structural Characterization of Lateral-Grown 4H/6H-SiC a/m-Plane Pseudo Fiber Crystals by Hot Wall CVD Epitaxy” (Oral Presentation with O.Y. Goue and B. Raghathamachar – Paper presented by O.Y. Goue).
388. 2014 Spring MRS Symposium on “Silicon Carbide 2014 — Materials, Processing, and Devices” San Francisco, CA, April 21 - 25, 2014: “Direct Observation of Stacking Fault Nucleation from Deflected Threading Dislocations with Burgers Vector $c+a$ in PVT Grown 4H-SiC” (Oral Presentation with F. Wu, H. Wang, S. Byrappa, B. Raghathamachar, G. Chung, E.K. Sanchez, S.G. Mueller, J. Zhang, B. Thomas, D. Hansen, and M. J. Loboda – paper presented by F. Wu).

389. European Materials Research Society Meeting Symposium on “Crystal Growth Related Twins and Point Defects”, Co-Organizer (with T. Duffar, D. Klimm and M. Neubert), Lille Grand Palais, Lille, France, May 25-30, (2014).
390. 56th Electronic Materials Conference, Symposium on SiC: Growth Processing and Characterization (Technical Session Co-Organizer (with M. Spencer, R. Stahlbush, and J. Caldwell), University of California, Santa Barbara, June 26-28, (2014).
391. 56th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at University of California, Santa Barbara, June 26-28, (2014): “Studies of the Origins of Half Loop Arrays and Interfacial Dislocations Observed in Homoepitaxial Layers of 4H-SiC,” (Oral Presentation with H. Wang, F. Wu., B. Raghathamachar, G. Chung, J. Zhang, B. Thomas, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by H. Wang).
392. 56th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at University of California, Santa Barbara, June 26-28, (2014): “Characterization of V Shaped Defects in 4H-SiC Homoepitaxial Layers” (Oral Presentation with H. Wang, F. Wu., B. Raghathamachar, G. Chung, J. Zhang, B. Thomas, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by F. Wu).
393. SICCC Materials, Jinan, China: “Defects in SiC”, July 28-30, 2014 (Invited Lecture).
394. 12th Biennial Conference on High-Resolution X-Ray Diffraction and Imaging (XTOP 2014), September 14-19, 2014, Villard-de-Lans, France: “Application of X-ray reticulography to the measurement and mapping of the stress tensor in single crystals (Poster with B. Raghathamachar – paper presented by B. Raghathamachar).
395. 12th Biennial Conference on High-Resolution X-Ray Diffraction and Imaging (XTOP 2014), September 14-19, 2014, Villard-de-Lans, France: “Synchrotron x-ray topography study of stacking faults nucleated from deflected threading dislocations with Burgers vector $c+a$ in PVT grown 4H-SiC” (Poster with H. Wang, F. Wu., B. Raghathamachar, G. Chung, J. Zhang, B. Thomas, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by B. Raghathamachar).
396. 12th Biennial Conference on High-Resolution X-Ray Diffraction and Imaging (XTOP 2014), September 14-19, 2014, Villard-de-Lans, France: “X-ray White Beam and Monochromatic Beam Synchrotron Studies of Interfacial Dislocations and Half-loop Arrays in homoepitaxial 4H-SiC epiwafers (Poster with H. Wang, F. Wu., B. Raghathamachar, G. Chung, J. Zhang, B. Thomas, E.K. Sanchez, S.G. Mueller, D. Hansen, and M. J. Loboda – paper presented by B. Raghathamachar).
397. European Conference on Silicon Carbide and Related Materials (ECSCRM 2014), Grenoble, France, September 21-25, 2014: “Stacking fault formation via 2D nucleation in PVT grown 4H-SiC”, (Oral Presentation with – F. Wu, H. Wang, B. Raghathamachar, S. Mueller, G. Chung, E. Sanchez, D. Hansen, and M. Loboda – Paper presented by F. Wu).
398. European Conference on Silicon Carbide and Related Materials (ECSCRM 2014), Grenoble, France, September 21-25, 2014: “Studies of the Origins of Half Loop Arrays and Interfacial Dislocations Observed in Homoepitaxial layers of 4H-SiC”, (Poster with – F. Wu, H. Wang, B. Raghathamachar, S. Mueller, G. Chung, E. Sanchez, D. Hansen, and M. Loboda – Paper presented by H. Wang, M. Dudley and F. Wu).
399. 226th Electrochemical Society Meeting, Cancun, Mexico, October 5 - 9, 2014, Co-Organizer of Symposium on GaN and SiC Power Technologies, (with K. Shenai, M. Bakowski, and N. Ohtani).
400. 226th Electrochemical Society Meeting, Cancun, Mexico, October 5 - 9, 2014, Symposium on GaN and SiC Power Technologies: “Stacking Fault Formation during Homo-Epitaxy of 4H-SiC”, (Oral Presentation with H. Wang, F. Wu, Y. Yang, J. Guo, B. Raghathamachar, J. Zhang, G. Chung, B. Thomas, E. K. Sanchez, S. Mueller, D. Hansen, and M. Loboda – Paper presented by H. Wang).
401. 226th Electrochemical Society Meeting, Cancun, Mexico, October 5 - 9, 2014, Symposium on GaN and SiC Power Technologies: “Characterization of Defects in SiC Substrates and Epilayers”, (Oral Presentation with H. Wang, F. Wu, Y. Yang, J. Guo, B. Raghathamachar, J. Zhang, G. Chung, B. Thomas, E. K. Sanchez, S. Mueller, D. Hansen, and M. Loboda – Paper presented by M. Dudley).

402. "Spring 2014 MRS Symposium DD-Silicon Carbide-Materials, Processing and Devices" Spring 2014 MRS Meeting, San Francisco, April 21-25, (2014): "Structural characterization of lateral-grown 4H/6H-SiC a/m plane seed crystals by hot wall CVD epitaxy", (Lecture, with B. Raghathamachar, M. Dudley, A.J. Trunek, P.G. Neudeck and A.A. Woodworth - lecture presented by O.Y. Goue)
403. 226th Electrochemical Society Meeting, Cancun, Mexico, October 5 - 9, 2014, Symposium on GaN and SiC Power Technologies: "Studies of Relaxation Processes and Basal Plane Dislocations in CVD Grown Homoepitaxial Layers of 4H-SiC", (Oral Presentation with H. Wang, F. Wu, Y. Yang, J. Guo, B. Raghathamachar, J. Zhang, G. Chung, B. Thomas, E. K. Sanchez, S. Mueller, D. Hansen, and M. Loboda – Paper presented by H. Wang).
404. NSLS II-CFN Users' Meeting, Brookhaven National Laboratory, May 18-20, (2015): "Characterization of structural defects in 6H-SiC a/m-plane seed crystal grown by hot wall CVD epitaxy", (Poster, with Y. Yang, J. Guo, B. Raghathamachar and M. Dudley - presented by O.Y. Goue)
405. 57th Electronic Materials Conference (EMC) Symposium on "Silicon Carbide: Growth, Processing, Characterization, Theory and Devices," held at Ohio State University, Columbus, OH, June 24-26, 2015: "Effect of Doping Concentration Variations in PVT-grown 4H-SiC Wafers," (Oral Presentation with J. Guo, , Ouloide Goue, H. Wang, F. Wu B. Raghathamachar, M. Dudley, G. Chung, E. Sanchez, J. Quast, I. Manning, and D. Hansen – paper presented by Y. Yang).
406. 57th Electronic Materials Conference Symposium U: Silicon Carbide - Materials, Growth and Characterization 57th Electronic Materials Conference, The Ohio State University, June 24-26, (2015): "Study of defect structures in 6H-SiC a/m plane pseudofiber crystals grown by hot-wall CVD epitaxy", (Lecture, with Balaji Raghathamachar, Yu Yang, Jianqiu Guo, Michael Dudley - lecture presented by Ouloide Y. Goue)
407. 20th American Conference on Crystal Growth and Epitaxy (ACCGE-20) together with The 17th U. S. Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-17) held jointly in Big Sky Resort, Montana (Journal of Crystal Growth special issue), Aug 02 - 07, 2015: "Experimental Verification of the Model for Formation of Double Shockley Stacking Faults in Highly Doped Regions of PVT-grown 4H-SiC Wafers", (Oral Presentation with J. Guo, Ouloide Goue, B. Raghathamachar, M. Dudley, G. Chung, E. Sanchez, J. Quast, I. Manning, and D. Hansen – paper presented by Y. Yang).
408. 20th American Conference on Crystal Growth and Epitaxy (ACCGE-20) together with The 17th U. S. Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-17) held jointly in Big Sky Resort, Montana (Journal of Crystal Growth special issue), Aug 02 - 07, 2015: "Characterization of CdZnTe single crystals grown under different Cadmium overpressures", (Lecture, with B. Raghathamachar, M. Dudley and C.-H. Su - lecture presented by O.Y. Goue)
409. Topical Workshop on Heterostructure Microelectronics, Takayama, Japan, August 23rd – August 26th , 2015: "Defects in SiC Crystals and their Influence on Device Performance." (Invited Lecture presented by M. Dudley).
410. Korean Institute of Ceramic Engineering and Technology (KICET), Jinju, Korea, August 28, 2015: "Defects in SiC and their Influence on Device Performance." (Invited Lecture presented by M. Dudley).
411. 11th International Conference of Pacific Rim Ceramic Societies (PacRim-11), Jeju Island, Korea, from Aug. 30th to Sept. 4th, 2015: "Synchrotron Topography Studies of the Origins and Evolution of Defects in 4H-SiC Substrates and Epilayers", (Invited Lecture – Presented by M. Dudley).
412. International Conference on Silicon Carbide and Related Materials (ICSCRM 2015) held in Giardini Naxos, Sicily, Italy, October 4-9, 2015: "Synchrotron X-Ray Topography Analysis of Double Shockley Stacking Faults in 4H-SiC Wafers" (Invited Poster Presentation with J. Guo, Ouloide Goue, B. Raghathamachar, M. Dudley, G. Chung, E. Sanchez, J. Quast, I. Manning, and D. Hansen – paper presented by Y. Yang).
413. "International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Giardini Naxos, Sicily, Italy, October 4-9, (2015): "Correlation of lifetime mapping of 4H-SiC epilayers with structural defects using synchrotron X-ray topography", (Poster, with Y. Yang, J. Guo, B. Raghathamachar, M. Dudley, J. Hostetler, R.L. Myers-Ward, P.B. Klein and K.D. Gaskill - poster presented by Jianqiu Guo)

