ATTACHMENT A



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Engineering & Scientific Consulting

Alex Kattamis, Ph.D., P.E, CFEI, CVFI

Principal Engineer | Electrical Engineering and Computer Science
New York
+1-212-895-8127 | akattamis@exponent.com

Professional Profile

Dr. Kattamis is an electrical engineer with an extensive background in failure analysis and forensic engineering. He performs root cause analyses (RCA) relating to failures and fires in electrical systems ranging from semiconductor devices and consumer electronics to power generation, transmission and distribution equipment. He also performs analyses related to electrical injury including arc flash and electric shock.

Dr. Kattamis has also led large-scale condition assessments of mechanical, electrical, and plumbing (MEP) systems following natural disasters. He has an in depth knowledge of relevant electrical codes and standards including those of the IEC, IEEE, NEC, NESC, NFPA, OSHA, and UL.

Dr. Kattamis has expertise in the design, fabrication, and failure analysis of semiconductor devices including thin-film electronics, flexible electronics, memories, LEDs, LCDs, AMOLEDs, integrated circuits, and printed circuit boards. Dr. Kattamis is also has experience in investigating and providing testimony in intellectual property matters.

Dr. Kattamis received his Ph.D. in Electrical Engineering at Princeton University. His research focused on large-area flexible electronics including the design, fabrication and characterization of TFT display backplanes for electrophoretic displays and AMOLEDs on metal foils and polymer substrates. This included significant work in thin-film mechanics. His fabrication experience includes plasma-enhanced chemical vapor deposition, reactive-ion etching, sputter deposition, wet chemical processing, and photolithography.

Prior to his Ph.D., Dr. Kattamis worked at General Electric Industrial Systems, where he designed and implemented electronic trip units and current sensing systems for metering and switchgear. This included analog electronics design, modeling, and firmware coding.

Academic Credentials & Professional Honors

Ph.D., Electrical Engineering, Princeton University, 2007

M.A., Electrical Engineering, Princeton University, 2004

B.S.E., Electrical Engineering, University of Connecticut, 2002

Princeton Plasma Physics Fellowship Recipient

Tau Beta Pi

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Eta Kappa Nu

McGraw Graduate Fellow

General Electric Student Intern Award Recipient

Citigroup Scholarship Recipient

Licenses and Certifications

Professional Engineer, Connecticut, #PEN.0034121

Professional Engineer, Georgia, #PE045381

Professional Engineer Electrical, Massachusetts, #5?5?2?4?0

Professional Engineer, New Jersey, #24GE05592500

Professional Engineer, New York, #90343

Professional Engineer, Pennsylvania, #PE090289

Professional Engineer Electrical, Rhode Island, #PE.0013344

Professional Engineer Electrical and Computer, Texas, #137167

Certified Fire and Explosion Investigator (CFEI)

Certified Vehicle Fire Investigator (CVFI)

Prior Experience

Research Assistant; Princeton University (2002-2007)

Design Engineer; General Electric Industrial Systems (Summer 2001, 2002)

Professional Affiliations

Institute of Electrical and Electronic Engineers (member)

Society for Information Display (member)

Materials Research Society (member)

Languages

French

Greek

Publications

A. Z. Kattamis, P. F. Murphy, M. Pooley and A. Soane, "Water Infiltration in Common Residential and Commercial Power Cables Introduced by Capillary Action," 2020 IEEE Symposium on Product

Compliance Engineering - (SPCE Portland), Portland, OR, USA, 2020, pp. 1-3, doi: 10.1109/SPCE50045.2020.9296167.

Kattamis AZ, Pooley M. Lightning Protection for Wind Turbines. Exponent Electrical Engineering and Computer Science Newsletter 2017; 6.

