Curriculum Vitae

Frank Ernst

Dr. rer. nat. habil.
Leonard Case Jr. Professor of Engineering

Department of Materials Science and Engineering

Case Western Reserve University

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March 26, 2024

Academic Degrees

1997	**Dr. rer. nat. habil.** (Habilitation*)	Materials Science	University of Stuttgart, Germany (Advisors: E. Arzt, F. Aldinger, M. Rühle)
1987	**Dr. rer. nat. (Ph. D.)**	Physical Metallurgy	University of Göttingen, Germany (Advisor: P. Haasen)
1984	**Dipl.-Phys. (Masters)**	Physics	University of Göttingen, Germany (Advisor: P. Haasen)

*The Habilitation is the highest academic degree in Germany. It is a post-doctoral qualification awarded for demonstrating a special qualification in research and *teaching* at the university level.

**The *venia legendi* is the permission to teach at a German university. It *can* be granted on the basis of a Habilitation.

Appointments

since 01/2016	**Department Chair** Department of Materials Science and Engineering CWRU, Cleveland, (Ohio), USA
2016 – 2021	**Faculty Director** Swagelok Center for Surface Analysis of Materials CWRU, Cleveland, (Ohio), USA
since 09/2012	**Secondary Professor** Department of Chemical and Biomolecular Engineering CWRU, Cleveland, (Ohio), USA
since 08/2008	**Director** Case Center for Surface Engineering CWRU, Cleveland, (Ohio), USA
2008 – 2016	**Co-Director** Swagelok Center for Surface Analysis of Materials CWRU, Cleveland, (Ohio), USA
since 05/2007	**Leonard Case Jr. Professor** Department of Materials Science and Engineering CWRU, Cleveland, (Ohio), USA
since 10/2000	**Professor** Department of Materials Science and Engineering CWRU, Cleveland, (Ohio), USA
1997 – 2000	**Lecturer** University of Stuttgart, Germany
1989 – 2000	**Senior Scientist** Max-Planck-Institut für Metallforschung Stuttgart, Germany
1987 – 1988	**Post-Doctoral Researcher** Department of Materials Science and Engineering CWRU, Cleveland, (Ohio), USA

Awards

2019 **Jessica Melton Perry Award for Disnguished Teaching in Disciplinary & Professional Writing**
CWRU

2019 **Graduate Teaching Award**
Case School of Engineering

2018 **Nomination for the Graduate Teaching Award**
Case School of Engineering

2017 **John S Diekhoff Award for Distinguished Graduate Teaching**
CWRU

2016 **Technical Educator Award**
CTSC (Cleveland Technical Societies Council)

2010 **Acta Materialia Top Reviewer 2009**
Elsevier

2010 **Materials Science and Engineering Outstanding Reviewer 2009**
Elsevier

2009 **Materials Science and Engineering Outstanding Reviewer 2008**
Elsevier

2006 **Case School of Engineering Outstanding Teacher 2005-2006**
CWRU

2005 **Nomination for the**
2005 Carl F. Wittke Award for Excellence in Undergraduate Teaching
CWRU

2005 **2004-2005 Case School of Engineering Teaching Leader**
CWRU

2004 **Tenure Appointment**
CWRU

2001 **Werner Köster Prize 2000**
German Materials Research Society (DGM) and Zeitschrift für Metallkunde

1997 **Venia Legendi**[**]
University of Stuttgart

1993 **Tenure Appointment**
Max-Planck Society, Max-Planck-Institut für Metallforschung

1985 **Graduate Student Research Award**
German Materials Research Society (DGM)

1984 **Heineman Scholarship for Graduate Studies**
Minna-James-Heineman-Foundation (for 3 years)

Professional Activities

Professional Memberships

DGE	German Electron Microscopy Society
DGM	German Materials Research Society
MSA	Microscopy Society of America
MSNO	Microscopy Society of Northern Ohio
ACerS	American Ceramic Society
TMS	The Minerals, Metals & Materials Society
ASM	The Materials Information Society / American Society of Metals

Memberships on Boards of Scientific Journals

2010 – today	**Metals**: Editorial Board
2006 – today	**International Journal of Materials Research**: Advisory Board
2004 - 2013	**Materials Science and Engineering A**: Editorial Board
1997 – 2006	**Zeitschrift für Metallkunde**: Advisory Board
1996 – 2002	**Journal of Electron Microscopy**: Editorial Board

Service as Reviewer

For Scientific Publications

Acta Crystallographica
Acta Materialia
Advanced Materials
Applied Physics Letters
International Journal of Materials Research
Journal of Biomedical Materials Research
Journal of Electron Microscopy
Journal of Physical Chemistry
Journal of Materials Research
Materials Science and Engineering
Materials Science and Technology
Metallurgical and Materials Transactions
Metals
Microscopy & Microanalysis
Nano Letters
Philosophical Magazine
Physica Status Solidi
Physical Review B
Physical Review Letters
Science
Steel Research
Surface Science
Surface Science and Technology
Ultramicroscopy
Wiley & Sons
Zeitschrift für Metallkunde

For Research Agencies

European Science Foundation
German Science Foundation (Research Proposals, Proposals for Research Centers)
Max-Planck-Society (Proposals for International Max-Planck Research Schools)
National Science Foundation
US Department of Defense

Conference Activity

1. Organizer of "Third Symposium on Surface Hardening of Corrosion-Resistant Alloys" *Materials Science & Technology 2014*. Pittsburgh, PA, USA, October 12-16, 2014.

2. Session Chair of Symposium "Grain Boundary Engineering" *XIII International Conference on Intergranular and Interface Boundaries (iib2010)*. Mie, Japan, June 27 to July 2, 2010.

3. Co-Organizer and Session Chair of the *"International Symposium on Surface Hardening of Corrosion Resistant Alloys"*. Cleveland, May 24 to 26, 2010.

4. Co-Organizer and Session Chair of the *"International Meeting on Surface Hardening of Stainless Steel"*. Cleveland, October 22 and 23, 2007.

5. Co-Organizer and Session Chair of Conference on "Progress and Challenges in Understanding Materials Interfaces" *Material Science and Technology Conference and Exhibition*. Cincinnati, October 15-19, 2006.

6. Session Chair of Symposium "Progress and Challenges in Understanding Materials Interfaces" *Material Science and Technology Conference and Exhibition*. Cincinnati, October 15-19, 2006.

7. Session Chair of Symposium "Progress and Challenges in Understanding Materials Interfaces" *Material Science and Technology Conference and Exhibition*. Cincinnati, October 15-19, 2006.

8. Organizer and Chair of "Interfaces: A Symposium in Honor of Manfred Rühle." *Annual Meeting of the Microscopy Society of America*. Savannah, Georgia, USA, August 01-05, 2004.

9. Chair of the Symposium "Materials Design." *First Kyoto Workshop on Computational Materials Science*. Kyoto, Japan, March 4, 2003.

10. Organizer and Chair of the *MSNO Winter Symposium on Transmission Electron Microscopy*. Cleveland, Ohio, USA, February 13, 2002.

11. Chair of a Symposium on "Data Analysis and Modeling Across length Scales." *United Engineering Foundation Meeting on Integrating Materials Science into Engineering Structures and Devices*. Lake Arrowhead, California, USA, November 11-15, 2001.

12. Chair of a Symposium on "Quantitative Analysis of Interface Structure by HRTEM." *Annual Meeting of the Microscopy Society of America 2001*. Long Beach, California, USA, August 05-09, 2001.

13. Chair of a Symposium on "Wide Band-Gap Semiconductors." *Microscopy of Semiconducting Materials XII*. Oxford, United Kingdom, March 25-29, 2001.

14. Organizer and Chair of a Symposium on "Quantitative High-Resolution Electron Microscopy." *EUREM 12*. Brno, Czech Republic, July 9-14, 2000.

15. Organizer and Chair of an *International Conference on Quantitative High-Resolution Electron Microscopy*. Berlin, Germany, March 27-29, 2000.

16. Organizer and Chair of a Symposium on "Materials Research." *29th Congress of the German Electron Microscopy Society*. Dortmund, Germany, September 5-10, 1999.

17. Organizer and Chair of a Symposium on "Advances in Quantitative and Coherent High-Resolution Electron Microscopy." *14th International Congress on Electron Microscopy*. Cancun, Mexico, August 31 - September 4, 1998.

18. Organizer and Chair of the International Conference on *Frontiers of Electron Microscopy in Materials Science*. Irsee, Germany, April 19-24, 1998.

19. Organizer and Chair of a Symposium on "Interfaces and Surfaces." *Multinational Congress of the Austrian, German, and Swiss Microscopy Societies*. Regensburg, Germany, September 8-12, 1997.

20. Chair of a Symposium on "Atomic Resolution Microscopy of Surfaces and Interfaces." *Fall Meeting of the Materials Research Society*. Boston, USA, December 2-6, 1996.

21. Chair of a Symposium on "Defects at Hetero-Interfaces." *Annual Meeting of The Materials Society*. San Francisco, USA, February 27-March 3, 1994.

22. Chair of a Symposium on "Defect–Interface Interactions." *Fall Meeting of the Materials Research Society*. Boston, USA, November 29-December 3, 1993.

23. Chair of a Symposium on "Stress Relaxation and Misfit Accommodation in Epitaxial Thin Films." *Annual Meeting of The Materials Society*. San Francisco, USA, February 17-22, 1991.

24. Chair of a Symposium on "HRTEM of Defects in Materials." *Spring Meeting of The Materials Research Society*. San Francisco, USA, April 16-20, 1990.

Publications

Academic Publications

1. F. Ernst: *Struktur von Heterogrenzflächen (Structure of Heterointerfaces)*. Habilitationsschrift (Professorial Thesis), University of Stuttgart, 1997.

2. F. Ernst: *Hochauflösende Elektronenmikroskopie der Entmischung von Al–1 at% Ag at 413 K (Decomposition Kinetics of Al–1 at% Ag at 413 K, Studied by High-Resolution Electron Microscopy)*. Dissertation (Ph. D. Thesis), University of Göttingen, 1987.

3. F. Ernst: *Rekristallisationsexerimente in ⟨100⟩-zugverformten Kupfer-Einkristallen mit künstlicher Keimbildung (Recrystallization of ⟨100⟩-Strained Copper Single Crystals After Artificial Nucleation)*. Diplomarbeit (Masters Thesis), University of Göttingen, 1984.

Refereed Publications[§]

1. S. Lan, Z. Feng, F. Ernst, D. H. Matthiesen, and M. A. Willard: *Structure, Magnetic Properties, and Phase Evolution of Iron Powders after High-Temperature Nitridation*. Journal of Physics D (submitted).

2. Weiqi Yue, Mohommad Mehdi, Pawan Tripathi, Matthew Willard, Frank Ernst, Roger French: *Exploring 2D X-Ray Diffraction Data Analysis with Convolutional Neural Networks: Insights from Kinematic-Diffraction Simulations*. MRS Advances (2024).

3. Weiqi Yue, Pawan K. Tripathi, Gabriel Ponon, Zhuldyz Ualikhankyzy, Donald W. Brown, Bjorn Clausen, Maria Strantza, Darren C. Pagan, Matthew A. Willard, Frank Ernst, Erman Ayday, Vipin Chaudhary, Roger H. French: *Phase Identification in Synchrotron X-ray Diffraction Patterns of Ti–6Al–4V Using Computer Vision and Deep Learning*. Integrating Materials and Manufacturing Innovation, vol. in press, pp.

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4. **C. Illing**, Z. Ren, F. Ernst: *Low-Temperature Carburization: Ex Situ Activation of Austenitic Stainless Steel*. Metals, vol. 2023, pp. 335-359, 13.

5. **C. Illing**, M. Bestic, F. Ernst: *Additive Manufacturing: Corrosion Proofing by Infusion of Interstitial Solute—Exemplified for Alloy 22*. Metals, vol. 2023, pp. 127-143, 13.

[§]Author names in **boldface** indicate students or post-doctoral scholars I advised.

6. T. Li, S.C. Chien, **Z. Ren**, W. Windl, F. Ernst, and G.S. Frankel: *Understanding the efficacy of concentrated interstitial carbon in enhancing the pitting corrosion resistance of stainless steel; response to Comment by Martin et al.*. Scripta Materialia, vol. 224, pp. 115084, 2023.

7. T. Li, S.C. Chien, **Z. Ren**, W. Windl, F. Ernst, and G.S. Frankel: *Understanding the Efficacy of Concentrated Interstitial Carbon in Enhancing the Pitting Corrosion Resistance of Stainless Steel.* Acta Materialia, vol. 221, pp. 117433-447, 2021.

8. **C. Illing**, **Z. Ren**, **A. Agaponova**, A. Heuer, F. Ernst: *Rapid Alloy Surface Engineering Through Closed-Vessel Reagent Pyrolysis.* Metals, vol. 11, pp. 1764-1782, 2021.

9. **Z. Ren**, F. Ernst: *Stress–Corrosion Cracking of AISI 316 L Stainless Steel in Seawater Environments: Effect of Surface Machining.* Metals, vol. 10, pp. 1324-1341, 2020.

10. W. Niu, **Z. Li**, F. Ernst, R.S. Lillard: *The Passivity of Low-Temperature Carburized Austenitic Stainless Steel AISI-316L in a Simulated Boiling-Water-Reactor Environment.* Journal of Nuclear Materials, vol. 537, pp. 152197, 2020.

11. **Z. Ren**, F. Ernst: *High-Temperature Phase Transformations in AISI 316 Stainless Steel Infused With Concentrated Interstitial Carbon.* Journal of Alloys and Compounds, vol. 819, pp. 153000, 2020.