414. 228th Electrochemical Society Meeting, Phoenix, AZ, October 11 - 15, 2015, Co-Organizer of Symposium on GaN and SiC Power Technologies, (with K. Shenai, M. Bakowski, and N. Ohtani).
415. 228th Electrochemical Society Meeting, Symposium on GaN and SiC Power Technologies, Phoenix, AZ, October 11 - 15, 2015: "Double Shockley Stacking Fault Formation in Higher Doping Regions of PVT-Grown 4H-SiC Wafers" (Oral Presentation with J. Guo, Oulouide Goue, B. Raghothamachar, M. Dudley, G. Chung, E. Sanchez, J. Quast, I. Manning, and D. Hansen – paper presented by Y. Yang).
416. "NSLS II-CFN Users' Meeting" Brookhaven National Laboratory, May 18-20, (2015): "Characterization of structural defects in 6H-SiC a/m-plane seed crystal grown by hot wall CVD epitaxy", (Poster, with Yu Yang, Jianqiu Guo, Balaji Raghothamachar and Michael Dudley – presented by Oulouide Y. Goue)
417. Fall 2015 MRS Meeting, Boston MA, November 29, 2015 – December 4, 2015, Symposium on "Wide-Bandgap Materials for Energy Efficiency—Power Electronics and Solid-State Lighting": "Current Status of the Quality of 4H-SiC Substrates and Epilayers for Power Device Applications," (Invited Lecture presented by M. Dudley).
418. Advanced Energy Conference, New York City, New York, April 20-22 2016: "Study of stress relaxation during CVD homoepitaxial growth of 4H-SiC for power electronics application", (Poster with J. Guo, Y. Yang, H. Wang, O. Goue, and B. Raghothamachar – Poster presented by Y. Yang).
419. Joint NSLS-II & CFN Joint Users' Meeting, Brookhaven, NY, May 23-25, 2016: "Study of Stress Relaxation during CVD Homoepitaxial Growth of 4H-SiC for Power Electronics Application" (Poster with J. Guo, Y. Yang, Oulouide Goue, and B. Raghothamachar – Poster presented by J. Guo and Y. Yang).
420. 58th Electronic Materials Conference (EMC) Symposium on "Silicon Carbide: Growth, Processing, Characterization, Theory and Devices," held in Newark, DE, June 22-24, 2016: "Investigation Penetration Depth in Grazing Incidence X-ray Topography of 4H-SiC Wafers", (Oral Presentation with Yu Yang, Jianqiu Guo, Oulouide Goue, and Balaji Raghothamachar – lecture presented by Y. Yang).
421. 58th Electronic Materials Conference (EMC) Symposium on "Silicon Carbide: Growth, Processing, Characterization, Theory and Devices," held in Newark, DE, June 22-24, 2016: "Study on Prismatic Slip in 4H-SiC Crystals Grown by PVT Method", (Oral Presentation with Jianqiu Guo, Yu Yang, and Balaji Raghothamachar – lecture presented by Y. Yang).
422. SICC Materials, Jinan, China: "Defects in SiC", June 22-24, 2016 (Invited Lecture delivered jointly with J. Guo).
423. 1st Johns Hopkins University Summer School on Materials Growth and Design, Johns Hopkins University, July 13-14, 2016: "Characterization of Defects in Materials", (three invited lectures).
424. 11th European Conference on Silicon Carbide & Related Materials, held in Halkidiki, Greece, Sept. 25-29, 2016: "Effect of Radial Thermal Gradients on the Activation of Prismatic Slip in 4H-SiC Crystals Grown by PVT Method", (Lecture with J. Guo, Y. Yang, B. Raghothamachar, G. Chung, I. Manning, and E. Sanchez Lecture Presented by J. Guo).
425. 11th European Conference on Silicon Carbide & Related Materials, held in Halkidiki, Greece, Sept. 25-29, 2016: "Investigation of Factors Influencing Penetration Depth in Grazing Incidence X-ray Topography of 4H-SiC Wafers", (Lecture with Y. Yang, J. Guo, O. Goue, B. Raghothamachar, G. Chung, E. Sanchez, and I. Manning, - Lecture Presented by J. Guo).
426. SICC Materials, Jinan, China: "Defects in SiC", January 6-8, 2017 (Invited Lectures delivered jointly with J. Guo).
427. 2017 APS/CNM User's Meeting, Workshop on "X-ray Characterization of Materials Evolution: The State-of-the-Art", held at the APS, Argonne National Laboratory, May 8-11, 2017, "Evolution of defects During the Growth of SiC Substrates and Epilayers", (Invited Lecture).

428. 59th Electronic Materials Conference, held at University of Notre Dame, South Bend, Indiana, US, June 28-30, (2017), “Mapping of Lattice Strain in 4H-SiC Crystals by Synchrotron Double-Crystal X-ray Topography” (Lecture with J. Guo, Y. Yang, B. Raghathamachar, M. Dudley, and S. Stoupin – Lecture presented by J. Guo).
429. 59th Electronic Materials Conference, held at University of Notre Dame, South Bend, Indiana, US, June 28-30, (2017), “Lattice Parameter and Doping Concentration Measurement Inside Highly N-Doped Facet Region of 4H-SiC Commercial Wafers Using X-Ray Topographic Contour Mapping” (Lecture with Y. Yang, J. Guo, B. Raghathamachar, and M. Dudley – Lecture presented by J. Guo).
430. 59th Electronic Materials Conference, held at University of Notre Dame, South Bend, Indiana, US, June 28-30, (2017), “Characterization of Defects in GaN Crystals by Synchrotron X-ray Topography” (Lecture with S.Wu, J. Guo, B. Raghathamachar, M. Dudley, J. A. Freitas Jr., T. Sochacki and M. Bockowski – Lecture Presented by J. Guo).
431. 21st American Conference on Crystal Growth and Epitaxy (ACCGE-21) and 18th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-18) and 3rd Symposium on 2D Electronic Materials and Symposium on Epitaxy of Complex Oxides, July 30-Aug 4, 2017, Santa Fe, NM “Substrate Evaluation for High Quality Boron Phosphide Growth” (Lecture with Y. Yang, X. Wang, J. Guo, B. Raghathamachar, M. Dudley, B. Padavala, C. Frye, and J. Edgar – Lecture Presented by B. Raghathamachar).
432. 21st American Conference on Crystal Growth and Epitaxy (ACCGE-21) and 18th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-18) and 3rd Symposium on 2D Electronic Materials and Symposium on Epitaxy of Complex Oxides, July 30-Aug 4, 2017, Santa Fe, NM. “Understanding the microstructures of triangular defects in 4H-SiC homoepitaxial layers grown by CVD method” (Lecture with J. Guo, Y. Yang, B. Raghathamachar, T. Kim, M. Dudley, and J. Kim – Lecture Presented by J. Guo).
433. 21st American Conference on Crystal Growth and Epitaxy (ACCGE-21) and 18th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-18) and 3rd Symposium on 2D Electronic Materials and Symposium on Epitaxy of Complex Oxides, July 30-Aug 4, 2017, Santa Fe, NM, “Growth and Characterization of SiC” (Lecture with B. Raghathamachar, M. Dudley, Y. Yang, J. Guo – Lecture Presented by B. Raghathamachar).
434. International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Washington DC, September 17-22, (2017): “Direct Observation of Stress Relaxation Process in 4H-SiC Homoepitaxial layers via in situ Synchrotron X-ray Topography”, (Lecture with J. Guo, Y. Yang, B. Raghathamachar, M. Dudley, S. Weit, A.N. Danilewsky, P.J. McNally, and B.K. Tanner – Lecture presented by J. Guo).
435. International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Washington DC, September 17-22, (2017): “In-Situ Synchrotron X-ray Topography Observation of Double Ended Frank-Read Sources in PVT-grown 4H-SiC Wafers” (Lecture with J. Guo, Y. Yang, B. Raghathamachar, M. Dudley, S. Weit, A.N. Danilewsky, P.J. McNally, and B.K. Tanner – Lecture presented by B. Raghathamachar).
436. International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Washington DC, September 17-22, (2017): “Single Crystal AlN Substrates for AlGaN-Based UV Optoelectronics and Power Electronics” (Lecture with R. Dalmau, B. Moody, H. S. Craft, R. Schlessner, M. Dudley and B. Raghathamachar – Lecture presented by R. Dalmau).
437. International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Washington DC, September 17-22, (2017): “Optimization of 150 mm 4H SiC Substrate Crystal Quality”, (Lecture with R. Blasi, S. McGuire, P. Wu, E. Loukas, E. Emorhokpor, S. Dimov, X. Xu, J. Guo, Y. Yang, and M. Dudley – Lecture presented by P. Wu).
438. International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Washington DC, September 17-22, (2017): “Automated Mapping of Micropipes in SiC Wafers Using Polarized-Light Microscope”, (Poster with I. Manning, G. Chung, E. Sanchez, Y. Yang, J. Guo, O. Goue, B. Raghathamachar, and M. Dudley – Poster presented by I. Manning).
439. 232nd ECS Meeting, Symposium H03: Gallium Nitride and Silicon Carbide Power Technologies 7, October 1-5, 2017, National Harbor, MD: “Studies on Doping Concentration Variations in 4H-SiC Substrates Using X-ray Contour Mapping” (Lecture with Y. Yang, J. Guo, B. Raghathamachar, X. Chan, T. Kim, and M. Dudley - Lecture Presented by B. Raghathamachar).

