

Daniel Kiener

Personal data

Academic title: Ass. Prof. Dr. Mont. Dipl.-Ing. (PhD M.Eng.)
Date of birth: 10/11/1977
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Contact details

Work

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Main research interests

- Plastic deformation mechanisms in small dimensions and confined volumes
- Quantitative in situ electron microscopy
- Miniaturized mechanical testing techniques
- Irradiation effects on material properties
- Size effects on material strength and toughness

Education and Employment

- Since 10/10** Assistant Professor at the Department Materials Physics, Montanuniversität Leoben, Austria
- 03/10 – 10/10** Senior scientist at the Erich Schmid Institute of Material Science, Austrian Academy of Sciences, Leoben, Austria
- 03/09 – 02/10** Research fellow at the National Center for Electron Microscopy (NCEM), Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA, USA
- 08/08 – 02/09** Post-doc at the Department of Chemistry and Biochemistry, Ludwig-Maximilians-University (LMU), Munich, Germany
- 12/07 – 07/08** Post-doc at the Erich Schmid Institute of Materials Science, Leoben, Austria
- 10/04 – 11/07** PhD thesis (Supervisor: Prof. G. Dehm) at the Erich Schmid Institute, Leoben, Austria. Title of the thesis: 'Size effects in single crystal plasticity of copper under uniaxial loading'. Doctoral examination at Montanuniversität Leoben, Austria passed with distinction.
- 10/98 – 03/04** Study of Material Science at Montanuniversität Leoben, Austria. Diploma thesis (equivalent to MS) under the supervision of Prof. R. Pippan. Title of the thesis: 'Local orientation changes during microindentation'. Graduation (Dipl.-Ing.) with distinction.
- 10/97 – 05/98** Military service
- 08/92 – 06/97** Higher technical school for industrial engineering, final exam with distinction.

Curriculum Vitae

Languages

- German (native language)
- English spoken and written fluently
- Basic knowledge of French and Spanish

Further skills

- Three courses on 'Didactics'
- Several two-day-long seminars on the topics: 'Body Language', 'Presentation Techniques', 'Rhetoric and Communication'
- Extensive experience in electron microscopy (SEM, FIB, TEM)
- Various metallographic characterization and mechanical testing techniques
- Comprehensive computer literacy (Windows, Microsoft Office, Origin, Corel Draw, EndNote, Visual Basic, Perl, AutoCAD, LaTeX, Mathematica, AnalySIS, OpenDX, Digital Micrograph)

Teaching experience

430.046	Materials Physics II
430.047	Materials Physics III
430.048	Exercises to Materials Physics

Awards, fellowships, memberships

- 2012** Fritz-Kohlrausch prize of the Austrian Physical Society
- 2011** Top Cited Author 2011, Materials Science and Engineering: A
- 2010** Outstanding symposium paper, 2010 MRS Fall Meeting, Symposium P
- 2010** Best oral contribution, 12th YUCOMAT conference
- 2009** 2008 Acta Materialia Student Award
- 2009** Herbert-Depisch prize 2009 of the Austrian Society for Metallurgy and Materials ASMET
- 2009** Josef-Krainer promotion prize of the Country of Styria for the PhD thesis
- 2008** Erwin-Schrödinger foreign exchange scholarship, Project J2834-N20
- 2004** Awarded with the Rektor-Platzer ring from Montanuniversität Leoben for excellent studies
- 2001** Research fellowship from Pro Scientia for excellent scientific activity from 2001 to 2006

Publications

43 publications in peer reviewed journals, 4 reviewed conference proceedings, 3 book contributions (2 in German). H-factor: 14, >270 citations in 2011 and >800 since 2006 (Web of science 19.09.2012).

Selected top ten publications

- 2012** G. Dehm, M- Legros, D. Kiener, in: *In-situ Electron Microscopy*, ed. G. Dehm, J.M. Howe, J. Zweck, pp. 227-254 (in press): 10. *In-situ* TEM Straining Experiments: Recent Progress in Stages and Small-Scale Mechanics.
- 2011** Source truncation and exhaustion: Insights from quantitative in-situ TEM tensile testing *Nano Letters* 2011, 11: 3816-3820 (*IF: 29.920, 6 citations*)
D. Kiener and A.M. Minor
- 2011** In situ compression testing of irradiated Cu
Nature Materials 2011, 10: 608-613 (*IF: 12.219, 6 citations*)
D. Kiener, P. Hosemann, S.A. Maloy, A.M. Minor