12. **J.C. Dalton**, F. Ernst, A.H. Heuer: *Low-Temperature Nitridation of 2205 Duplex Stainless Steel.* Metallurgical and Materials Transactions A, vol. 51, pp. 607-617, 2020.

13. **Z. Ren**, F. Ernst: *Electronic Impact of Concentrated Interstitial Carbon on Physical Properties of AISI-316 Austenitic Stainless Steel.* Acta Materialia, vol. 2019, pp. 96-105, 173.

14. **Z. Ren**, A.H. Heuer, F. Ernst: *Ultrahigh-Strength AISI-316 Austenitic Stainless Steel Foils Through Concentrated Interstitial Carbon.* Acta Materialia, vol. 2019, pp. 231-240, 167.

15. **Z. Ren**, S.Eppell, S. Collins, F. Ernst: *Co–Cr–Mo Alloys: Improved Wear Resistance Through Low-Temperature Gas-Phase Nitro-Carburization.* Surface & Coatings Technology, vol. 378, pp. 124943-1-9, 2019.

16. **X. Zhan**, M. Daniil, X. Liu, M.A. Willard, R. Akolkar, F. Ernst: *Effect of Tungsten Alloying on Magnetic Properties of Amorphous Ni–P.* Journal of Alloys and Compounds, vol. 2019, pp. 742-749, 786.

17. **Z. Li**, **C. Illing**, A.H. Heuer, F. Ernst Low-Temperature Carburization of AL-6XN Enabled by Provisional Passivation Metals 2018 997-1011

18. **Z. Li**, **X. Zhan**, T. Paramasivam, W. Niu, A.H. Heuer, S. Maloy, R. Lillard, F. Ernst: *Surface Engineering of IN-718 by Low-Temperature Carburization: Properties and Thermal Stability*. Surface Engineering (2018). 35 281-293

19. **S. Lingala**, D. Jayne, F. Ernst: *Effect of Lubricant Additives on the Tribological Behavior of Aluminum Alloy Against Steel*. International Journal of Materials Research (2018). 789-802

20. W. Niu, **Z. Li**, F. Ernst, R.S. Lillard: *Passivity of Surface-Engineered Alloys in a Simulated Boiling-Water-Reactor Environment*. Corrosion, vol. 74, pp. 635-653, 2018.

21. **X. Zhan**, P. Zhang, P.M. Voyles, X. Liu, R. Akolkar, F. Ernst: *Effect of Tungsten Alloying on Short-to-Medium-Range-Order Evolution and Crystallization Behavior of Near-Eutectic Amorphous Ni–P*. Acta Materialia, vol. 122, pp. 400-411, 2017.

22. **D. Wang**, H. Kahn, F. Ernst, A.H. Heuer: *"Colossal" Interstitial Supersaturation in Delta Ferrite in Stainless Steels: (II) Low-temperature Nitridation of the 17-7 PH Alloy*. Acta Materialia, vol. 124, pp. 237-246, 2017.

23. J. Wang, **Z. Li**, **D Wang**, S. Qiu, F. Ernst: *Thermal stability of low-temperature-carburized austenitic stainless steel*. Acta Materialia, vol. 128, pp. 235-240, 2017.

24. **A. Zangiabadi**, **J. Dalton**, **D. Wang**, F. Ernst, A.H. Heuer: *The Formation of Martensitic Austenite during Nitridation of Stainless Steel*. Metallurgical and Materials Transactions A, vol. 48A, pp. 8-13, 2017.

25. F. Ernst: *Background of SAM Atom-Fraction Profiles*. Materials Characterization, vol. 125, pp. 142-151, 2017.

26. **D. Wang**, H. Kahn, F. Ernst, A.H. Heuer: *"Colossal" Interstitial Supersaturation in Delta Ferrite in 17-7 PH Stainless Steels After Low-temperature Nitridation*. Microscopy and Microanalysis (22). 2016 2020-2023

27. L. Yu, Z. Vashaei, F. Ernst, A. Kumar, R. Akolkar: *Direct Electroless Deposition of Nano-scale Copper Films on Ruthenium: Role of Ethylenediamine Additive as Nucleation Promoter*. Journal of the Electrochemical Society, vol. 163, pp. D374-D378, 2015.

28. **X. Zhan** and F. Ernst: *Crystallization Micro-Mechanism of Near-Eutectic Amorphous Ni–P*. Acta Materialia, vol. 104, pp. 274-282, 2016.

29. H. Kahn, F. Ernst, A.H. Heuer: *Increasing the Coefficient of Sliding Friction of NiCr at Low Loads by Interstitial Surface Hardening*. Wear, vol. 346-347, pp. 1-5, 2016.

30. D. Wu, Y. Ge, H. Kahn, A.H. Heuer, F. Ernst: *Diffusion Profiles after Nitrocarburizing Austenitic Stainless Steel.* Surface Coatings and Technology, vol. 279, pp. 180-185, 2015.

31. W. Niu, R.S. Lillard, **Z. Li**, F. Ernst: *The Mechanism of Passivity in Austenitic Stainless Steel AISI 316L Carburized to Colossal Super Saturation.* Electrochimica Acta (176). 2015 410-419

32. **D. Wang**, H. Kahn, F. Ernst, A.H. Heuer: *NiAl Precipitation in Delta Ferrite Grains of 17-7 Precipitation-hardening Stainless Steel During Low-Temperature Interstitial Hardening.* Scripta Materialia, vol. 108, pp. 136-138, 2015.

33. **D. Wang**, C.W. Chen, **J.C. Dalton**, F. Yang, R. Sharghi-Moshtaghin, H. Kahn, F. Ernst, R.E.A. Williams, D.W. McComb and A.H. Heuer: *"Colossal" Interstitial Supersaturation of Delta Ferrite in Stainless Steels—I. Low-Temperature Carburization.* Acta Materialia, vol. 86, pp. 193-207, 2015.

34. **X. Zhan** and F. Ernst: *Crystallization of Ni-P Fabricated by Electroless Deposition: Microscopic Mechanism.* Materials Research Society Symposia Proceedings, vol. 1757, pp. mrsf14-1757-uu03-07, 2015.

35. **D. Wang**, F. Ernst, H. Kahn, A.H. Heuer: *Cellular Precipitation at a 17-7 PH Stainless Steel Interphase Interface during Low-Temperature Nitridation.* Metallurgical and Materials Transactions A (45). 2014 1-8

36. X. Gu, G.M. Michal, F. Ernst, H. Kahn, A.H. Heuer: *Numerical Simulations of Carbon and Nitrogen Composition–Depth Profiles in Nitrocarburized Austenitic Stainless Steels.* Metallurgical and Materials Transactions, vol. 45A, pp. 4268-4279, 2014.

37. **X. Gu**, G.M. Michal, F. Ernst, H. Kahn, A.H. Heuer: *Concentration Dependent Carbon Diffusivity in Austenite.* Metallurgical and Materials Transactions, vol. 45A, pp. 3790-3799, 2014.

38. Y. Ge, F. Ernst, H. Kahn, A.H. Heuer: *The Effect of Surface Finish on Low-Temperature Acetylene-Based Carburization of 316L Austenitic Stainless Steel.* Metallurgical and Materials Transactions A, vol. 45, pp. 2338-2345, 2014.

39. D. Wu, H. Kahn, G.M. Michal, F. Ernst and A.H. Heuer: *Orientation Dependence of Nitrogen Supersaturation in Austenitic Stainless Steel During Low-Temperature Gas-Phase Nitriding.* Acta Materialia, vol. 2014, pp. 339-350, 79.

40. **Z. Li**, F. Ernst, A.H. Heuer: *Improved Accident Tolerance of Austenitic Stainless Steel Cladding through Colossal Supersaturation with Interstitial Solutes.* Transactions of the American Nuclear Society, vol. 109, pp. 304-306, 2013.

41. **D. Wang**, H. Kahn, J. J. Lewandowski, F. Ernst, G. M. Michal and A. H. Heuer: *Sustained-load Crack Growth of Hydrogen-Charged Surface-Hardened 316 L Stainless Steel.* Materials Science and Engineering A, vol. 556, pp. 43-50, 2012.

42. **J-P. Hsu**, **D. Wang**, H. Kahn, F. Ernst, G.M. Michal, A.H. Heuer: *Fatigue Crack Growth of Interstitially Hardened 316L Stainless Steel in Air and 0.6 M NaCl.* International Journal of Fatigue, vol. 47, pp. 100-105, 2013.

43. Q. He, B. Shyam, **M. Nishijima**, X. Yang, B. Koel, F. Ernst, D. Ramaker, S. Mukerjee: *Highly Stable PtAuRu/C Catalyst Nanoparticles for Methanol Electro-Oxidation.* Journal of Materials Chemistry, vol. 117, pp. 1457-1467, 2013.

44. **N. Matic**, G. S. Chottiner, F. Ernst, D. Scherson: *The Platinum/Titanium-Nitride Interface: X-Ray Photoelectron Spectroscopy Studies.* Electrochemical and Solid State Letters, vol. 15, pp. 79-82, 2012.

45. M.-C. Hsieh, **Y. Ge**, G.M. Michal, F. Ernst, A.H. Heuer: *Volatility Diagrams for Cr–O and Cr–Cl and Their Application to Removing the Passive Film from the Surface of Stainless Steel.* Metallurgical and Materials Transactions, vol. 43, pp. 1187-1201, 2012.

46. **N. Matic**, G. S. Chottiner, F. Ernst, D. Scherson: *The Platinum/Titanium-Nitride Interface: X-Ray Photoelectron Spectroscopy Studies.* Transactions of the Electrochemical Society, vol. 41, pp. 865-874, 2011.

47. H. Kahn, A.H. Heuer, G.M. Michal, F. Ernst, **R. Sharghi-Moshtaghin**, **Y. Ge**, P.M. Natishan, R.J. Rayne, F.J. Martin: *Interstitial Hardening of Duplex 2205 Stainless Steel by Low-Temperature Carburization: Enhanced Mechanical and Electrochemical Performance.* Surface Engineering, vol. Surface Engineering, pp. 2012, 28. 213-219

48. A. H. Heuer, H. Kahn, F. Ernst, G. M. Michal, D. Hovis, R. J. Rayne, F. J. Martin, and P. M. Natishan: *Enhanced Corrosion Resistance of Interstitially Hardened Stainless Steel: Implications of a Critical Passive Layer Thickness for Breakdown.* Acta Materialia, vol. 60, pp. 716-725, 2011.

49. **D. Wu**, H. Kahn, G.M. Michal, F. Ernst, A.H. Heuer: *Ferromagnetism in Interstitially Hardened Austenitic Stainless Steel Induced by Low-Temperature Gas-Phase Nitriding.* Scripta Materialia, vol. 65, pp. 1089-1092, 2011.

50. F. Ernst, **D. Li**, A. H. Heuer, H. Kahn and G. M. Michal: *The Carbide M_7C_3 in Low-Temperature-Carburized Austenitic Stainless Steel.* Acta Materialia, vol. 59, pp. 2268-2276, 2011.

51. **L. O'Donnel**, G.M. Michal, F. Ernst, H. Kahn, and A.H. Heuer: *Wear Maps for Low Temperature Carburized 316L Austenitic Stainless Steel Sliding Against Alumina.* Surface Engineering, vol. 26, pp. 284-292, 2010.

52. L. Zhu, M. Teo, P.C. Wong, K.C. Wong, **I. Narita**, F. Ernst, K.A.R. Mitchell, S.A. Campbell: *Synthesis and Characterization of a $CoSe_2$ Catalyst for the Oxygen Reduction Reaction.* Applied Catalysis A, vol. 386, pp. 157-165, 2010.

53. A. Heuer, H. Kahn, F. Ernst, G. Michal, R. Rayne, F. Martin, P.M. Natishan: *Carbon-Enhanced Passivity of PH13–8 Mo: A Precipitation-Hardened Martensitic Stainless Steel.* Electrochemical and Solid-State Letters C, vol. 13, pp. 37-39, 2010.

54. **R. Sharghi-Moshtaghin**, Y. Ge, H. Kahn, X. Gu, F. Martin, P. Natishan, R.J. Rayne, G.M. Michal, F. Ernst, and A. H. Heuer: *Low-Temperature Carburization of the Ni-base Superalloy IN718: Improvements in Surface Hardness and Crevice Corrosion Resistance.* Metallurgical and Materials Transactions, vol. 41, pp. 2022-2032, 2010.

55. **K. Du**, F. Ernst, **M. Pelsozy**, J. Barthel, K. Tillmann: *Expansion of Interatomic Distances at the Surface of Platinum Catalyst Nanoparticles.* Acta Materialia, vol. 58, pp. 836-845, 2010.

56. **M. Guinel**, A. Bonakdarpour, B. Wang, P. K. Babu, F. Ernst, N. Ramaswamy, S. Mukerjee, A. Wieckowski: *Carbon-Supported, Selenium-Modified Ruthenium–Molybdenum Catalysts for Oxygen Reduction in Acidic Media.* ChemSusChem, vol. 2, pp. 658-664, 2009.

57. H. Kahn, G. M. Michal, F. Ernst, and A. H. Heuer: *Poisson Effects on X-Ray Diffraction Patterns in Low-Temperature-Carburized Austenitic Stainless Steel.* Metallurgical and Materials Transactions, vol. 40, pp. 1799-1804, 2009.

58. F. Martin, P. Natishan, E. Lemieux, T. Newbauer, R. Rayne, R. Bayles, H. Kahn, G.M. Michal, F. Ernst, and A.H. Heuer: *Enhanced Corrosion Resistance of Stainless Steel Carburized at Low Temperature.* Metallurgical and Materials Transactions, vol. 40, pp. 1805-1809, 2009.