440. 232nd ECS Meeting, Symposium H03: Gallium Nitride and Silicon Carbide Power Technologies 7, October 1-5, 2017, National Harbor, MD: “Estimation of Lattice Strain in 4H-SiC Commercial Wafer by Synchrotron Monochromatic X-ray Topographic Contour Mapping” (Lecture with J. Guo, Y. Yang, B. Raghothamachar, and M. Dudley - Lecture Presented by B. Raghothamachar).
441. 232nd ECS Meeting, Symposium H03: Gallium Nitride and Silicon Carbide Power Technologies 7, October 1-5, 2017, National Harbor, MD: “Evaluation of HVPE GaN Layers Grown on Ammonothermal GaN Substrates By Synchrotron X-Ray Topography” (Lecture S. Wu, B. Raghothamachar, M. Dudley, J. A. Freitas Jr., T. Sochacki, and M. Bockowski - Lecture Presented by B. Raghothamachar).
442. SICC Materials, Jinan, China: “Defects in SiC”, December 15-16, 2017 (Invited Lectures delivered jointly with J. Guo).
443. 60th Electronic Materials Conference, University of California, Santa Barbara, CA, US, June 27-29, 2018: “X-ray Topographic Contour Mapping Method for Measuring Nitrogen Doping Concentration in N-doped 4H-SiC Substrates”, (Lecture with T. Ailihumaer, Y. Yang, J. Guo, and B. Raghothamachar – Lecture presented by T. Ailihumaer).
444. European Conference on Silicon Carbide and Related Materials (ECSCRM 2018), September 2-6, 2018 Birmingham, UK: “X-ray Topographic Contour Mapping Method for Measuring Nitrogen Doping Concentration in N-doped 4H-SiC Substrates”, (Lecture with T. Ailihumaer, Y. Yang, J. Guo, and B. Raghothamachar – Lecture presented by T. Ailihumaer – **Note T Ailihumaer was Best Paper Student Award Winner**).
445. European Conference on Silicon Carbide and Related Materials (ECSCRM 2018), September 2-6, 2018 Birmingham, UK: “Analysis of Basal Plane Dislocation Dynamics in 4H-SiC Crystals during High Temperature Treatment”, (Poster with B. Raghothamachar, Y. Yang, J. Guo, M. Dudley – Poster presented by B. Raghothamachar and M. Dudley).
446. AiMES 2018 Meeting, ECS and SMEQ Joint International Meeting, September 30 - October 4, 2018, Cancun, Mexico: “Evaluation of Model for Determining Nitrogen Doping Concentration from Resultant Strain in Heavily Doped 4H-SiC Crystals”, (Lecture with T. Ailihumaer, Y. Yang, J. Guo, and B. Raghothamachar – Lecture presented by B. Raghothamachar).
447. AiMES 2018 Meeting, ECS and SMEQ Joint International Meeting, September 30 - October 4, 2018, Cancun, Mexico: “In-Situ Synchrotron X-Ray Topography Study on the Stress Relaxation Process in 4H-SiC Homoepitaxial Layers”, (Lecture with J. Guo, T. Ailihumaer, H. Peng, and B. Raghothamachar – Lecture presented by B. Raghothamachar).
448. SICC Materials, Jinan, China: “Defects in SiC”, November 8, 2018 (Invited Lecture).
449. 2018 China Wide Bandgap Power Semiconductor and Application Industry Forum, December 6-7, 2018, Jinan, China “The Status of Defects in PVT Growth 4H-SiC Substrates”: (Invited Keynote Lecture presented by M. Dudley).
450. 2019 European Materials Research Society Spring Meeting, Symposium X “Silicon Carbide and Related Materials for Energy Saving Applications”, May 27-31, 2019, Nice, France, “Evaluation of Bulk Defects in Bulk SiC” (Invited Lecture presented by M. Dudley).
451. 61st Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at University of Michigan, Ann Harbor, MI, June 26-28, (2019): “Relationship Between Basal Plane Dislocation Distribution and Local Basal Plane Bending in PVT-Grown 4H-SiC Crystals”, (Lecture with T. Ailihumaer, H. Peng, and B. Raghothamachar – Lecture presented by T. Ailihumaer).
452. 61st Electronic Materials Conference (EMC) Symposium on “Silicon Carbide: Growth, Processing, Characterization, Theory and Devices,” held at University of Michigan, Ann Harbor, MI, June 26-28, (2019): “Ray Tracing Simulation of Images of Dislocations and Precipitates on X-Ray Topographs of GaAs Epitaxial Wafers,” (Lecture with H. Peng, T. Ailihumaer, and B. Raghothamachar – Lecture presented by H. Peng).
453. Symposium on Silicon Carbide Materials and Devices at the 19th International Conference on Crystal Growth and Epitaxy (ICCGE-19) and the 19th US Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-19), held at Keystone, CO, July 28 - August 2, 2019: “Evaluation of Defects in Bulk SiC,” (Invited Lecture).

