

CURRICULUM VITAE

Feb. 1, 2015

David P. Field

PERSONAL DATA

Home Address: 2701 Klemgard Road

Home Phone: (509) 338-9624

Citizenship: USA

EDUCATION

Ph.D. Mechanical Engineering, Yale University, December, 1991.

M.S. Mechanical Engineering, Brigham Young University, December, 1988.

B.S. Mechanical Engineering, University of Wyoming, August, 1987.

Areas of Research Interest:

Metal deformation and recrystallization, ferrous and non-ferrous metallurgy, crystallographic texture, grain boundary structure, thin film and IC interconnect structure/properties relationships, and advanced experimental techniques.

PROFESSIONAL EXPERIENCE

Washington State University (Aug. 2000-present) – Assist. Professor/Assoc. Professor/Professor,
Associate Dean for Research and Graduate Studies (June, 2013-present)
Interim Director, School of Mechanical and Materials Engineering (Aug. 2012-Aug. 2013)

TexSEM Laboratories, Inc. (July, 1994-Aug, 2000) – Director of Technology

Brigham Young University (Sept. 1994-Aug. 1997) Adjunct Assistant Professor and Part time Assistant Professor

Alcoa Technical Center (August, 1991 - July, 1994) Engineer / Sr. Engineer

COURSES TAUGHT

Graduate Level

MSE 511 – Deformation, Fall 2000

MatS 571 – Surfaces (3 week section),
Spring 2002, 2003, 2005, 2006, 2007

MSE 513 – Crystal Plasticity, Fall 2004,
Spring 2007

MSE/MatS 516 – Phase Transformations,
Spring 2006, 2008

MSE/MatS 521 – Statistics of

Undergraduate Level

MSE 110 – Intro to Materials Science,
Fall 2002-03, 2008-12

MSE 201/301 – Introduction to Matls.
Sci, Summer 2001, Spring 2007, Fall
2010

MSE 302 – Introduction to Elect. Matls,
Summer 2001

MSE 321 – Materials Characterization,

Microstructures, Spring 2005, 2009, 2011, 2013, 2015

Spring 2001 – 2006, 2008, 2011, 2012

MSE 323 – Materials Characterization Lab, Spring 2001 – 2004, 2010

MSE 401 – Metallic Matls, Fall 2001 – 2003, Fall 2005 – 2009, Spring 2010, 2012, 2013

MSE 413 – Solid Mechanics, Fall 2011

MSE 425/426 – Senior Thesis I/II, Fall 2001, Fall 2003, Spring 2004, Fall 2012

PhD RESEARCH SUPERVISED

<u>Student</u>	<u>Thesis Title</u>	<u>Date PhD Awarded/expected</u>
Pankaj Trivedi	Characterization of Dislocation Structures and their Influence on Processing of Al Alloys	May 2005
Reza Shahbazian Yassar	Characterization and Modeling of Dislocation-Precipitation Interactions in Aluminum Alloys	Dec 2005
J. Pablo Escobedo	Development and Analysis of Experiments to Measure the High Pressure Constitutive Behavior of Materials	Dec 2007
Alankar Alankar	Analysis of Dislocation Structure Evolution During Fatigue of High Strength Aluminum Alloys	May 2010
Nathaniel Sanchez	Texture evolution during shock deformation of aluminum	Aug 2013
Osama Fakron	SEM-Based Tomography of Turfs Comprised of Lineal Structures	May 2014
Zhe Leng	Texture Informed Crystal Plasticity Finite Element Modeling of Polycrystalline Material Deformation	Dec 2014
Colin Merriman	Structural Evolution during Explosive Bonding of Dissimilar Metals	May 2015
Graden Hardy	Development of a triple junction distribution function	May 2015
Yuri Hovanski	Friction stir welding of dissimilar aluminum alloys	Aug 2015 expected
Khaled Adam	Monte Carlo modeling of structure evolution in High-Strength Al alloys	Aug 2015 expected
John Young	Thermomechanical processing of Twin roll-cast Mg for superplastic deformation	Dec 2015 expected

Fan Zhang	Structure-Property Relationships in Dual Phase Steel	Dec 2015 expected
Vineet Joshi	Structure of U-10%Mo alloys	May 2016 expected
Bradley Fromm	Phase Field modeling using EBSD data from nuclear fuels	May 2016 expected
Tarang Mungole	Texture control in multilayer materials	May 2017 expected
Jingyi Zhang	Microstructure evolution during Friction Stir welding of dissimilar aluminum alloys	May 2018 expected