59. G.M. Michal, X. Gu, W.D. Jennings, H. Kahn, F. Ernst, and A.H. Heuer: *Paraequilibrium Carburization of Duplex and Ferritic Stainless Steels.* Metallurgical and Materials Transactions, vol. 40, pp. 1781-1790, 2009.

60. F. Ernst, **A. Avishai**, H. Kahn, **X. Gu**, G. M. Michal, A. H. Heuer: *Enhanced Carbon Diffusion in Austenitic Stainless Steel Carburized at Low Temperature.* Metallurgical and Materials Transactions A, vol. 40, pp. 1768-1780, 2009.

61. J. M. Ziegelbauer, D. Gatewood, A. F. Gullá, M. Guinel, F. Ernst, D. E. Ramaker, S. Mukerjee: *Fundamental Investigation of Oxygen Reduction Reaction on Rhodium Sulfide-based Chalcogenides.* Journal of Physical Chemistry C, vol. 113, pp. 6955-6968, 2009.

62. **K. Du**, F. Ernst, M. Garrels, J. Payer: *Formation of Nickel Nanoparticles in Nickel–Ceramic Anodes of Solid-Oxide Fuel Cells* . International Journal of Materials Research, vol. 99, pp. 548-552, 2008.

63. N. Agarwal, H. Kahn, **A. Avishai**, G. Michal, F. Ernst, and A.H. Heuer: *Enhanced Fatigue Resistance in 316L Austenitic Stainless Steel Due to Low-Temperature Paraequilibrium Carburization.* Acta Materialia, vol. 55, pp. 5572-580, 2007.

64. F. J. Martin, E. J. Lemieux, T. M. Newbauer, R. A. Bayles, P. M. Natishan, H. Kahn, G. M. Michal, F. Ernst, A. H. Heuer: *Carburization-Induced Passivity of 316L Austenitic Stainless Steel.* Electrochemical and Solid State Letters, vol. 10, pp. C76-C78, 2007.

65. G. Singh, **Y. Yu**, F. Ernst, R. Raj: *Shear Strength and Sliding at a Metal–Ceramic (Aluminum-Spinel) Interface at Ambient and Elevated Temperature.* Acta Materialia, vol. 55, pp. 3049-57, 2007.

66. F. Ernst, **Y. Cao**, G. M. Michal, A. H. Heuer: *Carbide Precipitation in Austenitic Stainless Steel Carburized at Low-Temperature.* Acta Materialia, vol. 55, pp. 1895-1906, 2007.

67. A. H. Heuer, F. Ernst, H. Kahn, A. Avishai, G. M. Michal, D. J. Pitchure and R. E. Ricker: *Interstitial Defects in an Austenitic Stainless Steel Containing "Colossal" Carbon Concentrations: An Internal Friction Study.* Scripta Materialia, vol. 56, pp. 1067-1070, 2007.

68. **Y. Yu**, **J. Mark**, F. Ernst, T. Wagner, R. Raj: *Diffusion Reactions at Al–$MgAl_2O_4$ Interfaces – and the Effect of Applied Electric Fields.* Journal of Materials Science, vol. 41, pp. 7785-7797, 2006.

69. F. Ernst, G. M. Michal, H. Kahn, A. H. Heuer: *Paraequilibrium Surface Alloying with Interstitial Solutes: A New Concept for Improving the Performance of Medical Devices*, in: *Medical Device Materials III* , Eds. K. Venugopalan and M. Wu. ASM International (Materials Park, Ohio), pp. 27-33, 2006.

70. **K. Du**, F. Ernst: *Quantitative Assessment of Nanoparticle Size Distributions from HRTEM Images.* International Journal of Materials Research, vol. 97, pp. 928-933, 2006.

71. F. Ernst, G. M. Michal, **F. Oba**, **L. Liu**, **J. Blush**, A. H. Heuer: *Gas-Phase Surface Alloying under "Kinetic Control," A Novel Approach to Improving the Surface Properties of Titanium Alloys.* International Journal of Materials Research, vol. 97, pp. 597-606, 2006.

72. G.M. Michal, F. Ernst, H. Kahn, **Y. Cao**, **F. Oba**, **N. Agarwal**, A.H. Heuer: *Colossal Carbon Supersaturation due to Paraequilibrium Carburization: Stainless Steels with Greatly Improved Mechanical Properties.* Acta Materialia, vol. 54, pp. 1597-1606, 2006.

73. G. M. Michal, F. Ernst, A. H. Heuer: *Carbon Paraequilibrium in Austenitic Stainless Steel.* Metallurgical and Materials Transactions, vol. 37, pp. 1819-1824, 2006.

74. R. Liu, E.A. Kulp, F. Oba, E. W. Bohannan, F. Ernst, J. A. Switzer: *Epitaxial Electrodeposition of High-Aspect-Ratio Cu_2O(110) Nanostructures on InP (111).* Chemistry of Materials, vol. 17, pp. 725-729, 2005.

75. L. Liu, F. Ernst, G. M. Michal, A. H. Heuer: *Surface Hardening of Ti Alloys by Gas-Phase Nitridation: Kinetic Control of the Nitrogen Surface Activity.* Metallurgical and Materials Transactions, vol. 36, pp. 2429-2434, 2005.

76. **F. Oba**, F. Ernst, **Y. Yu**, R. Liu, H. Kothari, J. Switzer: *Epitaxial Growth of Cuprous Oxide Electrodeposited onto Semiconductor and Metal Substrates (invited "Feature Article").* Journal of the American Ceramic Society, vol. 88, pp. 253-270, 2005.

77. **J. Cowen**, **L. Lucas**, F. Ernst, P. Pirouz, A. Hepp, S. Bailey: *Liquid-Phase Deposition of Single-phase Alpha-Copper-Indium-Diselenide.* Materials Science and Engineering B, vol. 116, pp. 311-319, 2005.

78. **R. Adelung**, F. Ernst, **N. Zheng**, U. Landau: *In-situ Nanoscale Observation and Control of Electron-Beam-Induced Cluster Formation.* Journal of Vacuum Science and Technology B, vol. 22, pp. 1797-1802, 2004.

79. K. Lyutovich, M. Oehme, F. Ernst: *Growth of Ultra-Thin and Highly Relaxed SiGe Layers Under In-Situ Introduction of Point Defects.* European Physical Journal of Applied Physics, vol. 27, pp. 341, 2004.

80. F. Ernst, **Y. Cao**, G. M. Michal: *Carbides in Low-Temperature Carburized Stainless Steels.* Acta Materialia, vol. 52, pp. 1469-1477, 2004.

81. R. Liu, **F. Oba**, E. W. Bohannan, F. Ernst, J. A. Switzer: *Shape Control in Epitaxial Electrodeposition: Cu_2O Nanocubes on InP(001).* Chemistry of Materials, vol. 15, pp. 4882-4885, 2003.

82. R. Liu, **F. Oba**, E. W. Bohannan, F. Ernst, J. A. Switzer: *Epitaxial Electrodeposition of Cu_2O Films onto InP(001).* Applied Physics Letters, vol. 83, pp. 1944-1946, 2003.

83. **R. Adelung**, R. Kunz, F. Ernst, L. Kipp, M. Skibowski: *Self-Organized Structures on Flat Crystals: Nanowire Networks Formed by Metal Evaporation.* Advances in Solid State Physics, vol. 43, pp. 463–476, 2003.

84. **Y. Cao**, F. Ernst, G. M. Michal: *Colossal Carbon Supersaturation in Austenitic Stainless Steels Carburized at Low Temperature.* Acta Materialia, vol. 51, pp. 4171-4181, 2003.

85. F. Ernst, J. Switzer: *Microstructure of Cu_2O/Si Interfaces, Made by Epitaxial Electrodeposition.* Zeitschrift für Metallkunde, vol. 94, pp. 259–264, 2003.

86. J. Switzer, R. Liu, E. W. Bohannan, F. Ernst: *Epitaxial Electrodeposition of a Crystalline Metal Oxide onto Single-Crystalline Silicon.* The Journal of Physical Chemistry B, vol. 106, pp. 12369–12372, 2002.

87. O. G. Schmidt, U. Denker, S. Christiansen, F. Ernst: *Composition of Self-Assembled Ge/Si Islands in Single and Multiple Layers.* Applied Physics Letters, vol. 14, pp. 2614–2616, 2002.

88. **R. Adelung**, **W. Hartung**, F. Ernst: *Fabrication of Cu-Induced Networks of Linear Nanostructures on Different Length Scales.* Acta Materialia, vol. 50, pp. 4925–4933, 2002.

89. F. Ernst: *Assessing the Mechanical Strength of Interfacial Atomic Bonds by Quantitative HRTEM.* Philosophical Magazine A, vol. 82, pp. 2677–2693, 2002.

90. **U. Klement**, F. Ernst, B. Baretzky, J. M. Plitzko: *Diffusion of Oxygen in CdSe-Photosensor Arrays.* Materials Science and Engineering B, vol. 94, pp. 123–130, 2002.

91. R. Raj, A. Saha, L. An, D. P. H. Hasselman, F. Ernst: *Ion Exchange at a Metal/Ceramic Interface.* Acta Materialia, vol. 50, pp. 1165–1176, 2002.

92. **R. Adelung**, F. Ernst, A. Scott, M. Tabib-Azar, L. Kipp, M. Skibowski, S. Hollensteier, E. Spiecker, W. Jäger, V. Zaporojtchenko, F. Faupel: *Self-Assembled Nanowire Networks by Deposition of Copper onto Layered-Crystal Surfaces.* Advanced Materials, vol. 14, pp. 1056–1061, 2002.

93. O. G. Schmidt, U. Denker, M. Dashiell, N. Y. Jin-Phillipp, K. Eberl, R. Schreiner, H. Gräbeldinger, H. Schweizer, S. Christiansen, F. Ernst: *Laterally Aligned Ge/Si Islands: A New Concept for Faster Field-Effect Transistors.* Materials Science and Engineering B, vol. 89, pp. 101–105, 2002.

94. F. Ernst, **O. Kienzle**, O. G. Schmidt, K. Eberl, J. Zhu, K. Brunner, G. Abstreiter: *Ge–Si Nanostructures for Quantum-Effect Electronic Devices.* Inst. Phys. Conf. Ser., vol. 169, pp. 167–176, 2001.

95. **S. Poulat**, F. Ernst: *Epitaxy of Ge on Sapphire.* Materials Science and Engineering A, vol. 323, pp. 9–16, 2002.

96. F. Ernst, C. Scheu, **R. Schweinfest**, M. Rühle: *Structure, Composition, and Bonding of Grain Boundaries in Metals*, in: *Materials for the Third Millennium*, Eds. R. K. Ray *et al.*. Oxford & IBH Publishing Co. Pvt. Ltd (New Delhi), pp. 295–323, 2001.

97. G. Wöhl, E. Kasper, T. Hackbarth, H. Kibbel, M. Klose, F. Ernst: *Fully Relaxed $Si_{0.7}Ge_{0.3}$ Buffers Grown on Patterned Silicon Substrates for Hetero-CMOS Transistors.* Journal of Materials Science: Materials in Electronics, vol. 12, pp. 235–240, 2001.

98. F. Ernst, M. L. Mulvihill, **O. Kienzle**, M. Rühle: *Preferred Grain Orientation Relationships in Sintered Perovskite Ceramics.* Journal of the American Ceramic Society, vol. 84, pp. 1885–1890, 2001.

99. **Gallardo-López**, J. Martinez-Fernández, A. Domínguez-Rodríguez, F. Ernst: *Origin of Diffuse Electron Scattering in YCSZ Single Crystals with 24 to 32 mol% Yttria.* Philosophical Magazine A, vol. 81, pp. 1675–1689, 2001.

100. **R. Schweinfest**, S. Köstlmeier, F. Ernst, C. Elsässer, M. W. Finnis: *Atomistic Structure of $Al/MgAl_2O_4$ and $Ag/MgAl_2O_4$ Interfaces, Studied by Quantitative HRTEM and ab initio Band Structure Calculations.* Philosophical Magazine A, vol. 81, pp. 927–955, 2001.

101. **S. Hutt**, **O. Kienzle**, F. Ernst, M. Rühle: *Processing and Structure of Grain Boundaries in Strontium Titanate.* Zeitschrift für Metallkunde, vol. 92, pp. 105–109, 2001.

102. K. Brunner, J. Zhu, G. Abstreiter, **O. Kienzle**, F. Ernst: *Self-Ordering of Ge Islands on Si Substrates Mediated by Local Strain Fields.* Physica Status Solidi (b), vol. 224, pp. 531–535, 2001.

103. O. G. Schmidt, U. Denker, K. Eberl, **O. Kienzle**, F. Ernst, R. J. Haug: *Resonant Tunneling Diodes Based on Stacked Self-Assembled Ge/Si Islands.* Applied Physics Letters, vol. 77, pp. 4341–4343, 2001.

104. **O. Kienzle**, **S. Hutt**, F. Ernst, M. Rühle: *Grain Boundaries in Strontium Titanate*, in: *Grain Boundary Engineering in Ceramics*, Eds. T. Sakuma, L. M. Sheppard, Y. Ikuhara. The American Ceramic Society (Westerville), pp. 215–222, 2000.

105. O. G. Schmidt, U. Denker, K. Eberl, **O. Kienzle**, F. Ernst: *Effect of Overgrowth Temperature on the Photoluminescence of Ge/Si Islands.* Applied Physics Letters, vol. 77, pp. 2509–2511, 2000.