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D'Andrade BW, Kattamis AZ, Murphy PF. Flexible organic electronics devices on metal foil substrates for lighting photovoltaic, and other applications. In: Handbook of Flexible Organic Electronics Materials, Manufacturing and Applications, 1st Edition. Logothetidis S, pp. 315-336, Cambridge, Woodhead Publishing, 2015

D'Andrade BW, Turner G, Kattamis AZ, Saleh M. Reliability of switches that generate current in the grounding conductor. IEEE: Reliability Society 2011 Annual Technical Report, 2011.

D'Andrade B, Kattamis AZ, Murphy PF, McNulty J, Souri S. Arcing enabled by tin whiskers. IEEE: Reliability Society 2010 Annual Technical Report. 2010.

D'Andrade B, Kattamis AZ. Flexible solid state lighting. Optics and Photonics for Advanced Energy Technology, OSA Technical Digest WB4, 2009.

D'Andrade B, Kattamis AZ. Flexible active-matrix organic light emitting displays. Silicon Valley Engineering Council J 2009; 1:18-21.

Hekmatshoar B, Cherenack K, Kattamis AZ, Long K, Wagner S, Sturm JC. Highly stable amorphous-silicon thin-film transistors on clear plastic. Appl Phys Lett 2008; 93:032103-1-3.

Hekmatshoar B, Cherenack K, Long K, Kattamis AZ, Wagner S, Sturm JC. AMOLED reliability with a-Si TFT's in normal vs. inverted TFT/OLED integration scheme. 66th Dev Res Conf 2008; 243-244.

Kattamis AZ, Cherenack KH, Cheng I-C, Long K, Sturm JC, Wagner S. Fracture mechanisms of SiNx thin-films on compliant substrates. Mat Res Soc Symp Proc 2008; 1078-M14-02.

Hekmatshoar B, Kattamis AZ, Cherenack K, Wagner S, Sturm JC. A novel TFT-OLED integration for OLED-independent pixel programming in amorphous-Si AMOLED pixels. J Soc Info Disp 2008; 16.

Hekmatshoar B., Kattamis AZ, Cherenack KH, Long K, Chen J-Z, Wagner S, Sturm JC, Rajan K, Hack M. Reliability of active-matrix organic light-emitting-diode arrays with amorphous silicon thin-film transistor backplanes on clear plastic. IEEE Elec Dev Lett2008; 29.

Yongtaek H, Chung S, Kattamis A, Cheng I-C, Wagner S. Technical issues of stainless steel foil substrates for OLED display applications. Proc. SPIE 2007; 6655:66550N.

Cherenack KH, Kattamis AZ, Hekmatshoar B, Sturm JC, Wagner S. Amorphous-silicon thin-film transistors fabricated at 300C on a free-standing foil substrate of clear plastic. IEEE Elec Dev Lett 2007; 28:1004-1006.

Carcia PF, McLean RS, Reilly MH, Crawford MK, Blanchard EN, Kattamis AZ, Wagner S. A comparison

of zinc oxide thin-film transistors on silicon oxide and silicon nitride gate dielectrics. J Appl Phys 2007; 102:074512-074519.

Kattamis AZ, Cherenack KH, Hekmatshoar B, Cheng I-C, Gleskova H, Sturm JC, Wagner S. Effect of SiNx gate dielectric deposition power and temperature on a-Si:H TFT stability. IEEE Elec Dev Lett 2007; 28:606-608.

Long K, Kattamis AK, Cheng I-C, Gleskova H, Wagner S, Sutrm JC. Amorphous-silicon thin-film transistors made at 280°C on clear-plastic substrates by interfacial stress engineering. J Soc Info Disp 2007; 15:167-176.

Kattamis AZ, Giebink N, Cheng I-C, Hong Y, Cannella V, Forrest SR, Wagner S. Active-matrix organic light emitting display employing two thin film transistor a-Si:H Pixels on flexible stainless steel foil. J Soc Info Disp 2006; 15:433-437.

Kattamis AZ, Cheng I-C, Long K, Hekmatshoar B, Cherenack K, Wagner, S, Sturm JC, Venugopal S, Loy DE, O'Rourke SM, Allee DR. Amorphous silicon thin film transistor backplanes deposited at 200ºC on clear plastic. IEEE J Disp Tech 2006; 2:304-308.