MS RESEARCH SUPERVISED

<u>Student</u>	<u>Thesis/Project Title</u>	<u>Date MS Awarded/expected</u>
Tejodher Muppidi	Microstructure and Texture of Electroplated Copper Films and Damascene Lines	Aug. 2003
J. Pablo Escobedo	Measurements of the Pressure-Dependent Dislocation Mobility in Oriented Mo Single Crystals	May 2004
Colin Merriman	Observation of Dislocation Structure Evolution in Aluminum	Aug 2007
Chia-Jeng Chung	Texture Development in Cu Damascene Lines and Thin Films	Aug 2007
Sudip Kumar Sinha	Microstructural Dependence of Spall Response in Aluminum under Shock Loading (non-Thesis)	May 2009
Chang-Kyu Yoon	Monte-Carlo Simulation of Structure Evolution in Cu Lines	Aug 2009
Zhe Leng	Grain boundary analysis of HT9 steel after creep testing	Aug. 2010
Jameson Root	Recrystallization of AA 7050 during hot rolling	Dec. 2010
Hina Malik	Quantification of tangled linear arrays for use in modeling of one dimensional structures	Dec. 2010
Hao Yu	Structure evolution in transformer steels	Aug 2011
Fan Zhang	Grain boundary damage during creep of Alloy 617	Dec 2011
Isaac Steele	Quantification of nanotopology in CNT turf structures (non-Thesis)	May 2013
Erin Diedrich	Structure evolution of FSW Al to Steel	Aug 2013
Linxiao Zhao	Observation of grain boundary structure evolution	Dec 2013
Alexander Plonczak	Control and Optimization of Prototype Instrument for Electro-Fountain Pen Lithography	Aug 2014

Batholomew Kimani FSW of dissimilar Al alloys Aug 2015 expected

UNDERGRADUATE RESEARCH SUPERVISED (Bold name indicates published paper)

<u>Student</u>	<u>Project Title</u>	<u>Date BS Awarded/expected</u>
Adam Mortensen	Deformation of a Copper Bicrystal	Dec 2001
Debbie Mahmood	Phase Analysis of Sintered W-V Carbides by EBSD	May 2001
Yasuyuki Kusama	Hillock Formation in Cu Films	Dec 2001
J. Pablo Escobedo (REU)	Superplasticity in Fine-Grained Ti-6Al-4V	May 2002
Mark Walpole	Severe Plastic Deformation of Al and Ti Using a Modified ECAE Approach	May 2002
Nathan Muntz	Analysis of Three Tool Types for Friction Stir Welding 7075-T6 Aluminum	May 2003
Brian Mattson (REU)	Friction Stir Welding of 7075 Al	Dec 2003
Brian True	Twin Boundary Migration in Deformed Cu	Dec 2003
Jason Swaim (REU)	GB Structure of Superplastically Deformed Ti-6Al-4V	Dec 2003
Eva McGowan	Processing of Ta for Sputtering Target Applications	May 2004
Joe Flood	Grain Size Flow Stress Dependence in Friction-Stir Processed Aluminum	Dec 2005
Ryan Eames	Grain Boundary Engineered Cu by Annealing under Shear Stress	May 2005
Daryl Bolejack	Analysis of Radiographic Inspection of Steel by Image Processing - WTC	May 2005
Matthew Foss	Twin Grain Development During Annealing of Heavily Deformed Copper	Dec 2005
Jerrod Miller	Fatigue in Friction Stir Welded Ti	Dec 2006
Jeff Yanke (REU)	Asymmetric Deformation of Ta Plate for Sputtering Target Applications	May 2005
Laura Bradford	Recrystallization of ECAE Cu	May 2006
Ross Johnson (REU)	Structure Evolution in Sputtered and Electroplated Cu Films	May 2006
Aaron Wilkinson	Fatigue in Friction Stir Welded Al 7050	May 2007
Ryuji Imoto	Equal Channel Angular Pressing of Aluminum	Dec 2007
Adam Hein (REU)	Fatigue in FSW 7050 Aluminum	May 2008
Sharla Hopkins (REU)	Fatigue of TRIP Steels	May 2009
Jameson Root	Friction Stir Welded MMCs	May 2008
Casey Stratton	Misorientation Analysis in High Tc Superconducting YBCO	May 2008
Julie Smith	Phase Analysis in Trip Steels	May 2008
Chris Melvin	Deep Drawing Steels	Dec 2008
Greg Santone (REU)	Structure and Texture of LENS processed Ti	May 2009
Cameron DuBois (REU)	Equal channel extrusion for grain refinement of commercial purity aluminum	May 2010
Ashley Tracy	Pb-free solders	Dec 2008
Kale Stephenson	Characterization of CNT turf structures	May 2009
Ashley Bradford Teare	GB structure in FSW Aluminum	Dec 2010