454. Symposium on Silicon Carbide Materials and Devices at the 19th International Conference on Crystal Growth and Epitaxy (ICCGE-19) and the 19th US Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-19), held at Keystone, CO, July 28 - August 2, 2019: "Effect Of Nitrogen Doping Concentration on Lattice Strain Variation in 4h-SiC Substrates" (Lecture with T. Ailihumaer, and B. Raghothamachar – Lecture Presented by T. Ailihumaer).
455. Symposium on Silicon Carbide Materials and Devices at the 19th International Conference on Crystal Growth and Epitaxy (ICCGE-19) and the 19th US Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-19), held at Keystone, CO, July 28 - August 2, 2019: "In Situ X-Ray Topography Studies of 4h-SiC Substrates and Epilayers," (Lecture with B. Raghothamachar – Lecture presented by B. Raghothamachar).
456. Symposium on Characterization Techniques for Bulk and Epitaxial Crystals at the 19th International Conference on Crystal Growth and Epitaxy (ICCGE-19) and the 19th US Biennial Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-19), held at Keystone, CO, July 28 - August 2, 2019: Characterization of Defects in Gaas Substrates and Epitaxial Wafers By Synchrotron X-Ray Topography," (Lecture with H. Peng and B. Raghothamachar – Lecture presented by H. Peng).
457. 18th Conference on Defect Recognition and Imaging in Physics (DRIP VIII), Berlin, Germany, September 8-12, 2019. "Synchrotron Topography Studies of Defect Evolution in 4H-SiC (Invited Lecture).
458. "X-ray Topography Studies of GaN," Mitsubishi Chemical, September 26, 2019: (Invited Lecture with Balaji Raghothamachar).
459. "Workshop on Innovative Metallurgical Processes for Advanced Materials 2 – Growth of Semiconducting Crystals and Their Defects," September 27, 2019, Institute of Industrial Science at University of Tokyo, Tokyo, Japan, "The Origins of the Defect Configurations Observed in PVT-Grown SiC Substrates and CVD-Grown Homo-Epitaxial Layers" (Invited Keynote Lecture).
460. "Workshop on Innovative Metallurgical Processes for Advanced Materials 2 – Growth of Semiconducting Crystals and Their Defects," September 27, 2019, Institute of Industrial Science at University of Tokyo, Tokyo, Japan, x"Analysis of Defect Configurations in PVT-Grown AlN Boules and Substrates" (Invited Lecture with B. Raghothamachar – presented by B. Raghothamachar).
461. International Conference on Silicon Carbide and Related Materials (ICSCRM 2019), September 29 – October 4, 2019 Kyoto, Japan: "Synchrotron X-ray Topography Study on the Relationship between Local Basal Plane Bending and Basal Plane Dislocations in PVT-grown 4H-SiC Substrate Wafers", (Oral Presentation with T. Ailihumaer, H. Peng, B. Raghothamachar, M. Dudley, G. Chung, I. Manning, and E. Sanchez – presented by T. Ailihumaer).
462. International Conference on Silicon Carbide and Related Materials (ICSCRM 2019), September 29 – October 4, 2019 Kyoto, Japan: "Investigation of Dislocation Behavior at the Early Stage of PVT-grown 4H-SiC Crystals", (Oral Presentation with T. Ailihumaer, B. Raghothamachar, M. Dudley, G. Chung, I. Manning, and E. Sanchez – presented by T. Ailihumaer).
463. 2019 China Wide Bandgap Power Semiconductor and Application Industry Forum, October 24, 2019, Hefei, China "The Status of Defects in PVT Growth 4H-SiC Substrates": (Invited Keynote Lecture presented by M. Dudley).
464. SICCC Materials, Jinan, China: "Defects in SiC", October 26, 2019 (Invited Lecture).
465. 62nd Electronic Materials Conference (EMC) Symposium on "Wide Bandgap Materials—Silicon Carbide and Diamond," held virtually, June 24-26, (2020): "Characterization of Dislocations on 6H-SiC through X-Ray Topography and Ray-Tracing Simulation," (Lecture with Q. Cheng, T. Ailihumaer, Y. Liu, H. Peng, Z. Chen, and B. Raghothamachar — Lecture presented by Q. Cheng).
466. 62nd Electronic Materials Conference (EMC) Symposium on "Materials for III-Nitrides Power Electronics," held virtually, June 24-26, (2020): "X-Ray Topography Characterization of GaN Substrates Used for Power Electronic Devices," (Lecture with Y. Liu, H. Peng, T. Ailihumaer, and B. Raghothamachar — Lecture presented by Y. Liu).

467. 62nd Electronic Materials Conference (EMC) Symposium on “Silicon Carbide—Growth, Processing, Characterization, Theory and Devices”, Virtual Conference, June 24-26, 2020, “Synchrotron X-Ray Topography Study on Dislocation Behavior in Early-Grown 4H-SiC Single Crystals”, (Lecture with T. Ailihumaer, H. Peng, Y. Liu, B. Raghothamachar – Lecture presented by T. Ailihumaer).
468. PRiME 2020 symposium on “State-of-the-Art Program on Compound Semiconductors 63 (SOTAPOCS 63) -and- GaN and SiC Power Technologies 10,” held virtually, October 4-9, (2020) “Analysis of Dislocations in PVT-Grown 6H-SiC through Grazing-Incidence X-Ray Topographic Images and Ray-Tracing Simulation,” (Lecture with Q. Cheng, T. Ailihumaer, H. Peng, Y. Liu, and B. Raghothamachar — Lecture presented by Q. Cheng).
469. PRiME 2020 Electrochemical Society (ECS) Symposium on “State-of-the-Art Program on Compound Semiconductors 63 (SOTAPOCS 63) and- GaN and SiC Power Technologies 10”, Virtual Conference, October 4-9, 2020, “Characterization of Dislocations in 4H-SiC Single Crystals at the Initial Growth Stage by Synchrotron X-ray Topography”, (Lecture with T. Ailihumaer, H. Peng, Y. Liu, B. Raghothamachar – Lecture presented by T. Ailihumaer).
470. PRiME 2020 Symposium on “State-of-the-Art Program on Compound Semiconductors 63 (SOTAPOCS 63) -and- GaN and SiC Power Technologies 10,” held virtually, October 4-9, (2020): “Morphological Analysis of AlInP/GaAs Epilayers Using Synchrotron X-Ray Topography and Reciprocal Space Mapping,” (Lecture with H. Peng, T. Ailihumaer, and B. Raghothamachar -Lecture presented by H. Peng).
471. PRiME 2020 symposium on “State-of-the-Art Program on Compound Semiconductors 63 (SOTAPOCS 63) -and- GaN and SiC Power Technologies 10,” held virtually, October 4-9, (2020): “Synchrotron X-Ray Topography Characterization of GaN Substrates for Power Electronic Applications,” (Lecture with Y. Liu, S. Hu, H. Peng, T. Ailihumaer, and B. Raghothamachar — Lecture presented by Y. Liu).
472. 2021 Virtual MRS Spring Meeting Symposium on “GaN Power Electronics II,” held virtually, April 17-23, (2021): “Application of Synchrotron X-Ray Topography to Characterization of Ion Implanted GaN Epitaxial Layers for the Development of Vertical Power Devices,” (Lecture with Y. Liu, H. Peng, Z. Chen, T. Ailihumaer, S. Hu, and B. Raghothamachar — Lecture presented by Y. Liu).
473. 63rd Electronic Materials Conference (EMC) Symposium on “Defects and Doping,” held virtually, June 23-25, (2021): “Crystallographic and Defect Characterization of PVT-Grown ZnSe Under Different Growth Configurations,” (Lecture with Q. Cheng, T. Ailihumaer, Y. Liu, H. Peng, Z. Chen, and B. Raghothamachar — Lecture presented by Q. Cheng).
474. 63rd Electronic Materials Conference (EMC) Symposium on “Group III-Nitride Defects,” held virtually, June 23-25, (2021): “Characterization of Prismatic Slip in PVT-Grown AlN Crystals,” (Lecture with S. Hu, H. Fang, Y. Liu, H. Peng, T. Ailihumaer, Q. Cheng, Z. Chen, R. Dalmau, J. Britt, R. Schlessner, and B. Raghothamachar — Lecture presented by S. Hu).
475. 63 rd Electronic Materials Conference (EMC) Symposium on “Silicon Carbide Theory, Characterization and Device Processing”, Virtual Conference, June 23-25, 2021, “Investigation of Dislocations Contrast and Determination of their Burgers Vectors in Synchrotron Grazing-Incidence X-Ray Topographs in PVT-Grown 4H-SiC Crystals”, (Lecture with T. Ailihumaer, H. Peng, Y. Liu, B. Raghothamachar – Lecture presented by T. Ailihumaer).
476. 63rd Electronic Materials Conference (EMC) Symposium on “Silicon Carbide—Growth, Processing, Characterization, Theory and Devices, held virtually June 24-26, (2021): “Analysis of Local Lattice Distortion of SiC in Weak Beam Topography,” (Lecture with H. Peng, T. Ailihumaer, Y. Liu and B. Raghothamachar -Lecture presented by H. Peng).
477. 63rd Electronic Materials Conference (EMC) Symposium on “Devices and Materials for Power Electronics,” held virtually, June 23-25, (2021): “X-Ray Topography Characterization of Selective Area Doping of Gallium Nitride Epitaxial Layers for Power Electronic Devices Development,” (Lecture with Y. Liu, H. Peng, T. Ailihumaer, Q. Cheng, Z. Chen, S. Hu, and B. Raghothamachar — Lecture presented by Y. Liu).
478. 63rd Electronic Materials Conference (EMC) Symposium on “Silicon Carbide—Growth, Processing, Characterization, Theory and Devices,” held virtually, June 24-26, (2021): “Assessment of Lattice Damage in High Energy Ion Implanted 4H-SiC Wafers at Room Temperature,” (Lecture with Z. Chen, Y. Liu, H. Peng, T. Ailihumaer, Q. Cheng and B. Raghothamachar – Lecture presented by Z. Chen)