Curriculum Vitae

- 2011** Source controlled yield and hardening of Cu(100) studied by in situ transmission electron microscopy
Acta Materialia 2011, 59, 1328-1337 (IF: 3.791, 25 citations)
D. Kiener & A.M. Minor
- 2010** Achieving the Ideal Strength in Annealed Molybdenum Nanopillars
Acta Materialia 2010, 58, 5160-5167 (IF: 3.791, 23 citations)
M.B. Lowry, D. Kiener, M.M. LeBlanc, C. Chisholm, J.N. Florando, J.W. Morris, Jr., A.M. Minor
- 2009** Micro-compression testing: A critical discussion of experimental constraints
Materials Science & Engineering: A 2009, 505, 79-87 (IF: 2.101, 41 citations)
D. Kiener, C. Motz, G. Dehm
- 2009** In situ observation of dislocation nucleation and escape in a submicron Al single-crystal
Nature Materials 2009, 8, 95-100 (IF: 29.920, 75 citations)
S.H. Oh, M. Legros, D. Kiener, G. Dehm
- 2008** A further step towards an understanding of size-dependent crystal plasticity: *In-situ* tension experiments of miniaturized single crystal copper samples (IF: 3.791, 127 citations)
Acta Materialia 2008, 56, 580-592
D. Kiener, W. Grosinger, G. Dehm, R. Pippan
- 2007** FIB damage of Cu and possible consequences for miniaturized mechanical tests
Materials Science & Engineering: A 2007, 459, 262-272 (IF: 2.101, 97 citations)
D. Kiener, C. Motz, M. Rester, M. Jenko, G. Dehm
- 2006** Determination of Mechanical Properties of Copper at the Micron Scale
Advanced Engineering Materials 2006, 8, 1119-1125 (IF: 1.746, 82 citations)
D. Kiener, C. Motz, T. Schöberl, M. Jenko, G. Dehm

Oral Presentations

44 oral presentations in total, including 18 invited lectures. Currently 2 upcoming invited lectures scheduled in 2012 (ESMC, Fall MRS).

Selected top ten Presentations

- 2012** Work hardening in micron and submicron scales – *invited keynote*
Plasticity 2012, Rio Mar, Puerto Rico, USA, 03.01. – 08.01.12
- 2011** Defect – Strength Relations in Small Volumes: Insights from Quantitative In-situ TEM
13th Frontiers of Electron Microscopy in Material Science (FEMMS) 2011, Rohnert Park, CA, USA, 18.09 – 23.09.11 – *invited*
- 2011** Plasticity of FIB fabricated samples investigated by in-situ μ Laue and in-situ TEM
10th Multinational Congress on Microscopy, Urbino, Italy, 04.09. – 09.09.11 – *invited*
- 2011** Mechanisms governing strength and hardening in small volumes
Structural Materials Seminar, Cambridge, UK, 13.05.11 – *invited*
- 2011** Quantitative in situ TEM to investigate defect – strength relations
TMS 2011, San Diego, CA, USA, 27.02 – 03.03.11 – *invited*
- 2011** Defect controlled strength in small volumes studied by *in situ* TEM
Plasticity 2011, Puerto Vallarta, Mexico, 03. – 08.01.11 – *invited keynote*
- 2010** International workshop ‘Understanding materials using in-situ microscopy’, Göttingen, Germany, 10. – 12.11.10 – *invited*
- 2010** Oak Ridge National Laboratory, Oak Ridge, TN, USA, 20.01.10 – *invited*

Curriculum Vitae

- 2010** EMPA Laboratory for Mechanics of Materials and Nanostructures, Thun, Switzerland, 08.01.10 – *invited*
- 2009** International summer school on micro-mechanical experiments, Leoben, Austria, 07. – 10.07.09 – *invited*

Scientific communication

Journal reviewer

Nature Materials, Nature Communications, Acta Materialia, Scripta Materialia, Applied Physics Letters, Advanced Engineering Materials, Microscopy and Microanalysis, Philosophical Magazine, Thin Solid Films, Materials Science and Engineering: A, Journal of Materials Science, Journal of Nuclear Materials...

Conference organization

Symposium organizer, Spring MRS 2013: 'Size Dependent & Coupled Properties of Materials'
Symposium organizer, TMS 2013: 'Fatigue and Fracture of Thin Films and Nanomaterials'
Conference organizer 'Small scale testing techniques SSTT 2014'

Memberships and affiliations

Member of the Austrian Physical Society (ÖPG)
Member of the Materials Research Society (MRS)
Member of the Minerals, Metals and Materials Society (TMS)
Member of the OST Scientist Network
Member of the Austrian Society for Electron Microscopy (ASEM)
Affiliate of the Lawrence Berkeley National Laboratory, Berkeley, CA, USA since 2009
Affiliate of the Los Alamos National Laboratory, Los Alamos, NM, USA since 2010

Collaborations (selected and in alphabetical order)

Prof. D.F. Bahr, Washington State University, WA, USA
Dr. B. Boyce, Sandia National Laboratory, NM, USA
Prof. D. Dunstan, Queen Mary University, London, UK
Prof. C. Eberl, KIT, Karlsruhe, Germany
Prof. C.P. Frick, University of Wyoming, WY, USA
Prof. D.S. Gianola, University of Pennsylvania, PA, USA
Dr. P.A. Gruber, KIT, Karlsruhe, Germany
Prof. P. Hosemann, University of California, Berkeley, CA, USA
Dr. M. Legros, CNRS, Toulouse, France
Dr. J. Michler, EMPA, Thun, Switzerland
Prof. A.M. Minor, University of California, Berkeley, CA, USA
Prof. S.H. Oh, POSTECH, Pohang, South Korea
Dr. A.S. Schneider, INM, Saarbrücken, Germany