David Koch	Zr-C Films and Coatings	Dec 2009
Lisa Behrens (REU)	Structure Evolution in Hot Rolled AA 7050	May 2011
Mark Taylor (REU)	Microstructure in Ti FSW	May 2010
Jon Jackson	Allotropic phase transformation in Ti	May 2010
David McDonald	Surface chemistry of extrusion dies	May 2010
John Bryson	IN 617 creep	Dec. 2010
Erin Diedrich	TWIP steel structure evolution	Dec 2011
Adam George	Texture in LENS Titanium	May 2013
Michael Heiden	ECAE processed Mg	May 2012
John Young	Texture analysis in FSW of A2 tool steels	May 2011
Garrett Kelly	Statistics of linear arrays of structures	Dec 2010
Alyssa Arrigoni	Pressure dependent deformation of Al, Brass and Ti	May 2011
Skylar Hatch	Twin boundary evolution in IN 600	May 2016
Cory Parker (REU)	GND Density in AA 7050	May 2012
Jake Bair	Twin boundary evolution in IN 600	Dec 2012
Juan Trevino	Deformation and structure evolution in CNT turfs	May 2013
Karen Nash	Pressure dependent deformation of Al, Brass and Ti	May 2013
Jose Marcial	GBE in alloy 617	Dec 2013
Mengil Deane	Mechanical Testing	Dec 2013
Tyler Claus	GB structure development in Inconel	May 2013
Mary O'Brien	GND Density in Aluminum Plate	May 2013
Christopher Gay	Computational Materials Science	May 2014
Kassiopeia Smith	Strength of CNT Filaments	May 2014
Jonathan Lueck	Carbide Segregation in alloy 617	Dec 2014
Jace Barley	Carbon Nano-structures	May 2016
Denise Blohowiak	Growth of CNT turfs	May 2016
Sam Karcher	Heat Treating of DP Steel	May 2017

UNIVERSITY SERVICE

WSU – MME Undergraduate Studies Committee, 2006-2012
 WSU – MME Graduate Studies Committee, 2000-2007
 WSU – MME Awards Committee, 2004-2008
 WSU – MME Space Committee, 2009-2012
 WSU – CEA Curriculum Assessment Committee, 2006-2011
 WSU – WSU Admissions sub-committee, 2010-present
 WSU – MSEP Admissions and Graduate Studies Committee Chair 2011-12
 WSU – Team Mentoring Program Faculty Advisor, 2008-present
 WSU – ORAC Committee, 2013-present
 WSU – GPEC Committee, 2013-present
 WSU –Research Enterprise Study, Management and Integration Committee, 2014-15

PROFESSIONAL ACTIVITIES, AWARDS AND HONORS

Visiting Appointments:

- Visiting Professor, Laboratoire d'études de microstructures et de mécaniques des matériaux (LEM3), Université de Metz/Université de Lorraine, Paul Verlaine, Metz, France, 2010 (LETAM), 2011, 2012, 2014

Organized Symposia:

- Predictive Modeling of the Co-Evolution of Microstructure and Properties, USNCCM, San Diego, July 26-30, 2015
- Quantification of Texture and Microstructure Gradients in Polycrystalline Materials, MS&T 2012, Pittsburgh, October 7-11, 2012
- Challenging Applications in EBSD Measurement and Analysis, Microscopy & Microanalysis, Nashville, August 7-11, 2011
- Microstructure Sensitive Design, MS&T 2009, Pittsburgh, October, 25-29, 2009
- DOE Workshop: 4-Dimensional characterization of Materials and Damage – Annapolis, MD, Aug 16-19, 2009. Organized section on 3D EBSD and conventional tomography.
- Metrology in Thin Films, TMS Annual Meeting, Orlando, Feb 25- Mar. 1, 2007
- Three-Dimensional Experimental Measurements and Simulations, Plasticity, Halifax, Nova Scotia, July 2006
- Brent Adams Honorary Symposium on Homogenization Techniques and Microstructure Design and Characterization, Plasticity, Halifax, Nova Scotia, July 2006
- Thermoelectric Materials and Applications, MS&T 06, Cincinnati, Oct. 2006
- Structure-Property Relationships in Functional Materials, MS&T 06, Cincinnati, Oct. 2006
- Refractory Metals in Electronic Applications, TMS, San Francisco, February, 2005
- Texture and Microstructure of Thin Films and Coatings, TMS, San Francisco, February, 2005
- Texture in Electronic and Magnetic Films, MRS, San Francisco, April, 2002
- Friction Stir Welding and Processing, Indianapolis, TMS, Indianapolis, October, 2001
- EBSD of Electronic Materials, Pullman, May, 2001
- Texture Analysis for Quality and Process Control, ASM, St. Louis, October, 2000.
- Applications of Orientation Imaging, Salt Lake City, April, 2000.
- Texture and Properties of Thin Films, TMS, Chicago, October, 1998.