Kattamis AZ, Giebink N, Cheng I-C, Hong Y, Cannella V, Forrest SR, Wagner S. AMOLED backplanes of amorphous silicon on steel foils. Proc Inter Disp Res Conf SID 2006; 9.3.

Kattamis AZ, Cheng I-C, Long K, Forrest SR, Sturm JC, Wagner S. Amorphous silicon 2-TFT pixel circuits on stainless steel foils. Mat Res Soc Symp Proc 2006; 936E:0910-A16-03-L09-03.

Long K, Kattamis AZ, Cheng I-C, Sturm JC, Wagner S, Stevenson M, Yu G, O'Reagan M. Active-matrix amorphous-silicon TFTs arrays at 180ºC on clear plastic and glass substrates for organic light-emitting displays. IEEE Trans Elec Dev 2006; 53:1789-1796.

Cheng I-C, Kattamis AZ, Long K, Sturm JC, Wagner S. Self-aligned amorphous-silicon thin-film transistors on clear plastic substrates. IEEE Elec Dev Lett 2006; 27:166-168.

Long K, Kattamis AZ, Cheng I-C, Gleskova H, Wagner S, Sturm JC. Stability of amorphous-silicon thin-film transistors deposited on clear plastic substrates at 250°C to 280°C. IEEE Elec Dev Lett 2006; 27:111-113.

Kattamis AZ, Holmes RJ, Cheng I-C, Long K, Forrest SR, Sturm JC, Wagner S. High Mobility Nanocrystalline Silicon Transistors on Clear Plastic Substrates. IEEE Elec Dev Lett 2006; 27:49-51.

Kattamis AZ, Cheng I-C, Sturm JC, Wagner S. Nanocrystalline silicon thin film transistors on optically clear polymer foil substrates. Proceedings, Mat Res Soc Symp Proc 2005; 870:H2.7.1-6.

Cheng I-C, Kattamis AZ, Long K, Sturm JC, Wagner S. Stress control for overlay registration in a-Si:H TFTs on flexible organic-polymer-foil substrate. J Soc Info Disp 2005; 13:563-568.

Kattamis AZ, Cheng I-C, Allen S, Wagner S. Hydrogen in ultralow temperature SiO2 for nanocrystalline silicon thin film transistors. Proceedings, Mat Res Soc Symp Proc 2004; 814:I10.14.1-6.

Published Abstracts of Presentations

Kattamis AZ, Cherenack K, Hekmatshoar B, Cheng I-C, Sturm JC, Wagner S. Amorphous silicon thin-film transistor backplanes fabricated on a clear plastic substrate at 300ºC. 22nd International Conference on Amorphous and Nanocrystalline Semiconductors, 2007.

Kattamis AZ, Cheng I-C, Long K, Cherenack K, Hekmatshoar B, Sturm JC, Wagner S. Amorphous silicon thin-film transistor backplanes deposited at high temperature on clear plastic for electrophoretic displays.

Electronic Materials Conference, 2007.

Kattamis AZ, Cheng I-C, Long K, Sturm JC, Wagner S. Effect of SiNx gate dielectric deposition power on the electrical stability of a-Si:H TFTs. Materials Research Society Spring Meeting, 2007.

Kattamis AZ, Hekmatshoar B, Cherenack K, Wagner S, Sturm JC, Venugopal S, Loy DE, O'Rourke SM, Allee DR. Amorphous silicon thin-film transistor backplanes processed at high temperatures on clear plastic for flexible electrophoretic displays. 6th Annual Flexible Display and Microelectronics Conference of USDC, 2007.

Kattamis AZ, Cheng I-C, Long K, Sturm JC, Wagner S. Built-in strain in silicon nitride films on polymer foils. Electronic Materials Conference, 2006.