106. **W. Han**, P. Kohler-Redlich, C. Scheu, F. Ernst, M. Rühle, N. Grobert, M. Terrones, H. W. Kroto, D. R. M. Walton: *Carbon Nanotubes as Nanoreactors for Boriding Iron Nanowires.* Advanced Materials, vol. 12, pp. 1356–1359, 2000.

107. K. Brunner, J. Zhou, G. Abstreiter, **O. Kienzle**, F. Ernst: *Step Bunching and Correlated SiGe Nanostructures on Si(113).* Thin Solid Films, vol. 369, pp. 39–42, 2000.

108. **W. Han**, P. Redlich, T. Seeger, F. Ernst, M. Rühle, W. Hsu, B. Chang, N. Grobert, M. Terrones, Y. Zhu, H. W. Kroto, D. R. M. Walton: *Aligned CN_x Nanotubes Produced by the Pyrolysis of Ferrocene/C_{60} Mixtures in Ammonia Atmosphere.* Applied Physics Letters, vol. 77, pp. 1807–1809, 2000.

109. K. Eberl, O. G. Schmidt, R. Duschl, **O. Kienzle**, F. Ernst, Y. Rau: *Self-Assembling SiGe and SiGeC Nanostructures for Light Emitters and Tunneling Diodes.* Thin Solid Films, vol. 369, pp. 33–38, 2000.

110. **W. Han**, P. Redlich, F. Ernst, M. Rühle: *Growth and Microstructure of Ga_2O_3 Nanorods.* Solid State Communications, vol. 115, pp. 527–529, 2000.

111. T. Gödecke, **T. Haalboom**, F. Ernst: *Phase Equilibria of Cu–In–Se I. Stable States and Non-Equilibrium States of the In_2Se_3–Cu_2Se Subsystem.* Zeitschrift für Metallkunde, vol. 91, pp. 622–634, 2000.

112. T. Gödecke, **T. Haalboom**, F. Ernst: *Phase Equilibria of Cu–In–Se II. The Cu–Cu_2Se–In_2Se_3–In Subsystem.* Zeitschrift für Metallkunde, vol. 91, pp. 635–650, 2000.

113. T. Gödecke, **T. Haalboom**, F. Ernst: *Phase Equilibria of Cu–In–Se. III. The In_2Se_3–Se–Cu_2Se Subsystem.* Zeitschrift für Metallkunde, vol. 91, pp. 651–662, 2000.

114. **W. Han**, P. Redlich, F. Ernst, M. Rühle: *Synthesis of GaN-Carbon Composite Nanotubes and GaN Nanorods by Arc Discharge in Nitrogen Atmosphere.* Applied Physics Letters, vol. 76, pp. 652–654, 2000.

115. O. G. Schmidt, K. Eberl, **O. Kienzle**, F. Ernst, S. Christiansen, H. P. Strunk: *Reduced Critical Thickness and Photoluminescence Line Splitting in Multiple Layers of Self-Assembled Ge/Si Islands.* Materials Science and Engineering B, vol. 74, pp. 248–252, 2000.

116. K. Brunner, J. Zhu, C. Miesner, G. Abstreiter, **O. Kienzle**, F. Ernst: *Self-Organized Periodic Arrays of SiGe Wires and Ge Islands on Miscut Si Substrates.* Physica A, vol. 7, pp. 881–886, 2000.

117. K. Lyutovich, E. Kasper, F. Ernst, M. Bauer, M. Oehme: *Relaxed SiGe Buffer Layer Growth with Point Defect Injection.* Materials Science and Engineering B, vol. 71, pp. 14–19, 2000.

118. K. Eberl, O. G. Schmidt, **O. Kienzle**, F. Ernst: *Preparation and Optical Properties of Ge and C-induced Ge Dots on Si.* Materials Research Society Symposia Proceedings, vol. 571, pp. 355–362, 2000.

119. K. Eberl, O. G. Schmidt, **O. Kienzle**, F. Ernst: *Preparation and Optical Properties of Ge and C-induced Ge Dots on Si.* Thin Solid Films, vol. 373, pp. 164-169, 2000.

120. J. Stangl, T. Roch, G. Bauer, I. Kegel, T. H. Metzger, O. G. Schmidt, K. Eberl, O. Kienzle, F. Ernst: *Vertical Correlation of SiGe Islands in SiGe–Si Superlattices: X-ray Diffraction Versus Transmission Electron Microscopy.* Applied Physics Letters, vol. 77, pp. 3953-3955, 2000.

121. M. Bauer, K. Lyutovich, M. Oehme, E. Kasper, H.-J. Herzog, F. Ernst: *Relaxed SiGe Buffers with Thicknesses Below 0.1 μm.* Thin Solid Films, vol. 369, pp. 152-156, 2000.

122. K. Eberl, O. G. Schmidt, **O. Kienzle**, F. Ernst: *Self-Assembling Si/SiGe Nanostructures for Light Emitters.* Diffusion & Defect Data B: Solid State Phenomena, vol. 69–70, pp. 13–21, 1999.

123. J. Stangl, V. Holy, J. Grim, G. Bauer, J. Zhu, K. Brunner, G. Abstreiter, **O. Kienzle**, F. Ernst: *Structural Investigation of Si/SiGe Superlattices on Vicinal (113) Oriented Si.* Thin Solid Films, vol. 357, pp. 71–75, 1999.

124. **W. Han**, P. Redlich, F. Ernst, M. Rühle: *Formation of $(BN)_xC_y$ and BN Nanotubes Filled with Boron Carbide Nanowires.* Chemistry of Materials, vol. 11, pp. 3620–3623, 1999.

125. **W. Han**, P. Redlich, F. Ernst, M. Rühle: *Synthesizing Boron Nitride Nanotubes Filled with SiC Nanowires by Using Carbon Nanotubes as Templates.* Applied Physics Letters, vol. 75, pp. 1875–1877, 1999.

126. K. Eberl, O. G. Schmidt, **O. Kienzle**, F. Ernst: *Preparation and Optical Properties of Ge and C-induced Ge Dots on Si.* Materials Research Society Symposia Proceedings, vol. 570, pp. 187-195, 1999.

127. J. Zhu, K. Brunner, G. Abstreiter, **O. Kienzle**, F. Ernst, M. Rühle: *Correlated SiGe Wires Shaped by Regular Step Bunches on Miscut Si(113) Substrates.* Physical Review B, vol. 60, pp. 10935–10940, 1999.

128. F. Ernst, R. Raj, M. Rühle: *Nanomechanical Modeling of Misfit Dislocations at Heterointerfaces.* Zeitschrift für Metallkunde, vol. 90, pp. 961–977, 1999.

129. K. Lyutovich, F. Ernst, E. Kasper, M. Bauer, M. Oehme: *Interaction Between Point Defects and Dislocations in SiGe.* Solid State Phenomena, vol. 69–79, pp. 179–184, 1999.

130. O. G. Schmidt, **O. Kienzle**, Y. Hao, K. Eberl, F. Ernst: *Modified Stranski-Krastanov Growth in Stacked Layers of Self-Assembled Islands.* Applied Physics Letters, vol. 74, pp. 1272–1274, 1999.

131. R. Herberholz, U. Rau, H. W. Schock, **T. Haalboom**, T. Gödecke, F. Ernst, C. Beilharz, K. W. Benz, D. Cahen: *Phase Segregation, Cu Migration, and Junction Formation in Cu(In, Ga)Se_2*. European Physical Journal – Applied Physics , vol. 6, pp. 131–139, 1999.

132. **R. Schweinfest**, F. Ernst, T. Wagner, M. Rühle: *High-Precision Assessment of Interface Lattice Offset*. Journal of Microscopy, vol. 194, pp. 142–151, 1999.

133. **D. Baither**, F. Ernst, T. Wagner, M. Rühle, M. Bartsch, U. Messerschmidt: *Micromechanisms of Fracture in NiAl, Studied by in situ HVEM*. Intermetallics, vol. 9, pp. 479–489, 1999.

134. F. Ernst, **O. Kienzle**, M. Rühle: *Structure and Composition of Grain Boundaries in Ceramics*. Journal of the European Ceramic Society, vol. 19, pp. 665–673, 1999.

135. **O. Kienzle**, F. Ernst, M. Rühle, O. G. Schmidt, K. Eberl: *Germanium "Quantum Dots" Embedded in Silicon: Quantitative TEM Study of Self-Alignment and Coarsening*. Applied Physics Letters, vol. 74, pp. 269–271, 1999.

136. J. Zhu, K. Brunner, G. Abstreiter, **O. Kienzle**, F. Ernst: *Lateral Ordering of Self-Assembled Ge Islands*. Thin Solid Films , vol. 336, pp. 252–255, 1998.

137. O. G. Schmidt, C. Lange, K. Eberl, **O. Kienzle**, F. Ernst: *C-Induced Ge Dots: A Versatile Tool to Fabricate Ultra-Small Ge Nanostructures*. Thin Solid Films, vol. 336, pp. 248–251, 1998.

138. F. Ernst, **A. Recnik**, P. A. Langjahr, P. D. Nellist, M. Rühle: *Atomistic Structure of Misfit Dislocations in $SrZrO_3$/$SrTiO_3$ Interfaces*. Acta materialia, vol. 47, pp. 183–198, 1998.

139. J.-F. Guillemoles, **T. Haalboom**, T. Gödecke, F. Ernst, D. Cahen: *Phase and Interface Stability Issues in Chalcopyrite-Based Thin Film Solar Cells*. Materials Research Society Symposia Proceedings, vol. 485, pp. 127–132, 1998.

140. O. G. Schmidt, S. Schieker, K. Eberl, **O. Kienzle**, F. Ernst: *Carbon-Induced Germanium Dots: Kinetically Limited Islanding Process Prevents Coherent Vertical Alignment*. Applied Physics Letters, vol. 73, pp. 659–661, 1998.

141. O. G. Schmidt, C. Lange, K. Eberl, **O. Kienzle**, F. Ernst: *Influence of Pre-Grown Carbon on the Formation of Germanium Dots*. Thin Solid Films, vol. 321, pp. 70–75, 1998.

142. C. Schmidt, M. W. Finnis, F. Ernst, V. Vitek: *Theoretical and Experimental Investigations of Structures and Energies of Σ3, [112] Tilt Grain Boundaries in Copper*. Philosophical Magazine A, vol. 77, pp. 1161–1184, 1998.

143. **T. Haalboom**, T. Gödecke, F. Ernst, M. Rühle, R. Herberholz, H. W. Schock, C. Beilharz, K. W. Benz: *Phase Relations and Microstructure of Bulk Material and Thin Films of the Ternary System Cu–In–Se*. Inst. Phys. Conf. Ser., vol. 152 B, pp. 249–252, 1998.

144. P. Pirouz, F. Ernst, Y. Ikuhara: *On Epitaxy and Orientation Relationship in Bicrystals*. Diffusion and Defect Data Part B„ vol. 59–60, pp. 51–62, 1998.

145. **T. Gemming**, G. Möbus, M. Exner, F. Ernst, M. Rühle: *Towards **ab-initio** HRTEM Simulations*. Journal of Microscopy , vol. 190, pp. 89–98, 1998.

146. **O. Kienzle**, F. Ernst, G. Möbus: *Reliability of Atom Column Positions in a Ternary System Determined by Quantitative High-Resolution Transmission Electron Microscopy*. Journal of Microscopy, vol. 190, pp. 144–158, 1998.

147. **O. Kienzle**, F. Ernst: *Analysis of Interface Structures by Quantitative HRTEM*, in: *Electron Microscopy and Analysis 1997* , Ed. J. M. Rodenburg. IOP Publishing (Bristol), pp. 457–462, 1998.

148. **O. Kienzle**, M. Exner, F. Ernst: *Atomistic Structure of Σ=3, (111) Grain Boundaries in Strontium Titanate*. Physica Status Solidi (a), vol. 166, pp. 57–71, 1998.

149. G. Wöhl, C. Schöllhorn, O. G. Schmidt, K. Brunner, K. Eberl, **O. Kienzle**, F. Ernst: *Characterization of Self-Assembled Ge Islands on Si (100) by Atomic Force Microscopy and Transmission Electron Microscopy*. Thin Solid Films, vol. 321, pp. 86–91, 1998.

150. **O. Kienzle**, F. Ernst: *Analysis of Interface Structures by Quantitative HRTEM*. Journal of Computer-Assisted Microscopy, vol. 9, pp. 13–15, 1997.

151. **U. Klement**, F. Ernst: *Microstructure and Opto-Electronic Properties of CdSe Thin Films*. Materials Research Society Symposia Proceedings, vol. 472, pp. 131–136, 1997.

152. F. Ernst, **O. Kienzle**, M. Exner: *Analysis of Interface Structures by Quantitative High-Resolution Transmission Electron Microscopy*. Materials Research Society Symposia Proceedings, vol. 466, pp. 95–106, 1997.

153. K. Lyutovich, F. Ernst, F. Banhart, I. Silier, A. Gutjahr, M. Konuma: *Defect Distribution in Compositionally-Graded Epitaxial SiGe Layers on Si Substrates*. Inst. Phys. Conf. Ser., vol. 157, pp. 131–134, 1997.

154. O. G. Schmidt, C. Lange, K. Eberl, **O. Kienzle**, F. Ernst: *Formation of Carbon-Induced Germanium Dots.* Applied Physics Letters, vol. 71, pp. 2340–2342, 1997.

155. **O. Kienzle**, F. Ernst, M. Rühle: *Atomic-Resolution Transmission Electron Microscopy – Present State and Future Perspectives.* Acta Microscopica, vol. 6, pp. 36–39, 1997.