Committees/Conferences/Editorial:

- ASM – Texture and Anisotropy Committee (Chair, 2001-2005)
- ASM – Welding and Joining Committee
- TMS – Thin Films and Interfaces Committee (Vice Chair, 2003-2005, Chair, 2005-2007)
- TMS – Advanced Characterization, Testing and Simulation Committee
- MRS – Faculty advisor for student MRS chapter in Pullman, (April, 2004-2013)
- Material Advantage – Faculty advisor (Aug. 2012-present)
- Member of International Committee of ITAP (International Conference on Texture, Anisotropy and Plasticity),– Gottingen, Germany, Sept. 2009
- Member of Scientific Committee of Thermec 2003 (held in Madrid), and Thermec 2006 (Vancouver, BC), and Thermec 2009 (Berlin, Germany), Thermec 2011 (Quebec,

Canada)

- Member of organizing committee for the 15th International Conference on Textures of Materials (ICOTOM 15), Pittsburgh, June 2008
- Member of Editorial Board – Advances in Materials Science and Engineering, 2007 – 2012
- Associate Editor – Materials Characterization, 2009 – Present
- Member of International Advisory Committee – 6th International Conference on Nanomaterials by Severe Plastic Deformation (Nano SPD 6), Metz, France, June 23-28, 2014
- Member of Editorial Board - Advanced Structural and Chemical Imaging, 2013 – Present
- Member of International Advisory Committee, International Conference on Friction based Processes, Bangalore, India, September 3-5, 2014

External PhD Examinership:

- Capetown University, South Africa, 2001
- McGill University, Montreal, Canada, 2005
- Andhra University, Vishakapatnam, India, 2006
- Monash University, Australia, 2011
- Univ. British Columbia, Canada, 2012
- University of New South Wales, Australia, 2013

Consulting:

- Intel – 1997-2001
- Honeywell – 2003
- Cabot Corporation – 2003-2011
- Oak Ridge National Laboratory – 2004-2006
- EDAX – 2004, 2007
- LumenIQ – 2004
- Unicep Corp – 2006
- Wagstaff, Inc. – 2007
- Medtronic – 2007-2010
- Ambature – 2010-2011
- Tape Solar – 2011
- Global Advanced Metals – 2011-12
- Ormond, LLC - 2013

Awards/Prizes

- TMP Program, MLK Distinguished Service Award, 2015
- Honorary Member, Golden Key International, 2014
- Fellow, ASM International, 2013
- Best Paper in Physical Sciences, Microscopy and Microanalysis Vol. 17, 2011
- WSU MME Research Award – 2006, 2007
- GPSA Outstanding Advisor Award (WSU) – 2004
- TMS EMPMD service (Committee Chair) – 2004

- WSU MSE Excellence in Teaching Award – 2002, 2005, 2006
- TSL/EDAX Outstanding Technical Contribution – 2000
- AMD Award for Technical Excellence – 1995

Reviewership:

Journals/Proceedings:

Acta Materialia
Advanced Materials
Advances in Manufacturing
American Ceramic Society Proceedings
Applied Physics
Applied Physics Letters
ASM International Symposia Proceedings
ChemPhysChem
Computational Materials Science
Computers, Materials, and Continua (CMC)
Crystal Research and Technology
Electronic Devices
ICOTOM Proceedings
IEEE Transactions
Integrating Materials and Manufacturing Innovation
International Journal of Cast Metals Research
International Journal of Fatigue
International Journal of Fracture
International Journal of Materials and Product Technology (IJMPT).
International Journal of Plasticity
International Materials Reviews
Institute of Materials, Minerals and Mining (UK)
IOP Conference Series: Materials Science and Engineering
Journal of Alloys and Compounds
Journal of the American Ceramic Society
Journal of Applied Crystallography
Journal of Applied Physics
Journal of Electronic Materials
Journal of Engineering Fracture Mechanics
Journal of Engineering Tribology
Journal of Materials Engineering and Performance
Journal of Engineering Materials and Technology
Journal of Materials and Design
Journal of Materials Research
Journal of Materials Science
Journal of Metallurgy
Journal of Microscopy
Journal of Nuclear Engineering