479. 22nd American Conference on Crystal Growth and Epitaxy (ACCGE-22) and 20th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-20), Symposium on “Silicon Carbide and Gallium Oxide Materials and Devices,” held virtually, Aug 02-04, (2021): “Structural Defects Characterization of PVT-Grown 6H-SiC Crystal Using Synchrotron X-Ray Topography and Ray-Tracing Simulations,” (Lecture with Q. Cheng, T. Ailihumaer, H. Peng, Y. Liu, and B. Raghothamachar — Lecture presented by Q. Cheng).
480. 22nd American Conference on Crystal Growth and Epitaxy (ACCGE-22) and 20th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-20), Symposium on “In situ and ex situ characterization techniques,” held virtually, Aug 02-04, (2021): “X-Ray Characterization of Defect Structures in PVT-Grown ZnSe Crystals with Different Seeding Conditions and Growth Configurations,” (Lecture with Q. Cheng, Z. Chen, and B. Raghothamachar — Lecture presented by Q. Cheng).
481. 22nd American Conference on Crystal Growth and Epitaxy (ACCGE-22) and 20th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-20) Symposium on “Silicon Carbide and Gallium Oxide Materials and Devices,” held virtually, Aug 02-04, (2021): “Characterization of Lattice Damage in High Energy Ion Implanted 4H-SiC Wafers at Room Temperature,” (Lecture with Z. Chen, Y. Liu, H. Peng, T. Ailihumaer, Q. Cheng, S. Hu and B. Raghothamachar – Lecture presented by Z. Chen).
482. 22nd American Conference on Crystal Growth and Epitaxy (ACCGE-22) and 20th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-20) Symposium on “In situ and ex situ characterization techniques,” held virtually, Aug 02-04, (2021): “Prismatic Slip in PVT-Grown AlN Crystals,” (Lecture with S. Hu, H. Fang, Y. Liu, H. Peng, T. Ailihumaer, Q. Cheng, Z. Chen, R. Dalmau, J. Britt, R. Schlessler, and B. Raghothamachar — Lecture presented by S. Hu).
483. 22nd American Conference on Crystal Growth and Epitaxy (ACCGE-22) and 20th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-20), Symposium on “In situ and ex situ characterization techniques,” held virtually, Aug 02-04, (2021): “Dislocation Contrast on X-ray Topographs under Weak Diffraction Conditions,” (Lecture with H. Peng, T. Ailihumaer, Y. Liu X. Huang, L. Assoufid and B. Raghothamachar -Lecture presented by H. Peng).
484. 22nd American Conference on Crystal Growth and Epitaxy (ACCGE-22) Symposium on “Silicon Carbide and Gallium Oxide Materials and Devices”, Virtual Conference, August 2 - 4, 2021, “Effect of Surface Relaxation and X-ray Absorption on Dislocation Contrast in Synchrotron Grazing-incidence X-ray Topographs in Off-axis 4H-SiC Crystals”, (Lecture with T. Ailihumaer, H. Peng, Y. Liu, Q. Cheng, Z. Chen, S. Hu, B. Raghothamachar – Lecture presented by T. Ailihumaer).
485. 22nd American Conference on Crystal Growth and Epitaxy (ACCGE-22) and 20th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-20), Symposium on “Silicon Carbide and Gallium Oxide Materials and Devices,” held virtually, Aug 02-04, (2021): “Synchrotron X-ray topographic image of dislocations in 6H-SiC axial samples,” (Lecture with H. Peng, T. Ailihumaer, Y. Liu, L. Assoufid and B. Raghothamachar -Lecture presented by H. Peng).
486. 22nd American Conference on Crystal Growth and Epitaxy (ACCGE-22) and 20th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-20), Symposium on “Characterization Techniques for Bulk and Epitaxial Crystallization II,” held virtually, Aug 02-04, (2021): “Application of Synchrotron X-ray Rocking Curve Topography to GaN Substrates and Epitaxial Layers Used for Power Electronic Devices,” (Lecture with Y. Liu, T. Ailihumaer, H. Peng, Z. Chen, S. Hu, Q. Cheng, and B. Raghothamachar — Lecture presented by Y. Liu).
487. 240nd ECS Meeting, Symposium H03: Gallium Nitride and Silicon Carbide Power Technologies 11, October 10-14, 2021, Held virtually: “Microstructure Analysis of GaN Epitaxial Layers During Ion Implantation Using Synchrotron X-Ray Topography” (Lecture with Y. Liu, H. Peng, Z. Chen, T. Ailihumaer, Q. Cheng, S. Hu, B. Raghothamachar, and M. Dudley - Lecture Presented by Y. Liu).
488. 240nd ECS Meeting, Symposium H03: Gallium Nitride and Silicon Carbide Power Technologies 11 October 10-14, 2021, Held virtually: “Characterization of 4H-SiC Lattice Damage After Novel High Energy Ion Implantation” (Lecture with Z. Chen, Y. Liu, H. Peng, T. Ailihumaer, Q. Cheng, S. Hu, B. Raghothamachar, M. Dudley - Lecture Presented by Z. Chen).
489. 240nd ECS Meeting, Symposium H01: Interface Effects and Materials Properties, October 10-14, 2021, Held virtually: “Crystal Defect Investigation in PVT-Grown ZnSe Under Different Seeding Conditions and Growth Configurations

Using Synchrotron X-Ray Topography” (Lecture with Q. Cheng, Z. Chen, H. Peng, Y. Liu, S. Hu, B. Raghathamachar, and M. Dudley - Lecture Presented by Q. Cheng).

490. 240nd ECS Meeting, Symposium H03: Gallium Nitride and Silicon Carbide Power Technologies 11, October 10-14, 2021, Held virtually: “Analysis of Dislocation Contrast in Synchrotron Grazing-incidence X-ray Topographs and Ray-tracing Simulation in Off-axis 4H-SiC Crystals” (Lecture with T. Ailihumaer, H. Peng, Y. Liu, Q. Cheng, Z. Chen, S. Hu, B. Raghathamachar, and M. Dudley - Lecture Presented by Q. Cheng).
491. 240nd ECS Meeting, Symposium H03: Gallium Nitride and Silicon Carbide Power Technologies 11, October 10-14, 2021, Held virtually: “Investigation of Dislocations in 6H-SiC Axial Samples Using Synchrotron X-ray Topography and Ray Tracing Simulations” (Lecture with H. Peng, Y. Liu, Z. Chen, Q. Cheng, S. Hu, B. Raghathamachar, and M. Dudley - Lecture Presented by H. Peng).
492. 240nd ECS Meeting, Symposium H03: Gallium Nitride and Silicon Carbide Power Technologies 11, October 10-14, 2021, Held virtually: “Prismatic Slip in PVT-Grown AlN Crystals” (Lecture with S. Hu, H. Fang, Y. Liu, H. Peng, T. Ailihuamaer, Q. Cheng, Z. Chen, B. Raghathamachar, M. Dudley - Lecture Presented by S. Hu).
493. European Conference on Silicon Carbide and Related Materials (ECSCRM 2020-2021), October 24-28, 2021 Tours, France: “Synchrotron X-Ray Rocking Curve Topography Characterization of Power Electronic GaN Materials”, (Poster with Y. Liu, H. Peng, Z. Chen, Q. Cheng, S. Hu, B. Raghathamachar, M. Dudley – Poster presented by Y. Liu).
494. European Conference on Silicon Carbide and Related Materials (ECSCRM 2020-2021), October 24-28, 2021 Tours, France: “Dislocation Contrast Analysis on PVT-grown 4H-SiC through Synchrotron Grazing-incidence X-Ray Topographs and Ray-Tracing Simulation with Consideration of Surface Relaxation and X-Ray Absorption”, (Poster with Q. Cheng, T. Ailihumaer, H. Peng, Y. Liu, Z. Chen, S. Hu, B. Raghathamachar, M. Dudley – Poster presented by Q. Cheng).
495. European Conference on Silicon Carbide and Related Materials (ECSCRM 2020-2021), October 24-28, 2021 Tours, France: “Ray-Tracing Simulation Analysis of Effective Penetration Depths on Grazing Incidence Synchrotron X-Ray Topographic Images of Basal Plane Dislocations in 4H-SiC Wafers”, (Lecture with Q. Cheng, H. Peng, S. Hu, Z. Chen, Y. Liu, B. Raghathamachar, M. Dudley – Lecture presented by Q. Cheng).
496. European Conference on Silicon Carbide and Related Materials (ECSCRM 2020-2021), October 24-28, 2021 Tours, France: “Dislocation contrast analysis in synchrotron X-ray topography”, (Lecture with H. Peng, Z. Chen, Y. Liu, Q. Cheng, S. Hu, B. Raghathamachar, and M. Dudley - Lecture Presented by H. Peng).
497. European Conference on Silicon Carbide and Related Materials (ECSCRM 2020-2021), October 24-28, 2021 Tours, France: “Prismatic Slip in PVT-Grown AlN Crystals”, (Poster with S. Hu, Y. Liu, H. Peng, Q. Cheng, Z. Chen, B. Raghathamachar, M. Dudley – Poster presented by S. Hu). 64th Electronic Materials Conference (EMC) Symposium on “Group III-Nitrides—Power Diodes and HEMTs,” held in Columbus, Ohio, June 29-July 1, (2022): “Investigation of the Area Defects in Gallium Nitride Substrate Wafers,” (Lecture with Y. Liu, Q.Cheng, Z. Chen, S. Hu and B. Raghathamachar — Lecture presented by Q. Cheng).
498. 64th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide Materials and Characterization,” held in Columbus, Ohio, June 29-July 1, (2022): “Analysis of Strain Gradient in High Energy Implanted 4H-SiC Epi Wafer by Synchrotron X-Ray Rocking Curve Topography,” (Lecture with Z. Chen, Y. Liu, H. Peng, Q. Cheng, B. Raghathamachar, R. Ghandi, S. Kennerly and P. Thieberger — Lecture presented by Z. Chen).
499. 64th Electronic Materials Conference (EMC) Symposium on “Silicon Carbide Materials and Characterization,” held in Columbus, Ohio, June 29-July 1, (2022): “Determination of Effective Penetration Depths on Synchrotron X-Ray Topographic Images of Dislocations Lying on the Basal Plane in 4H-SiC Crystals,” (Lecture with Q.Cheng, H. Peng, S. Hu, Z. Chen, Y. Liu and B. Raghathamachar — Lecture presented by Q. Cheng).
500. 19th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Davos, Switzerland, Sept 11-16, (2022): “Analysis of Strain in Ion Implanted 4H-SiC by Fringes Observed in Synchrotron X-ray Topography” (Z. Chen, Y. Liu, H. Peng, Q. Cheng, S. Hu, B. Raghathamachar, R. Ghandi, S. Kennerly and P. Thieberger — Lecture presented by M. Dudley).