Kattamis AZ, Giebink N, Cheng I-C, , Hong Y, Cannella V, Forrest SR, Wagner S. AMOLED backplanes of amorphous silicon on steel foils. International Display Research Conference SID 9.3, 2006.

Kattamis AZ, Cheng I-C, Long K, Forrest SR, Sturm JC, Wagner S. Amorphous silicon 2-TFT pixel circuits on stainless steel foils. Materials Research Society Spring Meeting, 2006.

Kattamis AZ, Holmes RJ, Cheng I-C, Long K, Forrest SR, Sturm JC, Wagner S. Nanocrystalline silicon TFTs on Clear Plastic Foil for Flexible OLED Displays. 21st International Conference on Amorphous and Nanocrystalline Semiconductors, 2005.

Kattamis AZ, Cheng I-C, Long K, Sturm JC, Wagner S. Dimensionally stable processing of a-Si TFTs on polymer substrates. Electronic Materials Conference, 2005.

Kattamis AZ, Cheng I-C, Sturm JC, Wagner S. Nanocrystalline silicon thin film transistors on optically clear polymer foil substrates. Materials Research Society Spring Meeting, 2005.

Kattamis AZ, Cheng I-C, Allen S, Wagner S. Hydrogen in ultralow temperature SiO2 for nanocrystalline silicon thin film transistors. Materials Research Society Spring Meeting, 2004.

Presentations

Kattamis A, Murphy PF, Cotts B. Impacts of Extreme Weather Events on Renewable Energy Generation. Webinar. March 24, 2021.

Cotts B, Kattamis A, Murphy PF. Alternative Energy Liability Claims for Solar Installations Large & Small. Webinar. November 11, 2020.

Kattamis AZ, Widin DR. Power interruption. HarrisMartin: Superstorm Sandy Insurance Coverage Litigation Conference, Borgata Hotel, Atlantic City, NJ, June 26, 2013.

Troisi MA, Kattamis AZ. Power Interruption Coverage and Electrical Engineering Issues - Discussion of the Wakefern Case. HarrisMartin: Superstorm Sandy Insurance Coverage Litigation Conference, InterContinental, New York Barclay, New York, NY, Febryary 26, 2013.

Kattamis AZ, Murphy PF. Innovations in backplane electronics for large-area OLEDs. IEEE Long Island Systems, Applications and Technology Conference, Technology Track, Session 3, 2012.

Project Experience

Failure Analysis

- Root cause analysis of medical device failures
- Root cause analysis of lighting device failures
- Root cause analysis of failures in power strips used in data centers
- Hazard analysis for lighting devices
- Root cause analysis for motor run capacitor failures

Flexible Electronic Circuits

- Flexible aluminum substrate characterization
- Amorphous silicon thin-film transistor deposition
- Aluminum substrate passivation and coating for thin-film processing

Hard Disk Drives

- Patent and trade secret investigations relating to hard disk drive intellectual property
- Infringement analysis of accused hard disk drives products
- Prior art and validity analysis of patents related to hard disk drive patents

Light Emitting Devices

- Patent investigations relating to LED and laser diode intellectual property
- Reverse engineering focusing on device processing and characterization
- Infringement analysis of accused LEDs and laser diodes
- Prior art and validity analysis of patents related LEDs and laser diodes

Semiconductor Devices and Materials

- Patent investigations relating to semiconductor devices
- Reverse engineering focusing on packaging, processing and design of memories and other semiconductor devices
- Infringement analysis of accused memories and other semiconductor devices
- Prior art and validity analysis of patents related to memories and other semiconductor devices

Image Processing Software

- Reverse engineering focusing on image processing software and algorithms
- Infringement analysis of accused image processing products
- Prior art and validity analysis of patents related to image processing patents

Computer Networks

- Reverse engineering focusing on computer networks, including networks for providing financial services
- Infringement analysis of accused computer networking products

Fire Investigations

- Cause and origin of fires relating to wiring, electrical equipment and consumer electronics

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