Journal of Testing and Evaluation
Journal of Undergraduate Research
Journal of Vacuum Science and Technology
Journal of Zhejiang University-Science A
Materials
Materials Characterization
Materials Chemistry and Physics
Materials Letters
Materials Research Society Symposia Proceedings
Materials Science and Engineering (A)
Materials Science Forum
Materials Today
Mechanics of Materials
Metallurgical and Materials Transactions (A)
Micron
Microscopy and Microanalysis
NanoSPD Proceedings
Nature
Nature Materials
Nuclear Engineering and Design
Philosophical Magazine
Philosophical Magazine Letters
Philosophical Transactions of the Royal Society
Phys Stat Solidi
Research Letters in Materials Science
Science
Scripta Materialia
Solid State Technology
Surface and Coatings Technology
Thin Solid Films
TMS Symposia Proceedings
Ultramicroscopy
Wear

Government Organizations/Funding Agencies:

Air Force Office of Scientific Research (US)
Army Corp. Engineering Research and Development Center (US)
Canada Research Chairs Program
Cooperative Research and Development Fund
Dept. of Energy (US), BES
Dept. of Energy (US), NEUP
Dept. of Energy (US), OIT
EPSRC (Engineering and Physical Science Research Council, UK)
Israeli Science Foundation
KSEF (Kentucky Science and Education Fund)

National Science Foundation (US)
 NSERC (Canada)
 Office of Naval Research (US)
 Petroleum Research Fund (ACS)
 STW (Netherlands Science and Technology)

Invited Lectures/Seminars

- DP Field, "Using EBSD to estimate defect content in polycrystalline materials," Advanced Structural and Chemical Imaging, 2015, Pullman, WA May 20-22, 2015
- DP Field, "EBSD Observation of annealing twin boundaries in FCC metals," Oregon State Univ, Corvallis, OR, April 16, 2015
- DP Field, "Measurement and Modeling of defects in deformed metals," TMS Annual Meeting, Orlando, March 13-17, 2015
- DP Field, Characterization and Mechanical Properties of Carbon Nanotube Turf Structures, Portland St. Univ, Nov. 2014
- DP Field, "Industry Partnerships in R&D for Manufacturing and Aerospace at WSU," Aerospace Futures Alliance Meeting, Everett, WA, Sept. 26, 2014
- DP Field, Y Hovanski, H Yu, and EE Patterson, Friction Stir Joining Using Scribe Tool Technology, International Conference on Friction based Processes, Bangalore, India, September, 2014
- DP Field, Ultrafine Grained Materials using the Triaxial Test Apparatus, NanoSPD6, Metz, France, June, 2014
- DP Field, TMS, San Diego, Feb. 16-19, 2014
- DP Field, Crystal Plasticity Modeling and Experiments to Measure the Spatial Distribution of GND Dislocations in IF Steel, Plasticity, Freeport, The Bahamas, Jan 3-8, 2014
- DP Field and K Adam, "Recrystallization of 7xxx series Al alloys" Rex &GG, Sydney, Australia, May 5-10, 2013
- DP Field, "Analysis of deformation structures using EBSD," Symposium in honor of Oscar Ruano, U. Politecnica de Valencia, Valencia, Spain, Sept. 23-25, 2012.
- DP Field, "Microstructure Optimization of Laser-Engineered Net-Shape (LENS) Formed Ti," EBSD 2012, Pittsburgh, PA, June 20, 2012
- DP Field, "Observations of dislocation structure in AA 7050 by EBSD," International Conference on Textures of Materials 16 (ICOTOM 16) Bombay, India, December 12-17, 2011.
- DP Field, "Pressure dependent shear strength in Ta and Mo," LEM3, Metz, France, June 11, 2011.
- DP Field, "Deformation heterogeneity and excess dislocation density measurements," Plasticity 2011, Puerto Vallarta, Mexico Jan. 2011.
- DP Field, "Analyzing Deformation Structures using EBSD," Metz University, France, June, 2010.
- DP Field, "Comparison of Strain Measurement by X-ray Microdiffraction and EBSD," International Conference on Texture and Anisotropy of Polycrystals, ITAP3, Gottingen, Germany, Sept. 22-25, 2009.
- DP Field, "Current State of Three-dimensional EBSD: Operation, Application and Challenges," DOE Workshop on 4D Characterization of Materials and Damage, Annapolis, MD, Aug. 16-19, 2009.
- DP Field, JP Escobedo, DH Lassila, M. Leblanc, J Florando, "Pressure Dependent Shear Strength in Ta Foils," Keynote (invited) presentation at Plasticity '09, St. Thomas, USVI, Jan 2-9, 2009
- DP Field, "Structure Evolution in Thin Metal Films," Japan OIM Academy, Tokyo, Japan, Nov. 20, 2008
- DP Field, "Advanced Applications of EBSD," Tohoku University Departmental Seminar, Sendai, Japan, Nov 21, 2008
- DP Field, "Texture Evolution in Friction Stir Processed Aluminum," Eighth International Welding Symposium, Kyoto, Japan, Nov. 18, Kyoto, Japan
- DP Field, "Electron Backscatter Diffraction: Operation and Applications," Tutorial Lecture given in conjunction with Microscopy and Microanalysis '08, Albuquerque, NM, Aug. 2008
- SI Wright and DP Field, "EBSD: Physics, techniques and applications," Workshop given as part of International Conference on Textures of Materials 15, (ICOTOM 15), Pittsburgh, PA, June, 2008