156. F. Ernst: *Interface Dislocations Forming in GeSi Layers During Epitaxy on {111} Si Substrates at High Temperatures.* Materials Science and Engineering A, vol. 233, pp. 126–138, 1997.

157. A. Mariano, C. Gatts, F. Ernst, M. Rühle: *Determining Periodicities at Grain Boundaries in HRTEM.* Acta Microscopica, vol. 6, pp. 142–145, 1997.

158. **O. Kienzle**, F. Ernst: *Effect of Shear Stress on the Atomistic Structure of a Grain Boundary in Strontium Titanate.* Journal of the American Ceramic Society, vol. 80, pp. 1639–1644, 1997.

159. **U. Klement**, D. Horst, F. Ernst: *Microstructure of Thin Film Photoconductors and its Correlation with Optical and Electronic Properties.* Materials Research Society Symposia Proceedings, vol. 452, pp. 925–930, 1997.

160. **A. Recnik**, P. A. Langjahr, F. Ernst: *Structural Characterization of $SrZrO_3/SrTiO_3$ Epitaxial Layers by HRTEM.* Journal of Computer-Assisted Microscopy, vol. 9, pp. 35–36, 1997.

161. F. Ernst, M. W. Finnis, W. Gust, A. Koch, C. Schmidt, B. Straumal: *Structure and Energy of Twin Boundaries in Copper.* Zeitschrift für Metallkunde, vol. 87, pp. 911–922, 1996.

162. G. Dehm, F. Ernst, J. Mayer, G. Möbus, H. Müllejans, F. Phillipp, C. Scheu, M. Rühle: *Transmission Electron Microscopy at the Max-Planck-Institut für Metallforschung.* Zeitschrift für Metallkunde, vol. 87, pp. 898–910, 1996.

163. P. Pirouz, Y. Ikuhara, F. Ernst: *On Epitaxy and Orientation Relationship in Physisorption*, in: *Interface Science and Materials Interconnection.* The Japan Institute of Metals (Tokyo), pp. 107–115, 1996.

164. F. Ernst, M. Rühle: *Structure of Twin Boundaries in Copper, Studied by Quantitative High-Resolution Transmission Electron Microscopy*, in: , Interface Science and Materials Interconnection. The Japan Institute of Metals (Tokyo), pp. 3–10, 1996.

165. **K. Nadarzinski**, F. Ernst: *The Atomistic Structure of a $\Sigma=3$, (111) Grain Boundary in NiAl, Studied by Quantitative High-Resolution Transmission Electron Microscopy.* Philosophical Magazine A, vol. 74, pp. 641–664, 1996.

166. G. Dehm, **K. Nadarzinski**, F. Ernst, M. Rühle: *Quantification of Irradiation Damage Generated During HRTEM with 1250 keV Electrons*. Ultramicroscopy, vol. 63, pp. 49–55, 1996.

167. C. Schmidt, M.W. Finnis, V. Vitek, F. Ernst: *Prediction of the BCC Structure in a Cu Σ3 -84°⟨211⟩ Tilt Grain Boundary and Its Confirmation by HRTEM*, in: *Intergranular and Interphase Boundaries in Materials*, Eds.: A. C. Ferro, E. P. Conde, E. A. Fortes. Transtec Publications Ltd. (Zürich), pp. 337–340, 1996.

168. **K. Nadarzinski** and F. Ernst: *Quantitative HRTEM of the Σ3(111) Grain Boundary in NiAl*, in: *Intergranular and Interphase Boundaries in Materials*, Eds. A. C. Ferro, E. P. Conde, E. A. Fortes. Transtec Publications Ltd. (Zürich), pp. 309–312, 1996.

169. C. Schmidt, F. Ernst, M. W. Finnis, V. Vitek: *Prediction and Observation of the BCC Structure in Pure Copper at a Sigma-3 Grain Boundary*. Physical Review Letters, vol. 75, pp. 2160–2163, 1995.

170. F. Ernst, **D. Hofmann**, **K. Nadarzinski**, **S. Stemmer**, S. K. Streiffer: *Quantitative High-Resolution Electron Microscopy of Interfaces*, in: *Intergranular and Interphase Boundaries in Materials*, Eds. A. C. Ferro, E. P. Conde, E. A. Fortes. Transtec Publications Ltd. (Zürich), pp. 23–34, 1996.

171. G. Möbus, F. Ernst: *Determination of Interface Structures by Quantitative Interpretation of HREM Images*, in: *Image Interpretation and Image Processing in Electron Microscopy* , Eds. J. Heydenreich, W. Neumann. Elbe (Wittenberg), pp. 61–70, 1995.

172. **S. Stemmer**, S. K. Streiffer, F. Ernst, M. Rühle, W.-Y. Hsu, R. Raj: *Domain Configurations in Ferroelectric $PbTiO_3$ Thin Films: The Influence of Substrate and Film Thickness*. Solid State Ionics, vol. 75, pp. 43–48, 1995.

173. **S. Stemmer**, S. K. Streiffer, W. Y. Hsu, F. Ernst, R. Raj, M. Rühle: *The Influence of Pt and $SrTiO_3$ Interlayers on the Microstructure of $PbTiO_3$ Thin Films Deposited by Laser Ablation on (001) MgO*. Journal of Materials Research, vol. 10, pp. 791–794, 1995.

174. **S. Stemmer**, S. K. Streiffer, F. Ernst, M. Rühle: *Atomistic Structure of 90 ° Domain Walls in $PbTiO_3$ Thin Films*. Philosophical Magazine A, vol. 71, pp. 713–724, 1995.

175. **S. Stemmer**, S. K. Streiffer, F. Ernst, M. Rühle: *Dislocations in $PbTiO_3$ Thin Films*. Physica Status Solidi (a), vol. 147, pp. 135–154, 1995.

176. **D. Hofmann**, F. Ernst, M. Rühle: *Quantitative High-Resolution Transmission Electron Microscopy of a Grain Boundary in Cu*. Transactions of Materials Researc Society Japan, vol. 16B, pp. 1331–1338, 1994.

177. **D. Hofmann**, F. Ernst: *Twin Boundaries with 9R Zone in Cu and Ag Studied by Quantitative HRTEM.* Interface Science, vol. 2, pp. 201–210, 1994.

178. Ch. Borchers, F. Ernst, F. Haider, R. Hattenhauer, G. Schmitz, P.-J. Wilbrandt, S.-Q. Xiao: *The Investigation of Decomposition Processes by HREM and Unconventional TEM.* Physica Status Solidi (a), vol. 146, pp. 71–87, 1994.

179. J. Bruley, **S. Stemmer**, F. Ernst, M. Rühle, W. Y. Hsu, R. Raj: *Nanostructure and Chemistry of a (100)MgO/(100)GaAs Interface.* Applied Physics Letters, vol. 65, pp. 564–566, 1994.

180. F. Ernst: *Dissociation of Misfit Dislocations in GeSi/{111}Si Interfaces.* Materials Research Society Symposia Proceedings, vol. 319, pp. 165–170, 1994.

181. F. Ernst, M. Rühle: *Diffusion Reactions at Metal/Ceramic and Ceramic/Ceramic Interfaces*, in: *Diffusion Reactions*, Eds. Y. Limoge, J. L. Bocquet. Transtec Publications Ltd. (Aedermannsdorf), pp. 331–342, 1994.

182. **Y. Tzou**, J. Bruley, F. Ernst, M. Rühle, R. Raj: *Nucleation of Special Orientations During Heteroepitaxial Growth of Diamond on Silicon.* Materials Research Society Symposia Proceedings, vol. 317, pp. 517–522, 1994.

183. **Y. Tzou**, J. Bruley, F. Ernst, M. Rühle, R. Raj: *TEM Study of the Structure and Chemistry of a Diamond/Silicon Interface.* Journal of Materials Research, vol. 9, pp. 1566–1572, 1994.

184. **B. Roos**, F. Ernst: *Thermal Stress-Induced Dislocations in GeSi/Si Heterostructures.* Journal of Crystal Growth, vol. 137, pp. 457–471, 1994.

185. **D. Hofmann**, F. Ernst: *Quantitative High-Resolution Transmission Electron Microscopy of the Incoherent Σ3, (211) Boundary in Cu.* Ultramicroscopy, vol. 53, pp. 205–221, 1994.

186. M. Rühle, F. Ernst: *On the Thermal Stability of Metal/Ceramic Interfaces in Composites*, in: *High Temperature Ceramic Matrix Composites*, Eds. R. Naslain, J. Lamon, D. Doumeingts. Woodhead Publishing Ltd. (Bordeaux), 1993.

187. F. Ernst: *Dissociation of Misfit Dislocation Nodes in GeSi/Si-(111)-Interfaces.* Philosophical Magazine A, vol. 68, pp. 1251–1272, 1993.

188. **B. Roos**, F. Ernst: *Thermal Stress-Induced Defects in GeSi/Si Heterostructures.* Inst. Phys. Conf. Ser., vol. 134(6), pp. 337–340, 1993.

189. F. Ernst, M. W. Finnis, **D. Hofmann**, T. Muschik, U. Schönberger, U. Wolf, M. Methfessel: *Theoretical Prediction and Direct Observation of the 9R Structure in Ag.* Physical Review Letters, vol. 69, pp. 620–623, 1992.

190. F. Ernst, P. Pirouz, E. Bauser: *Lattice Mismatch Accommodation at GeSi/(111)Si Interfaces Grown by Liquid Phase Epitaxy.* Physica Status Solidi (a), vol. 131, pp. 651–662, 1992.

191. **A. Trampert**, F. Ernst, C. P. Flynn, H. F. Fischmeister, M. Rühle: *High Resolution Transmisssion Electron Microscopy Studies of the Ag/MgO Interface.* Acta metallurgica et materialia, vol. 40, pp. S227–S236, 1992.

192. U. Wolf, F. Ernst, T. Muschik, M. W. Finnis, H. F. Fischmeister: *The Influence of Grain Boundary Inclination on the Structure and Energy of Σ3 Twin Boundaries in Copper.* Materials Research Society Symposia Proceedings, vol. 238, pp. 177–182, 1992.

193. J. Bruley, F. Ernst, K. Ljutovich: *Germanium Concentration Profiles Across Interfaces and Close to Dislocations in CVD $Si_{1-x}Ge_x$-on-Si Junctions.* Materials Research Society Symposia Proceedings, vol. 238, pp. 469–474, 1992.

194. P. O. Hansson and F. Ernst: *Two-Dimensional Growth of Strained $Ge_{0.85}Si_{0.15}$ on Si (111) by Liquid Phase Epitaxy.* Journal of Applied Physics, vol. 72, pp. 2083–2085, 1992.

195. U. Wolf, F. Ernst, T. Muschik, M. W. Finnis, H. F. Fischmeister: *The Influence of Grain Boundary Inclination on the Structure and Energy of Σ3 Grain Boundaries in Copper.* Philosophical Magazine A, vol. 66, pp. 991–1016, 1992.

196. J. X. Chen, F. Ernst, P. O. Hansson, E. Bauser: *Liquid Phase Epitaxy of GeSi on {111}-Si-Substrates: Lattice Defect Structure and Electronic Properties.* Journal of Crystal Growth, vol. 118, pp. 452–460, 1992.

197. K. Weronek, J. Weber, A. Höpner, F. Ernst, R. Buchner, M. Stefaniak, H. Alexander: *Correlation of the D-Band Photoluminescence with Spatial Properties of Dislocations in Silicon.* Materials Science Forum, vol. 83–87, pp. 1315–1320, 1992.

198. F. Ernst, P. Pirouz, A. H. Heuer: *HRTEM Study of a Cu/Al_2O_3 Interface.* Philosophical Magazine A, vol. 63, pp. 259–277, 1991.

199. P. Pirouz, J. W. Yang, J. A. Powell, F. Ernst: *The Role of Dislocations in the 3C↔6H SiC Polytypic Transformation.* Inst. Phys. Conf. Ser. No., vol. 117(3), pp. 149–154, 1991.

200. J. Mayer, W. Mader, D. Knaus, F. Ernst, M. Rühle: *Structures of Nb/Al_2O_3 Interfaces Produced by Different Experimental Routes.* Materials Research Society Symposia Proceedings, vol. 183, pp. 55–60, 1990.

201. F. Ernst: *HRTEM of the Cu/MnO Interface in an Internally Oxidized CuMn Alloy*. Materials Research Society Symposia Proceedings, vol. 183, pp. 49–55, 1990.

202. P. Pirouz, F. Ernst: *High Resolution Electron Microscopy: Possibilities and Limitations*, in: *Metal-Ceramic Interfaces*, Eds. M. Rühle *et al.*. Pergamon Press (New York), pp. 199–221, 1990.

203. F. Ernst, P. Pirouz: *The Formation Mechanism of Planar Defects in Compound Semiconductors Grown Epitaxially on {100} Silicon Substrates*. Journal of Materials Research, vol. 4, pp. 834–842, 1989.

204. F. Ernst, P. Pirouz, A. H. Heuer: *High Resolution Electron Microscopy of an Alumina/Copper Interface*. Materials Research Society Symposia Proceedings, vol. 138, pp. 557–562, 1989.

205. U. Klement, F. Ernst, P.-J. Wilbrandt: *Recrystallization Experiments in Tensile-Deformed ⟨100⟩- and ⟨111⟩-Oriented Copper Single Crystals*, in: *Textures and Microstructures*, Gordon and Breach. UK (1988), pp. 383–400, 8–9.

206. P. Pirouz, J. Yang, F. Ernst, H.-J. Möller: *Hexagonal Silicon: A New HREM Study*. Materials Research Society Symposia Proceedings, vol. 139, pp. 199–204, 1988.