501. 19th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Davos, Switzerland, Sept 11-16, (2022): “Analysis of Basal Plane Dislocation Motion Induced by P+ Ion Implantation Using Synchrotron X-ray Topography” (Z. Chen, Y. Liu, H. Peng, Q. Cheng, S. Hu, B. Raghathamachar, S. Mancini, S. Y. Jang and W. Sung — Lecture presented by B. Raghathamachar).
502. 19th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Davos, Switzerland, Sept 11-16, (2022): “Effective Penetration Depth Investigation for Frank Type Dislocation (Deflected TSDs/TMDs) on Grazing Incidence Synchrotron X-ray Topographs of 4H-SiC Wafers,” (Q. Cheng, H. Peng, Z. Chen, S. Hu, Y. Liu, and B. Raghathamachar — Lecture presented by M. Dudley).
503. 19th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Davos, Switzerland, Sept 11-16, (2022): “Investigation of defect generation and propagation in electrically and photonically stressed Silicon Carbide” (H. Peng, Y. Liu, Z. Chen, Q. Cheng, S. Hu, J. Watson, S. Sampayan and B. Raghathamachar — poster presented by B. Raghathamachar).
504. 19th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Davos, Switzerland, Sept 11-16, (2022): “Characterization of Prismatic Slip in SiC crystal by Chemical Etching Method” (S. Hu, S. Fang, Y. Liu, Q. Cheng, H. Peng, Z. Chen, Y. Gao, C. Gao and B. Raghathamachar — Lecture presented by B. Raghathamachar).
505. 19th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Davos, Switzerland, Sept 11-16, (2022): “Step structure manipulation and impact on dislocation interactions and crystal quality during the early stages of PVT growth of 4H-SiC crystals” (S. Hu, Y. Liu, H. Peng, Z. Chen, Q. Cheng, B. Raghathamachar, M. Dudley, D. Hansen, D. Dukes, L. Young, S. Griswold, H. Briccetti — Lecture presented by B. Raghathamachar).
506. 19th International Conference on Defects-Recognition, Imaging and Physics in Semiconductors, held virtually, Aug. 29-Sep. 1, (2022): “Interpretation of dislocation images in synchrotron X-ray topography using ray-tracing simulations” (Lecture with H. Peng and B. Raghathamachar — presented by Z. Chen) 242nd The Electrochemical Society (ECS) Meeting, Symposium on “Electronic and Photonic Devices and Systems,” held in Atlanta, Georgia, Oct 9-13, (2022): “Investigation of the Area Defects in Gallium Nitride Substrate Wafers,” (Lecture with Y. Liu, Q. Cheng, Z. Chen, S. Hu and B. Raghathamachar — Lecture presented by Q. Cheng).
507. 242nd The Electrochemical Society (ECS) Meeting, Symposium on “Electronic and Photonic Devices and Systems,” held in Atlanta, Georgia, Oct 9-13, (2022): “Strain Analysis of High Energy Implanted 4H-SiC Epiwafer by Synchrotron X-ray Plane Wave Topography,” (Lecture with Z. Chen, Y. Liu, H. Peng, Q. Cheng, S. Hu, B. Raghathamachar, R. Ghandi, S. Kennerly and P. Thieberger — Lecture presented by Z. Chen).
508. 242nd The Electrochemical Society (ECS) Meeting, Symposium on “Electronic and Photonic Devices and Systems,” held in Atlanta, Georgia, Oct 9-13, (2022): “Effective Penetration Depths Investigation on Synchrotron X-Ray Topographic Images of Dislocations Lying on the Basal Plane in 4H-SiC Crystals through Ray-Tracing Simulation,” (Lecture with Q. Cheng, H. Peng, S. Hu, Z. Chen, Y. Liu, and B. Raghathamachar — Lecture presented by Q. Cheng).
509. 242nd The Electrochemical Society (ECS) Meeting, Symposium on “Electronic and Photonic Devices and Systems,” held in Atlanta, Georgia, Oct 9-13, (2022): “Investigation of the Area Defects in Gallium Nitride Substrate Wafers” (Lecture with Y. Liu, Q. Cheng, Z. Chen, S. Hu, and B. Raghathamachar — Lecture presented by Q. Cheng).
510. CRIEPI, Yokosuka, Japan, November 4, (2022), “Understanding Dislocation Configurations in SiC,” (Invited Lecture — presented by M. Dudley).
511. 8th International Symposium on Advanced Science and Technology of Silicon Materials, held in Okayama, Japan, November 7-9, (2022): “Contributions of Synchrotron X-ray Topography to the Understanding of Dislocation Configurations in SiC substrates and Epilayers” (Invited Lecture — presented by M. Dudley).
512. 243rd The Electrochemical Society (ECS) Meeting, Symposium on “on Solid Oxide Fuel Cells (SOFC-XVIII)” held in Boston, Massachusetts, May 28-June 2, (2023): “(Invited) Application of Synchrotron X-Ray Topography Techniques to the Analysis of Defect Microstructures in Bulk GaN Substrates and Epilayers for Power Devices” (Lecture with Y. Liu, S. Hu, Z. Chen, Q. Cheng and B. Raghathamachar — Lecture presented by M. Dudley).

513. 65th Electronic Materials Conference (EMC) Symposium on “SiC Material Characterization, Processing and Devices,” held in Santa Barbara, California, June 28-30, (2023): “Analysis of Distribution of Threading Edge Dislocation Low Angle Grain Boundaries in 4H-SiC Wafers through Synchrotron X-Ray Topography,” (Lecture with Q. Cheng, Y. Liu, Z. Chen, S. Hu and B. Raghothamachar — Lecture presented by Q. Cheng).
514. 65th Electronic Materials Conference (EMC) Symposium on “SiC Material Characterization, Processing and Devices,” held in Santa Barbara, California, June 28-30, (2023): “Ray Tracing Simulation of Defects of 4H-SiC in 22-4 16 Reflection of Synchrotron Monochromatic Beam X-ray Topography in Grazing Incident Geometry,” (Lecture with Z. Chen, Y. Liu, Q.Cheng, S. Hu and B. Raghothamachar — Lecture presented by Z. Chen).
515. 65th Electronic Materials Conference (EMC) Symposium on “SiC Material Characterization, Processing and Devices,” held in Santa Barbara, California, June 28-30, (2023): “Investigation of Defect Formation During Initial Stage of PVT-Grown 4H-SiC Crystals” (Lecture with S. Hu, Y. Liu, Q. Cheng, Z. Chen, and B. Raghothamachar — Lecture presented by S. Hu).
516. 65th Electronic Materials Conference (EMC) Symposium on “Group III–Nitrides—Growth and Characterization” held in Santa Barbara, California, June 28-30, (2023): “Characterization of Growth Sectors in Patterned HVPE Gallium Nitride Substrate Wafers” (Lecture with Y. Liu, S. Hu, Q. Cheng, Z. Chen, and B. Raghothamachar — Lecture presented by S. Hu).
517. 20th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Sorrento, Italy, Sept 17-22, (2023): “Investigating Dislocation Arrays Induced by Seed Scratches during PVT 4H-SiC Crystal Growth using Synchrotron X-Ray Topography,” (Lecture with Q. Cheng, Y. Liu, Z. Chen, S. Hu, B. Raghothamachar, V. Pushkarev, K. Moeggenborg, G. Chung and E. Sanchez — Lecture presented by B. Raghothamachar).
518. 244th The Electrochemical Society (ECS) Meeting, Symposium on “Electronic and Photonic Devices and Systems,” held in Gothenburg, Sweden, Oct 8-12, (2023): “Investigating the Distribution Pattern of Threading Edge Dislocation Low Angle Grain Boundaries in 4H-SiC Wafers Using Synchrotron X-Ray Topography,” (Lecture with Q. Cheng, Y. Liu, Z. Chen, S. Hu and B. Raghothamachar — Lecture presented by B. Raghothamachar).
519. 23rd American Conference on Crystal Growth and Epitaxy (ACCGE-23) and 21th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-21), Symposium on “Characterization techniques for bulk & epitaxial crystallization,” held in Tucson, Arizona, Aug 13-18, (2023): “Effective Penetration Depth Analysis of Dislocations Lying on the Basal Plane in Grazing Incidence Synchrotron X-ray Topographs of 4H-SiC Wafers,” (Lecture with Q. Cheng, S. Hu, Z. Chen, Y. Liu and B. Raghothamachar — Lecture presented by Q. Cheng).
520. 23rd American Conference on Crystal Growth and Epitaxy (ACCGE-23) and 21th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-21), Symposium on “Characterization techniques for bulk & epitaxial crystallization,” held in Tucson, Arizona, Aug 13-18, (2023): “Investigation of Defect Formation at the Early Stage of PVT-grown 4H-SiC Crystals,” (Lecture with S. Hu, Y. Liu, Z. Chen, Q. Cheng, and B. Raghothamachar — Lecture presented by S. Hu).
521. 23rd American Conference on Crystal Growth and Epitaxy (ACCGE-23) and 21th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-21), Symposium on “Characterization techniques for bulk & epitaxial crystallization,” held in Tucson, Arizona, Aug 13-18, (2023): “Characterization of Growth Sectors in Gallium Nitride Substrate Wafers,” (Lecture with Y. Liu, S. Hu, Z. Chen, Q. Cheng, and B. Raghothamachar — Poster presented by S. Hu).
522. 23rd American Conference on Crystal Growth and Epitaxy (ACCGE-23) and 21th US Workshop on Organometallic Vapor Phase Epitaxy (OMVPE-21), Symposium on “Silicon carbide & gallium oxide materials & devices,” held in Tucson, Arizona, Aug 13-18, (2023): “Analysis of Strain in Ion Implanted 4H-SiC by Fringes Observed in Synchrotron X-ray Topography,” (Lecture with Z. Chen, Y. Liu, Q. Cheng, B. Raghothamachar, R. Ghandi, and S. Kennerly — Lecture presented by Z. Chen).
523. 20th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Sorrento, Italy, Sept 17-22, (2023): “Analysis of Defect Structures During the Early Stages of PVT Growth of 4H-SiC Crystals,” (Lecture with S. Hu, Y. Liu, Z. Chen, Q. Cheng, B. Raghothamachar, D. Dukes, V. Torres, L. Young, S. Griswold, C. Liu, and H. Briccetti — Poster presented together with B. Raghothamachar).