- DP Field, "EBSD Step size dependence of dislocation density," Microscopy and Microanalysis, Miami, FL, Aug. 2007
- DP Field, "Analysis of phase fractions in complex steels: EBSD vs. X-Ray" Hyundai Steel Corp, Incheon, Korea, June, 2007
- DP Field, "Structural analysis of thin conductor lines as related to electromigration and stress voiding," Samsung Corporation, Suwon, Korea, June, 2007
- DP Field, "Advanced structural analysis by EBSD," as part of EBSD workshop held at Suncheon University, June, 2007
- DP Field, "Dislocation Density Measurement by EBSD," Meeting of the Royal Microscopy Society, Glasgow, Scotland, March, 2007
- DP Field, "Analysis of grain boundary structure by EBSD," MSU, Starkville, MS, July, 2006
- DP Field, "Evolution of twin boundaries during annealing of low SFE materials," Gordon Conference, Holderness, NH, July, 2006
- DP Field, "Stereology of Triple Lines in Polycrystalline Materials," Brent Adams Honorary Symposium, Plasticity, Halifax, Nova Scotia, July, 2006
- DP Field, "Twin Boundary Development in Heavily Deformed Cu," Indo-US Forum, Vishakapatnam, India, December, 2005.
- DP Field, "Superplastic Behavior of Ultrafine Grained Ti," Workshop on Mechanical Behavior of Ultrafine Grained Materials, Univ. British Columbia, Vancouver, CA, Nov. 2005.
- DP Field, "Improving the Spatial Resolution of EBSD," MSA meeting, Honolulu, Hawaii, August, 2005.
- DP Field, "Texture Evolution in Thin Cu Films and Lines," 14th International Conference on Textures of Materials, Leuven, Belgium, July, 2005.
- DP Field and N. Li, "Microstructure in Friction Stir Welds of Magnesium," TMS symposium, Feb. 2005, San Francisco.
- DP Field, "Electron Backscatter Diffraction in Materials Science," Venezuelan Electron Microscopy Congress, October, 2004 – Caracas, Venezuela.
- DP Field, Workshop on Electron Backscatter Diffraction, Instituto Universitario de Tecnologia, October, 2004 – Caracas, Venezuela
- DP Field, JP Escobedo, D. Lassila, M. LeBlanc, and B. Bonner, "High Pressure Testing of Mo Single Crystals," Workshop on Multi-scale Modeling of Material Behavior, Jan. 2004 – Berkeley, CA
- D.P. Field, P. Trivedi, S.I. Wright, and M. Kumar, "Analysis of Local Orientation Gradients in Deformed Single Crystals," Frontiers of Electron Microscopy in Materials Science, Oct. 2003 – Berkeley, CA
- D.P. Field, "Analysis of Grain Fragmentation in Deformed Materials," Microscopy and Microanalysis, Aug. 2003 – San Antonio, TX
- D.P. Field, S.I. Wright, and P. Trivedi, "Microtextural Analysis of Grain Fragmentation in Aluminum," Thermec, July, 2003 – Madrid
- D.P. Field, "Characterization of Thin Cu Films and Lines for Interconnect Applications," Scanning, San Diego, CA, May 2003
- D.P. Field, Investigation of Cu Films and Structures for IC Interconnects, Univ. British Columbia Departmental Seminar, Vancouver, BC, Oct. 2002
- D.P. Field, Quantifying the Grain Boundary Character Distribution for Improved Material Performance, Gordon Research Conference on Physical Metallurgy, Holderness, NH, July 2002
- D.P. Field, Applications of EBSD to Investigations of Electronic Materials, Hitachi Electron Microscopy Meeting, June 2002, Pleasanton, CA.
- Field, D.P. "Electron Backscatter Diffraction Applications to Electronic Films," FMS/AVS Florida Chapter Annual Meeting, Orlando, FL, March 11-14, 2002.
- Field, DP, Mortensen, AW, Nowell, MM, and Campbell, GH, "Deformation at Crystallite Interfaces," Plasticity 2002, Aruba, Jan. 3-9, 2002.
- Field, DP and Wright, SI, "Introduction to Orientation Imaging Microscopy (OIM) and Recent Applications in Materials Science," Hitachi EM Users Meeting, Daejeon, Korea, November 29-30, 2001.
- Field, D.P. "Investigating the Microstructure-Reliability Relationship of Cu Lines using EBSD," Advanced Micro Devices, Sunnyvale, CA, April 2001
- Field, D.P. "Structure Evolution in Cu Damascene Interconnects," Intel Corporation, Hillsboro, OR, Feb