207. T. T. Cheng, P. Pirouz, F. Ernst: *Inversion Domain Boundary Dislocations in Heteroepitaxial Films*. Materials Research Society Symposia Proceedings, vol. 144, pp. 189–194, 1988.

208. P. Pirouz, F. Ernst, T. T. Cheng: *Heteroepitaxy on (001) Silicon: Growth Mechanisms and Defect Formation*. Materials Research Society Symposia Proceedings, vol. 116, pp. 57–70, 1988.

209. P. Pirouz, S. Farmer, F. Ernst, J. Chung: *Transmission Electron Microscopy of Composites*, in: *Interfaces in Polymer, Ceramic, and Metal Matrix Composites*, Ed. Hatsuo Ishida. Elsevier, pp. 141–157, 1988.

210. F. Ernst, P. Pirouz: *Formation of Planar Defects in the Epitaxial Growth of GaP on Si Substrate by MOCVD*. Journal of Applied Physics, vol. 64, pp. 4526–4530, 1988.

211. F. Ernst: *Correction*. Scripta Metallurgica, vol. 22, pp. 305, 1988.

212. F. Ernst, P. Haasen: *The Decomposition Kinetics of Al–1 at% Ag at 413 K Studied by HREM*. Physica Status Solidi (a), vol. 104, pp. 403–416, 1987.

213. F. Ernst, S.Q. Xiao, F. Haider, P.-J. Wilbrandt: *High Resolution Electron Microscopy of Small Precipitates*. Scripta metallurgica, vol. 21, pp. 1189–1194, 1987.

214. F. Ernst, S.Q. Xiao, F. Haider, P.-J. Wilbrandt: *Investigation of the Decomposition of Al–1 at% Ag by HREM of GP-Zones*. European Journal of Cell Biology, vol. 19, pp. 17, 1987.

215. Measurement of Tridentate Astigmatism of a Conventional HRTEM and a high-vacuum HRTEM: *R. Schweinfest, T. Gemming, P. Kopold, F. Ernst, M. Rühle.* European Journal of Cell Biology, vol. 74, pp. 78-78, 1997.

216. F. Ernst, P.-J. Wilbrandt: *Growth Selection Experiments in Tensile-Deformed ⟨100⟩-Oriented Copper Single Crystals*, in: *ICOTOM 7* , Eds. C. M. Brakman, P. Jongenburger, E. J. Mittemeijer. Netherland Society for Materials Science (Zwijndrecht, The Netherlands), pp. 233–238, 1984.

Refereed Review Articles and Book Chapters

1. S. R. Collins, P. C. Williams, S. V. Marx, A. Heuer, F. Ernst, H. Kahn: *Low-Temperature Carburization of Austenitic Stainless Steels*, in: *ASM Handbook: Vol. 4D, Heat Treating of Irons and Steels*, Eds. J. Dossett, G. Totten. ASM International (Materials Park, Ohio, USA), pp. 451-460, 2014.

2. A. H. Heuer, F. Ernst, S. Collins, P. M. Nathishan, H. Kahn: *Corrosion Resistant Alloys: Case Hardening*, in: *Encyclopedia of Iron, Steel, and Their Alloys*, Eds. Rafael Colas, George E. Totten. CRC Press (London, UK), pp. 0-0, 2016.

3. F. Ernst, W. Sigle: *Microcharacterisation of Materials*, in: *High-Resolution Imaging and Spectrometry of Materials*, Eds. F. Ernst, M. Rühle. Springer Series in Materials Science, Springer Verlag (New York), pp. 1-8, 2002.

4. F. Ernst, M. Rühle: *Present Developments in High-Resolution Transmission Electron Microscopy.* Current Opinion in Solid State and Materials Science, vol. 2, pp. 469–476, 1997.

5. F. Ernst: *Metal-Oxide Interfaces.* Materials Science and Engineering R, vol. 147, pp. 97–156, 1995.

6. A. Berger, P.-J. Wilbrandt, F. Ernst, U. Klement, P. Haasen: *On the Generation of New Orientations During Recrystallization: Recent Results on the Recrystallization of Tensile-Deformed FCC Single Crystals.* Progress in Materials Science, vol. 32, pp. 2–95, 1988.

Refereed Online Publications

1. F. Ernst: *Laue Diffractograms.* Wolfram Research, http://goo.gl/n8UKdK, 2014.

2. F. Ernst: *Pole Figures in Crystallography*. Wolfram Research, http://goo.gl/grspzz, 2014.

Conference Proceedings[§]

1. **K. Du**, F. Ernst, M. Pelsozy, K. Tillmann, J. Barthel: *Strain analysis on platinum nanoparticles with aberration-corrected transmission electron microscopy,* in: *17th International Microscopy Congress (IMC17)*, Rio de Janeiro, Brazil, September 19 to 24, 2010, pp. CD.

2. **A. Avishai**, D. Isheim, D. N. Seidman, F. Ernst, G. M. Michal, A.H. Heuer: *Local-Electrode Atom Probe (LEAP™) Tomographic Microanalysis of Low-Temperature Gas-Carburized Austenitic Stainless Steel.* Microscopy & Microanalysis, vol. 13 (Suppl 2), pp. 1094-1095, 2007.

3. **J. Gentil**, F. Ernst, G. Michal, A. Heuer: *The Effect of Colossal Carbon Supersaturation on Stainless Steels of the Type PH13-8Mo and AL6XN*, in: *Recent Developments in Steel Processing*, Materials Science & Technology 2006. Editor(s): Matthew Merwin, Brian Nelson (Warrendale, PA), pp. CD, 2006.

4. Michal, G. M. and Ernst F. and **Cao Y.**: *Surface Hardening of Austenitic Steels by Low Temperature Colossal Supersaturation*, in: *Proceedings of Materials Science & Technology* , Volume II. AIST - TMS (Warrendale, PA), pp. 347 - 353, 2004.

5. **K. Du**, F. Ernst, Y. Ikuhara, P. Pirouz: *Preferred Intercrystalline Orientation Relationships and the Near Coincidence of Reciprocal Lattice Points,* in: *Proceedings of Microscopy & Microanalysis*, Savannah, Georgia, USA, August 1-5, 2004.

6. **F. Oba**, R. Liu, **Y. Yu**, E. W. Bohannan, F. Ernst, J. A. Switzer: *TEM Studies of Cu_2O–Si and Cu_2O–InP Interfaces Made by Epitaxial Electrodeposition,* in: *Proceedings of Microscopy & Microanalysis*, Savannah, Georgia, USA, August 1-5, 2004.

7. **J. Cowen**, **L. Lucas**, F. Ernst, P. Pirouz, A. Hepp, S. Bailey: *Liquid-Phase Deposition of α-Cu–In–Se Thin Films,* in: *Proceedings of Space Photovoltaic Research and Technology Conference (SPRAT)*, Ohio Aerospace Institute, September 16-18, 2003.

8. K. Lyutovich, M. Oehme, F. Ernst: *Growth of Ultra-Thin and Highly Relaxed SiGe Layers Under In-Situ Introduction of Point Defects,* in: *Proceedings of 10th International Conference on Defects: Recognition, Imaging and Physics in Semiconductors*, September 29 - October 02, 2003, Batz-sur-Mer, Loire Atlantique, France.

[§]Author names in **boldface** indicate students or post-doctoral researchers I advised.

9. M. Tabib-Azar, A. Scott, **R. Adelung**, F. Ernst: *Nano Metallic Solid Electrolyte Switches and Cu Nanowire Interconnects for Molecular Electronics,* in: *Procceedings of 2001 IEEE International Electronic Devices Meeting*, December 3-5, 2001, Washington (DC) USA.

10. **R. Schweinfest**, F. Ernst: *Progress in Structure Analysis of Crystal Defects by Quantitative HRTEM,* in: *Proceedings of the 12th European Congress on Electron Microscopy*, July 9-14, 2000, Brno, Czech Republic, pp. 111–114.

11. G. Wöhl, E. Kasper, T. Hackbarth, H. Kibbel, M. Klose, F. Ernst: *Fully Relaxed $Si_{0.7}Ge_{0.3}$ Buffers Grown on Patterned Silicon Substrates for Hetero-CMOS Transistors,* in: *Proceedings of 3rd International Conference on Materials for Microelectronics*, October 16-17, 2000, Dublin, Irland.

12. **O. Kienzle**, **S. Hutt**, F. Ernst, M. Rühle: *Grain Boundaries in Strontium Titanate,* in: *Proceedings of 10th JFCC International Workshop on Fine Ceramics 2000*, March 15-17, 2000, Nagoya, Japan.

13. K. Lyutovich, F. Ernst, E. Kasper, M. Bauer, M. Oehme: *Interaction Between Point Defects and Dislocations in SiGe,* in: *Proceedings of GADEST '99*, September 25-28, 1999, Höör, Sweden.

14. F. Ernst, C. Scheu, **R. Schweinfest**, M. Rühle: *Structure, Composition, and Bonding of Grain Boundaries in Metals,* in: *Proceedings of 37th Metallurgists' Day and 53rd Annual Technical Meeting of the Indian Institute of Metals*, November 14-16, 1999, Kanpur, India.

15. M. Bauer, K. Lyutovich, M. Oehme, E. Kasper, H.-J. Herzog, F. Ernst: *Relaxed SiGe Buffers with Thicknesses Below 0.1 Micron,* in: *Proceedings of the International Joint Conference on Silicon Epitaxy and Heterostructures*, September 13-17, 1999, Miyagi, Japan.

16. Brunner, J. Zhu, G. Abstreiter, **O. Kienzle**, F. Ernst: *Regular Step Bunching and Ordering of Ge Islands on Vicinal Si Surfaces,* in: *Proceedings of the 24th International Conference on the Physics of Semiconductors*, August 2-7, 1998, Jerusalem, Israel.

17. **O. Kienzle**, F. Ernst, G. Möbus: *Error Analysis in HRTEM Structure Retrieval by Multiple Units Analysis*, in: *Electron Microscopy 1998, vol. III* , Eds. H. A. C. Benavides, M. J. Yacaman. Mexican Society of Microscopy (Cancun), pp. 627–628, 1998.

18. **O. Kienzle**, F. Ernst: *Self-Assembled Ge–Si Nanostructures for Quantum-Effect Electronic Devices*, in: *Electron Microscopy 1998, vol. III*, Eds. H. A. C. Benavides, M. J. Yacaman. Mexican Society of Microscopy (Cancun), pp. 365–366, 1998.

19. **R. Schweinfest**, F. Ernst, T. Wagner, M. Rühle: *Quantitative HRTEM at the Al/MgAl$_2$O$_4$ Interface: Translation State and Its Reliability*, in: *Electron Microscopy 1998, vol I*, Eds. H. A. C. Benavides, M. J. Yacaman. Mexican Society of Microscopy (Cancun), pp. 635–636, 1998..

20. **R. Schweinfest**, T. Wagner, F. Ernst, M. Rühle: *Atomistic Structure of Al/MgAl$_2$O$_4$ Interfaces*, in: *Microscopy and Microanalysis 1997*, Eds. G. W. Bailey, J. M. Corbett, R. V. W. Dimlich, J. R. Michael, N. J. Zaluzec. San Francisco Press Inc. (San Francisco), pp. 326–327, 1997.

21. R. Herberholz, H. W. Schock, U. Rau, J. H. Werner, **T. Haalboom**, F. Ernst, C. Beilharz, K. W. Benz, D. Cahen: *New Aspects of Phase Segregation and Junction Formation in CuInSe$_2$,* in: *Proceedings of 26th IEEE Photovoltaic Specialists Conference*, September 29-October 3, 1997, Anaheim, USA, pp. 323–326.

22. **D. Baither**, U. Messerschmidt, B. Baufeld, M. Bartsch, F. Ernst: *In-situ Straining Experiments in HVEM to Study Deformation of Zirconia and NiAl,* in: *Proceedings of the 13th National Electron Microscopy Congress with International Participation*, September 1-4, 1997, Ankara, Turkey, pp. 517–530.

23. O. Kienzle, M. Exner, F. Ernst: *Analysis of Interface Structures by Quantitative High-Resolution Transmission Electron Microscopy.* Materials Research Society Symposium Proceedings, vol. 466, pp. 95–106, 1997.

24. **K. Nadarzinski**, **O. Kienzle**, F. Ernst: *Analysis of Interface Structures by Quantitative High-Resolution Transmission Electron Microscopy*, in: *Microscopy and Microanalysis 1996*, Eds. G. W. Bailey, J. M. Corbett, R. V. W. Dimlich, J. R. Michael, N. J. Zaluzec. San Francisco Press Inc. (San Francisco), pp. 326–327, 1997.

25. **O. Kienzle**, F. Ernst: *TEM analysis of GeSi quantum point structures.* European Journal of Cell Biology, vol. 74, pp. 52-52, 1997.

26. **T. Gemming**, F. Ernst, M. Rühle: *Atomistische Struktur von Korngrenzen in* α*-Al$_2$O$_3$*, in: *Werkstoffwoche '96, Symposium 7, Materialwissenschaftliche Grundlagen*, Eds. F. Aldinger, H. Mughrabi. DGM-Informationsgesellschaft mbH (Frankfurt), pp. 865–868, 1997.

27. **R. Schweinfest**, F. Ernst, T. Wagner: *Struktur von Al/MgAl$_2$O$_4$-Grenzflächen*, in: *Werkstoffwoche '96, Symposium 7, Materialwissenschaftliche Grundlagen*, Eds. F. Aldinger, H. Mughrabi. DGM-Informationsgesellschaft mbH (Frankfurt), pp. 849–852, 1997.