524. 20th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Sorrento, Italy, Sept 17-22, (2023): “Analysis of Lattice Damage in 4H-SiC Epiwafers Implanted with High Energy Al Ions at Elevated Temperatures,” (Lecture with Z. Chen, Y. Liu, Q. Cheng, B. Raghothamachar, R. Ghandi, S. Kennerly, C. Carlson, and D. Steski — Poster presented together with B. Raghothamachar).
525. 20th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Sorrento, Italy, Sept 17-22, (2023): “Characterization of Growth Sectors in Gallium Nitride Substrate Wafers,” (Lecture with Y. Liu, S. Hu, Z. Chen, Q. Cheng, and B. Raghothamachar — Poster presented together with B. Raghothamachar).
526. 244th The Electrochemical Society (ECS) Meeting, Symposium on “Electronic and Photonic Devices and Systems,” held in Gothenburg, Sweden, Oct 8-12, (2023): “Analysis of Basal Plane Dislocation Motion Induced by P+ Ion Implantation Using Synchrotron X-ray Topography,” (Lecture with Z. Chen, Y. Liu, H. Peng, Q. Cheng, S. Hu, B. Raghothamachar, S. Mancini, S. Y. Jang, and W. Sung — Lecture presented by M. Dudley).
527. 244th The Electrochemical Society (ECS) Meeting, Symposium on “Electronic and Photonic Devices and Systems,” held in Gothenburg, Sweden, Oct 8-12, (2023): “Synchrotron X-ray Topography Studies for Defect Formation at the Early Stage of PVT-grown 4H-SiC Crystals,” (Lecture with S. Hu, Y. Liu, Z. Chen, Q. Cheng, and B. Raghothamachar — Lecture presented by B. Raghothamachar).
528. 244th The Electrochemical Society (ECS) Meeting, Symposium on “Electronic and Photonic Devices and Systems,” held in Gothenburg, Sweden, Oct 8-12, (2023): “Investigation of Growth Sectors in Gallium Nitride Substrate Wafers from Ammonothermal and Patterned HVPE Growth Methods,” (Lecture with Y. Liu, S. Hu, Z. Chen, Q. Cheng, and B. Raghothamachar — Lecture presented by B. Raghothamachar).
529. 66th Electronic Materials Conference (EMC) Symposium on “SiC Materials, Characterization and Devices” held in University of Maryland, College Park, Maryland, June 26-28, (2024): “Frank Dislocation Generation and Behavior Investigation in PVT-Grown 4H-SiC Crystals” (Lecture with S. Hu, Z. Chen, Q. Cheng, and B. Raghothamachar — Lecture presented by S. Hu).
530. 66th Electronic Materials Conference (EMC) Symposium on “Doping and Impurities” held in University of Maryland, College Park, Maryland, June 26-28, (2024): “Analysis of Lattice Damage in Post-Annealed 4H-SiC Epiwafers Implanted with High Energy Al Ions at Elevated Temperatures” (Lecture with Z. Chen, Q. Cheng, S. Hu, B. Raghothamachar, C. Carlson and D. Steski — Lecture presented by Z. Chen).
531. 66th Electronic Materials Conference (EMC) Symposium on “SiC Materials, Characterization and Devices” held in University of Maryland, College Park, Maryland, June 26-28, (2024): “Analysis of Inclusions and Associated Dislocation Configurations in 4H-SiC Wafers through Synchrotron X-Ray Topography” (Lecture with Q. Cheng, Z. Chen, S. Hu and B. Raghothamachar — Lecture presented by Q. Cheng).
532. 21th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Raleigh, North Carolina, Sept 29-Oct 4, (2024): “New Insights into the Occurrence of Prismatic Slip during PVT Growth of SiC Crystals” (Lecture with S. Hu, B. Raghothamachar, Z. Chen, K. Kayang, D. Gersappe, V. Torres, D. Dukes, D. Lang, A. Martin, H. Briccetti, S. Griswold, T. Kegg and N. Griffin — Lecture presented by S. Hu).
533. 21th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Raleigh, North Carolina, Sept 29-Oct 4, (2024): “Punching of Prismatic Dislocation Loops from Inclusions in 4H-SiC Wafers” (Lecture with Q. Cheng, K. Kayang, Z. Chen, S. Hu, B. Raghothamachar, D. Gersappe, A. Soukhojak and S. Baek — Lecture presented by S. Hu).
534. 20th International Conference on Defects - Recognition, Imaging and Physics in Semiconductors (DRIP XIII), Stony Brook, New York, Aug 18-22, 2024: “Nucleation of Dislocations from Scratches on Surface of PVT Grown 4H-SiC Wafer”, (Lecture with S. Hu, Z. Chen, Q. Cheng and B. Raghothamachar — Lecture Presented by S. Hu)
535. 20th International Conference on Defects - Recognition, Imaging and Physics in Semiconductors (DRIP XIII), Stony Brook, New York, Aug 18-22, 2024: “Analysis of Prismatic Slip in PVT Growth of Hexagonal Crystals”, (Lecture with S. Hu, Q. Cheng, Z. Chen and B. Raghothamachar — Poster presented together with S. Hu)