2001

- Field, D.P. and Weiland, H. "Orientation Imaging of Heavily Deformed Materials," TMS Symposium on Electron Backscatter Diffraction, St. Louis, Oct 9-13, 2000.
- Field, D.P. and Dingley, D.J., V-ICEM, Margarita Island – OIM of Heavily Deformed Materials," Fifth InterAmerican Congress on Electron Microscopy, Isla de Margarita, Venezuela, October 24-28, 1999.
- Workshop on Texture Analysis and Measurement, McGill University, August, 1999.
- Field, D.P., "Orientation Imaging of Equal Channel Angular Extruded Cu," Idaho National Engineering Laboratory, January 7, 1999.
- Field, D.P., "An Introduction to OIM: Applications of Texture and Grain Boundary Structure," ASM Utah Chapter meeting, October 22, 1998.
- Field, D.P. Weiland, H., and Baggethun, P., "Imaging dislocation cell morphology in the SEM," Symposium in honor of Owen Richmond, Seven Springs, PA, October, 1998.
- Field, D.P., Sanchez, J.E. Jr., and Besser, P.R. "Texture and Grain Boundary Structure Evolution in Al-Cu Interconnect Lines," International Conference on Textures and Properties, Ekaterinburg, Russia, Sept. 1997.
- Field, D.P., "Orientation Imaging and Interconnect Reliability" Hewlett Packard, Thermal Ink Jet Division, Corvallis, OR, June 25, 1997.
- Field, D.P., "Interconnect Reliability: New Insights Obtained through Analysis by Orientation Imaging," Sematech Analytical Laboratory Managers Working Group meeting, April 16-17, 1997.
- Field, D.P., "Studies of Interconnect Reliability," Intel Corp., Hillsboro, OR, April 14, 1997.
- Field, D.P., "Recrystallization of 5xxx Series Aluminum Rolled Products," Alumax Technical Center, Golden, Colorado, April 11, 1997.
- Field, D.P., "Crystallographic Texture and Grain Boundary Structure: Real World Applications of Orientation Imaging," Univ. of Utah, Dept. of Metallurgy, April 9, 1997.
- Field, D.P., "Orientation Imaging Microscopy for Materials Research," Japan Institute of Metals, Symposium on the Texture of Metals, Tokyo, Japan, Aug. 22-23, 1996.
- Field, D.P., "Recent Advances in the Application of Orientation Imaging," Frontiers of Electron Microscopy, Oak Brook, IL, June, 1996.
- Field, D.P. and Palumbo, G., "Defining Optimal Grain Boundary Character for Engineered Structures," TMS symposium presentation, Cleveland, OH, October, 1995.
- Field, D.P., "An Overview of Orientation Imaging Microscopy," University of Toronto, Toronto, Canada, October, 1995.
- Field, D.P., "An Introduction to Orientation Imaging Microscopy," Kawasaki Steel, Chiba, Japan, Aug, 1995.
- Field, D.P., "Stereological Challenges in Grain Boundary Structure Investigation," Lawrence Livermore National Laboratory. September 29, 1994.
- Field, D.P., "Grain Boundary Character Effects on Intergranular Integrity," Knolls Atomic Power Laboratory, Schenectady, New York, June, 1994.
- Field, D.P., "Heterogeneity of Grain Boundary Performance in Creep and Fatigue," UC-San Diego, May, 3, 1994.
- Field, D.P., "The Significance of Grain Interactions in Polycrystal Deformation," Univ. California, Berkeley, CA, Apr. 28, 1994.
- Field, D.P., "Investigating the Crystallographic Structure of Grain Boundaries," FAMU/FSU, Tallahassee, FL, Mar. 14, 1994.