28. **O. Kienzle**, F. Ernst, M. Rühle: *Struktur der* Σ*3 (111) Kippkorngrenze in Strontiumtitanat*, in: *Werkstoffwoche '96, Symposium 7, Materialwissenschaftliche Grundlagen*, Eds. F. Aldinger, H. Mughrabi. DGM-Informationsgesellschaft mbH (Frankfurt), pp. 813–818, 1997.

29. F. Phillipp, F. Ernst: *High-Voltage Atomic Resolution Microscopy with the Stuttgart ARM 1250*, in: *Proc. 11th European Congress on Electron Microscopy (EUREM 96)*, Ed. U. C. D. Belfield, Dublin 1996, CD-ROM.

30. **O. Kienzle**, F. Ernst, M. Rühle: *Quantitative HRTEM of the Σ3 (111) Grain Boundary in Strontium Titanate*, in: *Proc. 11th European Congress on Electron Microscopy (EUREM 96)*, Ed. U. C. D. Belfield, Dublin, 1996, CD-ROM.

31. **R. Schweinfest**, F. Ernst, G. Möbus, T. Wagner: *Structure of the Al/$MgAl_2O_4$ Interface Determined by Quantitative HRTEM*, in: *Proc. 11th European Congress on Electron Microscopy (EUREM 96)*, Ed. U. C. D. Belfield, Dublin, 1996, CD-ROM.

32. **A. Recnik**, M. Ceh, F. Ernst: *Quantitative HRTEM Analysis of Antiphase Boundaries in SrO-Doped Calcium Titanate*, in: *Electron Microscopy 1994, vol. 2A*, Eds. B. Jouffrey and C. Coliex. Les Editions de Physique (Les Ulis), pp. 405–406, 1994.

33. F. Ernst, **D. Hofmann**: *Quantitative HRTEM of Grain Boundaries*, in: *Electron Microscopy 1994, vol. 2A*, Eds. B. Jouffrey and C. Coliex. Les Editions de Physique (Les Ulis), pp. 121–122, 1994.

34. S. K. Streiffer, S. Stemmer, W. Y. Hsu, F. Ernst, R. Raj, M. Rühle: *The Structure And Distribution of 90 Degrees Domains in $PbTiO_3$ Ferroelectric Thin Films*, in: *Fifty-second Annual Meeting*, Microscopy Society of America and Twenty-Ninth Annual Meeting. Microbeam Analysis Society (Eds. G. W. Bailey and A. J. Garratt-Reed), pp. 564–565, 1994..

35. **D. Hofmann**, G. Möbus, F. Ernst: *Quantitative HRTEM of Incoherent Twin Boundaries in Copper*, in: *Electron Microscopy 92, vol. 1*, Eds. A. López-Galindo *et al.*. Universidad de Granada (Granada), pp. 513–514, 1992.

36. G. Möbus, M. Hohenstein, F. Phillipp, F. Ernst, G. Necker, M. Rühle: *A Procedure to Measure the Chromatic Contrast Transfer Envelope of High-Resolution Electron Microscopes*, in: *Electron Microscopy 92, vol. 1*, Eds. A. López-Galindo *et al.*.. Universidad de Granada (Granada), pp. 531–532., 1992.

37. W. Mader, F. Ernst, G. Möbus: *HRTEM of Interfaces in Crystalline Solids*, in: *Electron Microscopy 92, vol. 1*, Eds. A. López-Galindo *et al.*.. Universidad de Granada (Granada), pp. 477–481, 1992.

38. S. Wen, F. Ernst, H. Jaeger,W. Mader P. Majewski, M. Marie, G. Petzow, M. Rühle: *HRTEM observation of the phase transition from $Bi_2Sr_2CaCu_2O_8$ to $_2Sr_2Ca_2Cu_3O_{10}$*, in: ,, Proceedings, annual meeting, Electron Microscopy Society of America. Cambridge University Press (CUP) (1990), pp.

, 94-95.

Publications as Editor

1. F. Ernst, M. Rühle: *High-Resolution Imaging and Spectrometry of Materials.* Springer Series in Materials Science, Springer Verlag (New York), 2002.
2. F. Ernst, J. Mayer, M. Rühle: Journal of Microscopy vol. 194, 1999.
3. W. Mader, F. Ernst: Physica Status Solidi (a) vol. 166, 1998.

Other Publications

Frank Ernst, Laura S. Bruckman, Yinghui Wu, Roger H. French: *Materials Data Science for Stockpile Stewardship (MDS3) Center of Excellence.* Stewardship Science, vol. 2023, pp.
, in press.

Patents

1. Frank Ernst, Todd Johns, Ronald Edmonson, Cyprian Adair William Illing, Peter C. Williams, Christina Semkow: *Activation of Self-Passivating Metals Using Reagent Coatings for Low-Temperature Nitrocarburization in the Presence of Oxygen-Containing Gas.* Patent Application, filed April 28, 2022. Publication Number: 20220364216..
2. **Z. Ren**, F. Ernst: *Metal Carburization Process To Produce a Uniform, Concentrated Solid Solution of Interstitial Carbon Workpiece and Articles Made From Same.* Patent, US 11,066,735 B2.
3. P. Williams, S. Marx, F. Ernst, **A. Agaponova**: *Enhanced Activation of Self-Passivating Metals.* Patent, US 2020/10,604,832.
4. **Zhe Ren**, Frank Ernst: *Metal Carburization Process to Produce a Uniform Concentrated Solid Solution of Interstitial Carbon Workpiece and Articles Made From Same.* US Patent Application, 56/654,367, filed on October 16, 2019..
5. **Zhen Li**, Frank Ernst, Harold Kahn, Arthur Heuer: *Alloy Surface Activation by Immersion in Aqueous Acid Solution.* Patent, US 10,450,658.
6. P. Williams, S. Marx, F. Ernst, **A. Agaponova**: *Enhanced Activation of Self-Passivating Metals.* Patent, US 2019/10,214,805.
7. **Z. Li**, F. Ernst, X. Zhan, A.H. Heuer: *Inducing Ferromagne/sm in Ni-Base Superalloys.* Invention Disclosure, 2017.
8. **A. Agaponova**, P. Williams, S. Marx, F. Ernst: *Enhanced Activation of Self-Passivating Metals.* Patent Application, US 2016/0032442A1.

9. **Z. Li**, F. Ernst: *Alloy Surface Activation by Immersion in Aqueous Acid Solution.* PCT Application, 2015.

10. T. Gödecke and F. Ernst: *Preparation of Compounds Based on Phase Equilibria of Cu–In–Se.* Japan Patent JP 5079963 B2, filed November 21, 2012.

11. **Chi-Hong Liao**, Uziel Landau, Frank Ernst: *A Non-Cyanide Alkaline Electroplating Bath Formulation for Copper Electrodeposition on Metals.* Provisional patent application, 2011.

12. T. Gödecke and F. Ernst: *Preparation of Compounds Based on Phase Equilibria of Cu–In–Se.* US Patent application 10311716, filed February 7, 2003.

13. F. Ernst, G. M. Michal, A. H. Heuer: *Surface Hardening of Ti Alloys by Gas-Phase Nitridation: Kinetic Control of the Nitrogen Activity.* US Patent 2006/0048862 A1.

14. R. W. Bruce, A. H. Heuer, G. M. Michal, F. Ernst: *Titanium Treatment to Minimize Fretting.* US Patent 2006/0289088 A1.

15. T. Gödecke and F. Ernst: *Preparation of Compounds Based on Phase Equilibria of Cu–In–Se.* Patent No. 01947428.7-2119-EP0107461, issued June 29, 2001.

Invited Presentations

1. *Alloy Surface Engineering by Infusion of Carbon or Nitrogen.* Colloquium, University of Alabama. November 09, 2023.

2. *Alloy Surface Engineering by Infusion of Interstitial Atoms.* Colloquium, Rice University. November 10, 2022.

3. *A New Perspective on Alloy Surface Engineering by Infusing High Concentrations of Interstitial Atoms.* Colloquium, University of Central Florida. March 12, 2021.

4. *Progress in Surface Engineering by Concentrated Interstitial Solute.* Colloquium, University of California at Davis. October 31, 2017.

5. *Materials Design by Surface Engineering.* Erich Bloch Symposium, University of Buffalo. June 1, 2017.

6. *Surface Engineering by Concentrated Interstitial Solute.* Colloquium, University of Maryland. May 5, 2017.

7. *Basic and Exploratory Research in the Department of Materials Science and Engineering at CWRU.* Army Research Laboratory, Aberdeen, MD, USA. February 14, 2017.

8. *The Department of Materials Science and Engineering*. Colloquium, Chemistry Department, College of Arts and Sciences, CWRU. October 28, 2016.

9. *Metals and Metalworking: DMSE as R&D Partner*. German Metal Working Delegation Meeting, Cleveland, OH, USA. July 12, 2016.

10. *Interdisciplinary Research*. Atotech Cross-Functional Meeting, Neu-Hardenberg, Germany. April 13, 2016.

11. *The Need to See Small: Structure–Property Relationships*. Atotech Cross-Functional Meeting, Neu-Hardenberg, Germany. April 12, 2016.

12. *CWRU and SCSAM*. Atotech Review Meeting, Berlin, Germany. September 28, 2015.

13. *R&D Interests at CWRU*. Atotech Review Meeting, Berlin, Germany. September 28, 2015.

14. *Computational Modeling of Concentration-Dependent Interstitial Diffusion*. Third Symposium on Surface Hardening of Corrosion-Resistant Alloys: Modeling and Structure, held at MS&T-2014, Pittsburg, PA. October 15, 2014.

15. *Low-Temperature Infusion of Interstitial Solutes: A New Concept for Surface Hardening of Steel*. International Symposium on New Trends in Steel Making and Steel Design, Institut für Neue Materialien, Saarbrücken, Germany. November 11, 2013.

16. *Alloy Surface Engineering by Gas-Phase Infusion of Interstitial Solutes*. Colloquium at the University of Birmingham, Birmingham, UK. August 02, 2013.

17. *Alloy Surface Engineering by Colossal Supersaturation with Interstitial Solutes*. Colloquium at the Christian-Albrechts-University, Department of Materials Science, Kiel, Germany. December 17, 2012.

18. *Surface Engineering of Alloys by Colossal Supersaturation with Interstitials*. Colloquium at the Institute of Engineering Innovation School of Engineering, The University of Tokyo, Tokyo, Japan. February 24, 2012.

19. *Colossal Supersaturation with Interstitial Solutes: Physical Principles and Potential for Alloy Surface Engineering*. WPI-AIMR Annual Workshop, Tohoku University, Sendai, Japan. February 2 to 23, 2012.

20. *Colossal Supersaturation: A Powerful Concept for Surface Engineering of Alloys*. ASM Young Member Night, University Club, Pittsburg, USA. February 16, 2012.

21. *Alloy Surface Hardening by Inward Diffusion of Interstitial Solutes*. Spring Seminar Series, Case School of Engineering, Cleveland, Ohio. March 25, 2011.

22. *Colossal Supersaturation with Interstitial Solutes: Perspectives for Surface Engineering of Medical Devices*. Materials Science & Technology 2010, Houston, Texas, USA. October 17 to 21, 2010.

23. *Thermodynamics of Low-Temperature Surface Carburizing*. 18th Congress of the IFHTSE, Rio de Janairo, Brazil. July 26-30, 2010.

24. *Alloy Surface Engineering by Inward Diffusion of Interstitial Solutes*. Kyoto University, Kyoto, Japan. June 27 to July 5, 2010.

25. *Carbide–Metal Interfaces in Low-Temperature-Carburized Structural Alloys*. XIII International Conference on Intergranular and Interface Boundaries (iib2010), Mie, Japan. June 27 to July 2, 2010.

26. *Strain State of Pt Catalyst Nanoparticles*. The 2nd International Symposium on Advanced Microscopy and Theoretical Calculations (AMTC2), Nagoya, Japan. June 24-26, 2010.

27. *Alloy Surface Engineering by Inward Diffusion of Interstitial Solutes*. The Ohio State University, Columbus, Ohio. May 10, 2010.

28. *Applications Transmission Electron Microscopy in Materials Research*. CUNY - The City University of New York, New York, USA. April 29, 2010.

29. *Perspektiven höchstauflösender Mikrocharakterisierung in der Festkörper- und Materialforschung (Perspectives of High-Resolution Microcharacterization in Solid-State and Materials Research.*. Institut für Festkörperforschung, Forschungszentrum Jülich, Germany. November 23, 2009.

30. *Surface Engineering of Medical Devices by Low-Temperature Carburization*. ASM Conference on Opportunities for Next Generation Implants. Cleveland. Ohio USA August 5-7, 2008

31. *Impact of Low-Temperature Carburization on the Microstructure of Structural Alloys*. 35th International Conference On Metallurgical Coatings And Thin Films (ICMCTF) 2008. San Diego, USA. April 28 to May 2, 2008

32. *Colossal Supersaturation with Interstitial Atoms: A New Concept for Surface Engineering of Structural Alloys*. Colloquium at the University of Toledo. Toledo, USA. March 20, 2008

33. *Impact of Applied Electric Fields on Diffusion Reactions at Metal–Oxide Interfaces*. Materials Science & Technology 2006 Conference and Exhibition, Cincinnati, Ohio, USA. October 15-19, 2006.

34. *The Carbide–Austenite Interface in Austenitic Stainless Steels with a Colossal Supersaturation of Carbon*. Materials Science & Technology 2006 Conference and Exhibition, Cincinnati, Ohio, USA. October 15-19, 2006.