536. PRiME 2024 Meeting, Symposium on “Electronic and Photonic Devices and Systems,” held in Honolulu, Hawaii, Oct 6-11, 2024: “Investigation of Defect Formation at the Early Stage of PVT-grown 4H-SiC Crystals” (Lecture with S. Hu, Z. Chen and B. Raghothamachar — Lecture presented by B. Raghothamachar).
537. 20th International Conference on Defects - Recognition, Imaging and Physics in Semiconductors (DRIP XIII), Stony Brook, New York, Aug 18-22, 2024: “Simulation of Defects of 4H-SiC in 22-4 16 Reflection of Synchrotron Monochromatic Beam X-ray Topography in Grazing Incident Geometry by Ray Tracing Method”, (Lecture with Z. Chen, Q. Cheng, S. Hu and B. Raghothamachar — Lecture Presented by Z. Chen)
538. 20th International Conference on Defects - Recognition, Imaging and Physics in Semiconductors (DRIP XIII), Stony Brook, New York, Aug 18-22, 2024: “Analysis of Lattice Damage in 4H-SiC Epiwafers Implanted with High Energy Al Ions”, (Lecture with Z. Chen, Y. Liu , Q. Cheng, S. Hu, B. Raghothamachar, M. Dudley, R. Ghandi, S. Kennerly, C. Carlson and D. Steski— Poster presented together with Z. Chen)
539. PRiME 2024 Meeting, Symposium on “Electronic and Photonic Devices and Systems,” held in Honolulu, Hawaii, Oct 6-11, 2024: “Analysis of Lattice Damage in Annealed 4H-SiC Epiwafers after Heated Implantation with High Energy Al Ions” (Lecture with Z. Chen, Y. Liu , Q. Cheng, S. Hu, B. Raghothamachar, M. Dudley, R. Ghandi, S. Kennerly, C. Carlson and D. Steski — Lecture presented by B. Raghothamachar).
540. 21th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Raleigh, North Carolina, Sept 29-Oct 4, (2024): “Analysis of Lattice Damage in 4H-SiC Epiwafers Implanted with High Energy Al Ions at Elevated Temperatures” (Lecture with Z. Chen, Y. Liu , Q. Cheng, S. Hu, B. Raghothamachar, M. Dudley, R. Ghandi, S. Kennerly, C. Carlson, D. Steski, T. Kubley, F. Krippendorf and M. Rüb — Poster presented by Z. Chen).
541. 21th International Conference on Silicon Carbide and Related Materials (ICSCRM), held in Raleigh, North Carolina, Sept 29-Oct 4, (2024): “Formation Mechanism and Complex Faulting Behavior of a BPD Loop in 180 μm Thick 4H-SiC Epitaxial layer” (Lecture with Z. Chen, N.A. Mahadik, M. Dudley, B. Raghothamachar, D.A. Scheiman, R.E. Stahlbush, Y. Kim and M.W. Owen — Lecture presented by Z. Chen).
542. 20th International Conference on Defects Recognitions, Imaging and Physics in Semiconductors (DRIP), held in Stony Brook, New York, Aug 18-22, (2024): “Analysis of Threading Edge Dislocation Low Angle Grain Boundaries Network Distribution in 4H-SiC Wafers through Synchrotron X-Ray Topography and Ray Tracing Simulation” (Lecture with Q. Cheng, Z. Chen, S. Hu, M. Dudley, B. Raghothamachar — Lecture presented by Q. Cheng).

APPENDIX B

Materials Considered

Exhibit	Description
	Petition for <i>Inter Partes</i> Review of U.S. Patent No. 9,130,074 in IPR2025-01432 (“Petition”)
1001	U.S. Patent No. 9,130,074
1002	File History of U.S. Patent No. 9,130,074
1003	Declaration of Dr. Stephen Shea Regarding U.S. Patent No. 9,130,074
1004	Curriculum Vitae of Dr. Stephen Shea
1005	E. Yablonovitch, et al., A 720 mV open circuit voltage SiO _x :c-Si:SiO _x double heterostructure solar cell, Appl. Phys. Lett. 47 (11) (Dec. 1, 1985) (“Yablonovitch”)
1006	Y.H. Kwark et al., “SIPOS Heterojunction contacts to silicon,” International Electron Devices Meeting (1984): 742-745 (“Kwark”)
1007	Y.H. Kwark, et al., N-Type SIPOS and Poly-Silicon Emitters, Solid- State Elecs. Vol. 30, No. 11, pp. 1121-l 125 (1987)
1008	EP 1732142 A1 (“Froitzheim”)
1009	R. Neville, Solar Energy Conversion: The Solar Cell, 2nd Ed. (Elsevier 1995) (excerpted) (“Neville”)
1010	H. Sasaki, et al., Light Trapping for Thin-Film Silicon Solar Cells Fabricated on Insulator, Jpn. J. Appl. Phys., Vol. 33, pp. 3389-3392 (1994) (“Sasaki”)
1013	W. Fussel, et al., Structural, optical and electrical properties of SIPOS passivation layers, Microelectronic Engineering 22 (1993) 355-358 (“Fussel”)
1014	G. Compagnini, Optical and structural properties of semi-insulating polycrystalline silicon thin films, J. Mater. Res., Vol. 10, No. 4 (Apr 1995) (“Compagnini”)
1015	Y. Pan, et al., Study on the optical absorption of oxygen-doped polysilicon thin films, Optical Engineering 32(3), 589-592 (March 1993) (“Pan”)
1016	I. Post, et al., Polysilicon Emitters for Bipolar Transistors: A Review and Re-Evaluation of Theory and Experiment, IEEE Transactions on Electron Devices, Vol. 39. No. 7 (July 1992) (“Post”)

Exhibit	Description
1017	G.R. Wolstenholme, et al., An investigation of the thermal stability of the interfacial oxide in polycrystalline silicon emitter bipolar transistors by comparing device results with high-resolution electron microscopy observations, J. Appl. Phys. 61 (1) (January 1987) (“Wolstenholme”)
1018	Michael Quirk and Julian Serda, Semiconductor Manufacturing Technology, Prentice-Hall, Inc. (2001) (“Quirk”)
1019	A. Luque, et al., Handbook of Photovoltaic Science and Engineering, John Wiley & Sons Ltd. (2003) (“Luque”)
1020	F. A. Lindholm, A. Neugroschel, M. Arienzo, and P. A. Iles. "Heavily Doped Polysilicon-Contact Solar Cells." IEEE Electron Device Letters, volume 6, number 7, July 1985, pages 363-365 (“Lindholm”)
1021	K. Tatsumura, et al., Residual order within thermally grown amorphous SiO ₂ on crystalline silicon, Phys. Rev. B 69, 085212 (2004) (“Tatsumura”)
1022	US Patent No. 7,851,336 (“Poplavskyy”)
1023	File History of US Patent No. 7,851,336 (excerpt)
1024	Complaint for Patent Infringement, <i>First Solar Inc. v. Canadian Solar Inc., et al.</i> , Case No. 1:25-cv-00582-JLH, Dkt. 1 (D. Del.)
1025	Y.H. Kwark., et al., Optical Absorption of Thin SIPOS Films, J. Electrochem. Soc., Solid-State Science and Technology, Vol. 129, No. 1, pp. 197-201 (1982) (“Kwark III”)
1026	B. Streetman, et al., Solid State Electronic Devices, Sixth Ed., Prentice Hall (2006) (“Streetman”)
1027	P. Ashburn, et al., Comparison of Experimental and Theoretical Results on Polysilicon Emitter Bipolar Transistors, IEEE Transactions on Electron Devices, Vol. ED-31, No. 7 (July 1984) (“Ashburn”)
1028	E. Yablonovitch, et al., A Study of n ⁺ -SIPOS:p-Si Heterojunction Emitters, IEEE Electron Device Letters, Vol. EDL-6, No. 11 (Nov. 1985) (“Yablonovitch 1984”)
1029	R. Sinton, et al., Design Criteria for Si Point-Contact Concentrator Solar Cells, IEEE Transactions on Electron Devices, Vol. ED-34, No. 10 (Oct. 1987)
1030	A. Zuoari, et al., Simple analytical solution and efficiency improvement of polysilicon emitter solar cells, Solar Energy Materials & Solar Cells 92 (2008) 313–322 (“Zouari”)

Exhibit	Description
1031	R. Fair, Physical Models of Boron Diffusion in Ultrathin Gate Oxides, J. Electrochem. Soc., Vol. 144, No. 2 (Feb. 1997) (“Fair”)
1032	U.S. Patent No. 8,222,516 (“Cousins”)
1033	First Solar’s Patent Marking Notification List (<i>available at</i> https://www.firstsolar.com/-/media/First-Solar/Documents/Patents/Patent-Marking-Notification.pdf as of August 14, 2025)
1034	U.S. Patent No. 4,667,060 (“Spitzer”)
1035	T. Matsushita, et al., Highly Reliable High-Voltage Transistors by Use of the SIPOS Process, IEEE Transactions on Electron Devices, Vol. ED-23, No. 8 (Aug. 1976) (“Matsushita”)
1036	P. Borden, et al., Polysilicon Tunnel Junctions as Alternates to Diffused Junctions, 23rd European Photovoltaic Solar Energy Conference, 1-5 September 2008 (“Borden”)
1037	M. Janai, et al., Optical Properties and Structure of Amorphous Silicon Films Prepared by CVD, Solar Energy Materials 1 (1979), pp. 11-27 (“Janai”)
1038	S. Silvestre, Series Resistance in Double-Polysilicon-Contacted Silicon Solar Cells, 25th PVSC, 13-17 May 1996 (“Silvestre”)
1039	K. Shimakura, et al., Boron and Phosphorous Diffusion Through an SiO ₂ Layer From a Doped Polycrystalline Si Source Under Various Drive-In Ambients, Solid-State Elecs., Vol. 18, pp. 991-997 (1975) (“Shimakura”)
1040	OSTI Printout for Kwark (EX1006)
1041	IEEE web page print out for Kwark (EX1006)
1042	U.S. Patent No. 5,661,079 (“Harmel”)
1043	Declaration of James L. Mullins, Ph.D
1044	U.S. Patent App. Pub. No. 2008/0041526 (“Pass”)
1045	J. Arumughan, et al., Simplified edge isolation of buried contact solar cells, Solar Energy Materials & Solar Cells 87 (2005) pp. 705-14