DEVELOPMENT OF RESEARCH FACILITIES

- Corrugated Pressing Test Apparatus
- SEM in-situ heating stage
- High pressure torsion dies
- Cup Drawing Dies for Earring tests
- Equal Channel Angular Extrusion Dies

- FEI Sirion 200 FESEM – NSF Grant
- Firewire slow-scan CCD, Digiview, to augment the EBSD system.
- High resolution scanner to use with radiographic images (from LumenIQ).
- Scanning Electron Microscope (LaB₆ filament) – JEOL 840a (from Intel)
- Scanning Electron Microscope – CamScan Series IV
- Orientation Imaging System –TexSEM Laboratories
- EDS System with Light Element Detector – EDAX Falcon
- Asymmetric Rolling Testing Apparatus for MTS
- Reciprocating Equal Channel Extrusion Apparatus for MTS
- High Pressure Trianvil Testing Apparatus – with LLNL
- Computer facilities

RESEARCH GRANTS/CONTRACTS

- H Zbib, DP Field, G Ayoub, B Mansour, “Multiscale modeling and optimization of advanced interface materials for high energy environments,” QNRF 2/2015-1/2018, \$315K
- DP Field, B Fromm, “Microstructure Reconstruction for Phase Field Models”, INL 8/2013-8/2015, \$157K
- DP Field, “Strength of CNT filaments after treatment,” Odysseus Technologies, 9/2013-12/2015
- H Zbib, A Ruimi, DP Field, “Advanced High Strength Steel,” Qatar National Research Fund, 1/2013-12/2015, \$332K
- DF Bahr, DP Field, “REU: Advanced Materials Characterization,” 2011-2014, \$279K
- H Zbib, G. Kridli, DP Field, “Twin Roll Cast Magnesium, Experiments and Modeling,” Qatar National Research Fund, 11/2010-11/2013, \$348K
- DP Field, “Development of a triple junction distribution function, 3DF,” NSF, 7/2010-6/30/2014, \$328K (REU supplements in 2012 and 2013)
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- DP Field, “Characterization of Explosively Bonded Materials,” Pacific Aerospace and Electronics, 2007-2008, \$25K
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- Z. Leng, DP Field, “Dislocation Density based crystal plasticity finite element simulation with grain boundary effect,” MS&T 2013, Oct. 27-31, Montreal, Canada
- E.E. Patterson, H. Yu, DP Field, Y Hovanski, “Gradients in Friction Stir Welds of Dissimilar Metals” TMS Annual Meeting, San Antonio, March, 2013.
- F Zhang and DP Field, “Grain Boundary Analysis of Crept Alloy 617,” in Materials Challenges in Current and Future Nuclear Technologies, MRS Fall meeting 2012, Boston, MA, Dec. 1-5, 2012
- F. Wagner, N. Allain-Bonasso, AD Rollett, DP Field, Approche théorique et expérimentale de l'étude de l'hétérogénéité de la déformation plastique dans des aciers IF, Plasticité, Metz, France, Apr, 2012.
- **CG Parker**, DP Field, “Observation of Structure Evolution during Annealing of 7xxx Series Al Deformed at High Temperature” TMS, Orlando, FL, 2012, pp. 383-386.
- O.M. Fakron and D.P. Field, “SEM-Based Electron Tomography of Turfs and Mats of 1-D Structures,” Microscopy and Microanalysis, Nashville, TN, Aug. 2011.
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- **GM Kelley** and DP Field, “Characterization of Curvature in CNT Turf Structures from Two-Dimensional Images,” MRS Symp. Boston, MA, Fall 2010.
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- CK Yoon and DP Field, “Modeling Twin Boundary Evolution in Thin Cu Films,” TMS Annual Meeting, San Francisco, CA, Feb 15-19, 2009
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