35. *Diffusion Reactions at Metal–Oxide Interfaces: The Effect of an Applied Electric Field*. 2006 TMS Annual Meeting & Exhibition, San Antonio, Texas, USA. March 12-16, 2006.

36. *The Microscopy and Microanalysis Facility at Case: Enabling Tools for Nanotechnology*. Functional Nanomaterials. Cleveland, Ohio. USA November 17, 2004

37. *TEM Studies of Cu_2O–Si and Cu_2O–InP Interfaces Made by Epitaxial Electrodeposition*. Microscopy & Microanalysis, Savannah, Georgia, USA. August 1-5, 2004.

38. *Nanoscale Characterization of Epitaxial Cu_2O Films Made by Electrodeposition*. Electronic Materials Conference (TMS), Notre Dame. June 23-25, 2004.

39. *Colossal Supersaturation: A New Concept for Surface Engineering*. The International Conference On Metallurgical Coatings And Thin Films ICMCTF, San Diego, California, USA. April 19-23, 2004.

40. *Colossal Supersaturation with Interstitial Atoms: A New Concept for Advanced Structural Alloys*. Colloquium at the Max-Planck-Institut für Eisenforschung, Düsseldorf, Germany. March 23, 2004.

41. *Microstructure and Phases of Cu–In–Se*. National CIS R & D Team Meeting, Orlando, Florida Solar Energy Center, Cocoa. November 13-14, 2003.

42. *Surface Hardening of Austenitic Stainless Steels by Colossal Supersaturation with Interstitial Solutes*. Structure–Property Relationships in High-Performance Ferrous-Based Systems Possessing Composite-Like Structures, Symposium at Materials Science & Technology 2003, Chicago. November 9-1, 2003.

43. *Alloy Surface Hardening by Colossal Supersaturation with Interstitial Solutes*. Colloquium of the Materials Science and Engineering Program, Rochester Institute of Technology. October 28, 2003.

44. *Colossal Supersaturation –A New Concept for Surface Engineering*. Colloquium of the Department of Materials Science and Engineering. The Ohio State University, Columbus. October 22, 2003.

45. *Liquid-Phase Deposition of α-Cu–In–Se Thin Films*. Space Photovoltaic Research and Technology Conference (SPRAT), Ohio Aerospace Institute. September 16-18, 2003.

46. *Characterization of Materials at the Nanometer Scale: Key to Nanotechnology*. NASA Tutorial on Nanotechnology, NASA Glenn Research Center, Cleveland, Ohio. August 23, 2003.

47. *Assessing Mechanical Properties of Interatomic Bonds Across Heterointerfaces*. Frontiers of Electron Microscopy in Materials Science (FEMMS-2003), Claremont, California. October 5-10, 2003.

48. *Structure of Cu_2O/Si Interfaces, Made by Epitaxial Electrodeposition*. Structure at the Limit of Resolution, Symposium at the 105th Annual Meeting of the American Ceramic Society, Nashville. April 27-30, 2003.

49. *Atomistic Structure and Composition of Grain Boundaries and Heterointerfaces*. Colloquium of the Materials Science and Engineering Department, University of Pittsburgh. March 20, 2003.

50. *Quantitative HRTEM and Modeling of Interfaces*. First Kyoto Workshop on Computational Materials Science, Kyoto (Japan). March 01-04, 2003..

51. *Advances in Assessing the Atomistic Structure of Grain Boundaries and Heterointerfaces*. Colloquium of the Engineering Research Institute, The University of Tokyo, Japan. February 28, 2003.

52. *Atomic Resolution and Bonding of Interfaces*. Colloquium of the Materials Engineering Department, University of Colorado in Boulder. January 28, 2003.

53. *High-Resolution Electron Microscopy*. Workshop on Diagnostics, Imaging and Spectroscopy, Cleveland, Ohio (USA). April 26, 2002.

54. *Assessing Interface Structures and Interfacial Atomic Bonds by Quantitative HRTEM*. Microscopy Society of Northern Ohio, Winter Meeting, Cleveland, Ohio (USA). February 13, 2002.

55. *Analysis of Interface Structure by Quantitative HRTEM*. Colloquium of the Department of Physics and Astronomy, Arizona State University, Tempe, Arizona (USA). December 04, 2001.

56. *Bridging the Gap from Atoms to Applications by Advanced Methods of Transmission Electron Microscopy*. United Engineering Foundation Meeting on "Integrating Materials Science into Engineering Structures and Devices," Lake Arrowhead, California (USA). November 11-15, 2001.

57. *Quantitative Analysis of Interface Structure by HRTEM*. Annual Meeting of the Microscopy Society of America, Long Beach, California (USA). August 05-09, 2001.

58. *Structure and Bonding of Metal/Oxide Interfaces*. Gordon Conference on High-Temperature Corrosion, New London, New Hampshire (USA). July 22-27, 2001.

59. *Atomistic Structure of Interfaces: Progress in Experimental Methods and Modeling*. Case School of Engineering, Faculty Seminar Series 2000-2001, CWRU, Cleveland (USA). May 1, 2001.

60. *Ge–Si Nanostructures for Quantum Effect Electronic Devices*. Microscopy of Semiconducting Materials, Oxford, UK. March 25-29, 2001.

61. *Progress in Materials Science by Synergy of High-Resolution*. Analytical, and In-Situ TEM. Workshop on Futue Perspectives of Transmission Electron Microscopy, Stuttgart, Germany. January 17-18, 2001

62. *Self-Assembly of Ge–Si Dots by Coherency Strains*. DSRC/DARPA Workshop on Self-Assembly in Manufacturing, Strategic Analysis Conference Center, Arlington, Virginia. December 6-7, 2000.

63. *Progress in Determination of Defect Structures by Iterative Digital HRTEM Image Matching*. EUREM 12, Brno (Czech Republic). July 9-14, 2000.

64. *Grain Boundaries in Strontium Titanate*. Japan Fine Ceramics Center Workshop on Grain Boundaries in Ceramics. Nagoya (Japan), March 16-17, 2000.

65. *Structure*. Composition, and Bonding of Grain Boundaries n Metals. 37th Metallurgists' Day and 53rd Annual Technical Meeting of the Indian Institute of Metals. Kanpur (India) November 14-16, 1999

66. *Atomistic Structure of Interfaces: Progress in Experimental Techniques and Modeling*. 3rd Slovenian-German Seminar, Bled, Slovenia. November 19-21, 1998.

67. *Ge–Si-Nanostructures for Quantum Effect Electronic Devices*. Technion-Israel Institute of Technology, Haifa, Israel. June 14, 1998.

68. *High Precision Assessment of Interface Structures by HRTEM*. 32nd Annual Meeting of the Israel Society for Microscopy, The Weizmann Institute of Science, Rehovot, Israel. June 11, 1998.

69. *Analysis of Interface Structures by Quantitative HRTEM*. MCEM 97, Portoroz, Slovenia. October 5-8, 1997.

70. *Analysis of Interface Structures by Quantitative HRTEM*. EMAG 97, Cambridge, Great Britain. September 2-5, 1997.

71. *Solving Interface Structures by Quantitative High-Resolution Electron Microscopy*. Physical Colloquium, University of Vienna, Austria. December 11, 1997.

72. *Analysis of Interface Structures by Quantitative High-Resolution Transmission Electron Microscopy*. Fall Meeting of the Materials Research Society, Boston. December 1-5, 1996.

73. *Quantitative HRTEM of Interfaces and Structure of Metal/Ceramic Interfaces*. Micromat 1996. Rio de Janeiro, October 13-16, 1996.

74. *Analysis of Grain Boundary Structures by Quantitative HRTEM*. Annual Meeting of the Microscopy Society of America (MSA), Minneapolis. August 11-15, 1996.

75. *Interface Dislocations*. International Workshop on Plastic Deformation of Structural Materials at High Temperatures, Schloss Ringberg, Tegernsee, Germany. July 14-17, 1996.

76. *Quantitative High-Resolution Electron Microcopy of Interfaces*. 7th International Conference on Intergranular and Interphase Boundaries in Materials (iib95), Lissabon, Portugal. June 26-29, 1995.

77. *Solving Interface Structures by High-Resolution Electron Microscopy and Computer Modeling*. Colloquium of the Institut für Physikalische Chemie und Elektrochemie, University of Hannover, Germany. May 8, 1995.

78. *Solving Interface Structures by High-Resolution Electron Microscopy and Computer Simulation*. 13th International Congress on Electron Microscopy, Paris, France. July 18-22, 1994.

79. *Quantitative HRTEM of Twin Boundaries*. Annual Congress of the German Physical Society, Münster, Germany. March 21-25, 1994.

80. *Quantitative High-Resolution Electron Microscopy as a Method to Determine the Structure of Grain Boundaries*. German Physical Society, Spring Meeting, Münster. March 21-25, 1994.

81. *Lattice Mismatch Accommodation by Misfit Partial Dislocations*. Annual Meeting of The Materials Society (TMS), San Francisco. February 27-March 3, 1994.

82. *Quantitative HRTEM of Grain Boundaries*. International Symposium on High-Voltage and High-Resolution Electron Microscopy, Stuttgart, Germany. February 21-24, 1994.

83. *Assessment of Interface Structures by Quantitative High-Resolution Transmission Electron Microscopy*. Workshop on Microcharacterization of Materials and Devices, Göttingen, Germany. January 6-7, 1994.

84. *Quantitative Evaluation of HRTEM Images*. Multinational Congress of the Austrian, German, and Swiss Electron Microscopy Societies, Zürich. Switzerland, Septembr 1993..

85. *HREM of Metal/Ceramic Interfaces*. Annual Meeting of the French Society of Electron Microscopy (SFME), Lyon, France. Jue 29-July 4, 1993..

86. *Misfit Dislocation Networks in 111-GeSi/Si-Interfaces*. Colloquium of the IV. Physikalisches Institut, University of Göttingen. June 24, 1993.

87. *Relaxation of Misfit Stresses in Epitaxial Layers*. Physical-Chemical Colloquium, University of Stuttgart, Germany. June 22, 1993.

88. *Phase Transformations at Metal/Ceramics Interfaces*. International Workshop on Reactive Phase Formation at Interfaces and Diffusion Processes, Aussois, France. May 21-2, 1993..

89. *Misfit Dislocation Structure of GeSi/Si-{111}-Interfaces*. European Science Foundation Conference on Extended Defects in Semiconductors, Holzhau, Germany. August 29-September 3, 1992.

90. *Quantitative Analysis of Intensities in HRTEM Lattice Images*. Annual Congress of the German Electron Microscopy Society (DGE), Darmstadt, Germany. September 8-13, 1991.

91. *Misfit Dislocation Networks in GeSi/Si Interfaces Grown by Liquid Phase Epitaxy*. Colloquium of the Department of Materials Science and Engineering, CWRU, Cleveland, USA. February 11, 1991.

92. *HRTEM of the Cu/MnO Interface in an Internally Oxidized CuMn Alloy*. Colloquium of the Department of Materials Science and Engineering, CWRU, Cleveland, USA. April 23, 1990.

93. *HRTEM of Metal/Ceramic Interfaces in Internally Oxidized Alloys*. 4th Workshop on Characterization and Properties of Interfaces in Crystals, Delft, Netherlands. June 5-9, 1989.

94. *High-Resolution Electron Microscopy of Semiconductor Heterointerfaces)*. Colloquium of the Max-Planck-Institut für Festkörperforschung, Stuttgart. Germany. May 8, 1989

95. *High-Resolution Electron Microscopy of Cu/Al_2O_3 Interphase Interfaces*. Colloquium of the Institut für Metallphysik, University of Göttingen, Germany. April 18, 1989..

Consulting

Period	*Client*	*Project*
07/2018–01/2024	Patent Law Suit	Expert Witness
05/2018–08/2018	Voss Aerospace Industries Inc.	Mechanical Properties of Aluminum Alloys
since 01/2017	KFAS	Proposal Reviewer for Kuwait Foundation for the Advancement of Sciences
03/2016–04/2018	Atotech	Development of a Know-How Management System
03/2014–08/2021	Skolkovo	Expert Reviewer
04/2014–06/2014	Voss Aerospace Industries Inc.	Microstructure of Precipitation-Hardened Aluminum Alloys
07/2012	Powdermet	Microscopic Structure of Novel Powders
07/2011–06/2012	Atotech	Microstructure of Electroplated Cu for Microelectronic Devices
04/2011–10/2011	AlSher Titania LLC	Structure and Composition of Titania Nanoparticles
01/2011–12/2017	Pocared	Microstructure of coatings.
09/2008	TRW Automotive Engine Components	Nanohardness and Auger Electron Spectroscopy Studies of Valves
04/2008	DoD	Reviewer for SERDP program
04/2007	DoD	Reviewer for SERDP program
10/2006–05/2007	Bird Technologies Group	Scanning Electron Microscopy and Analysis of Resistors
11/2004–04/2005	Patent Law Suit	Expert Witness Assistance for Experimental Studies of Coatings
05/2004–11/2004	OMG Americas	Transmission Electron Microscopy Analysis of Novel Nanoparticles
12/2003–06/2005	Moen Incorporated, North Olmsted, Ohio	Transmission Electron Microscopy Studies of Coatings
06/2003–12/2003	IMQ Corporation, Chesterland, Ohio	Transmission Electron Microscopy Studies on the Effect of Boron on the Surface Structure of Ferritic Steels.
02/2003–05/2003	Inst. of Semiconductor Technology, Stuttgart, Germany	Transmission Electron Microscopy Analysi^{4}s^{2}of Defect Structures in Ultrathin SiGe Buffer Layers