

NITIN P. PADTURE

School of Engineering, Brown University
184 Hope Street, Box D, Barus & Holley Rm. 608
Providence, RI 02912, USA

Phone: (401)863-2859 FAX (401)863-9025 Email: nitin_padture@brown.edu

Website: http://research.brown.edu/myresearch/Nitin_P._Padture

EDUCATION

- **Ph.D.**, Materials Science and Engineering, Lehigh University, Bethlehem, PA, 1991
- **M.S.**, Ceramic Engineering, Alfred University, Alfred, NY, 1987
- **B.Tech.**, Metallurgical Engineering, Indian Institute of Technology, Bombay, 1985

EMPLOYMENT

- **Professor**, School of Engineering, Brown University, Providence, RI, January 2012 - present
- **Director**, Institute for Molecular and Nanoscale Innovation, Brown University, Providence, RI, January 2014 - present
- **Director**, Center for Advanced Materials Research, Brown University, Providence, RI, July 2012 - December 2013
- **College of Engineering Distinguished Professor**, Department of Materials Science and Engineering, the Ohio State University, Columbus, OH, January 2009 - December 2011
- **Director (Founding)**, Center for Emergent Materials, a National Science Foundation (NSF) funded Materials Research Science and Engineering Center (MRSEC), the Ohio State University, Columbus, OH, September 2008 - September 2011
- **Professor (Courtesy Appointment)**, Department of Physics, the Ohio State University, Columbus, OH, September 2008 - September 2011
- **Professor**, Department of Materials Science and Engineering, the Ohio State University, Columbus, OH, January 2005 - January 2009
- **Professor**, Department of Metallurgy and Materials Engineering, University of Connecticut, Storrs, CT, August 2003 - January 2005
- **Interim Department Head**, Department of Metallurgy and Materials Engineering, University of Connecticut, Storrs, CT, June 2003 - June 2004
- **Visiting Associate Professor**, Materials Department, University of California, Santa Barbara, CA, January - July 2001 (Sabbatical with the late Prof. Fred Lange)
- **Associate Professor**, Department of Metallurgy and Materials Engineering, University of Connecticut, Storrs, CT, August 1998 - August 2003
- **Assistant Professor**, Department of Metallurgy and Materials Engineering, University of Connecticut, Storrs, CT, January 1995 - August 1998
- **Postdoctoral Fellow**, National Institute of Standards and Technology, Gaithersburg, MD, August 1991 - December 1994 (Supervisor: Dr. Brian Lawn)

MAJOR AWARDS AND DISTINCTIONS

- **Distinguished Service Award**, “for outstanding contributions towards the progress of the Institute,” Indian Institute of Technology, Bombay, 2012.
- **College of Engineering Distinguished Professorship**, “for excellence, impact and leadership in advanced materials research and education,” the Ohio State University, 2009
- **Fellow, American Association for the Advancement of Science**, “for outstanding contributions to the field of advanced ceramics and nanomaterials, particularly for understanding of processing and mechanical behavior of ceramic composites/coatings” 2008
- **Richard M. Fulrath Award**, “for technical contributions relating to processing and characterization of advanced ceramics,” the American Ceramic Society, 2007
- **Fellow, American Ceramic Society**, “for notable contributions to ceramic sciences,” 2005
- **Robert L. Coble Award for Young Scholars**, “for outstanding contributions to the understanding and education of the mechanical behavior of ceramics and composites,” the American Ceramic Society, 1998
- **Outstanding Junior Faculty Award**, “for outstanding scholarly achievements and sustained professional growth,” University of Connecticut School of Engineering, 1998
- **Olin Junior Faculty Development Award**, Olin Corporation, 1998
- **ONR Young Investigator Award Grant**, “for exceptional promise for doing creative research and teaching,” Office of Naval Research, 1996
- **Roland B. Snow Award**, “for best of the ceramographic exhibit,” the American Ceramic Society, 1990
- **Notable Lectures and Invited Talks:**
 - Opening Plenary Lecture, IVth Portuguese-Spanish Congress on Ceramics and Glasses, Aveiro, Portugal, November 2011
 - Keynote Lecture, European Congress on Advanced Materials and Processes EUROMAT 2009, Glasgow, United Kingdom, September 2009
 - Keynote Lecture, Richard M. Fulrath Award Symposium, MS&T '07 Conference, Detroit, MI, September 2007
 - Invited Talk, Gordon Research Conference, Solid State Studies in Ceramics, Meriden, NH, August 2001
 - Invited Talk, Workshop on Fundamental Research Needs in Ceramics, National Science Foundation, Arlington, VA, June 1997

CURRENT RESEARCH INTERESTS

Research interests are in the broad areas of synthesis/processing, characterization, and properties/performance of advanced structural ceramics and nanomaterials used in applications ranging from jet engines to solar cells to computer chips. Specifically, current research topics include:

- Tailoring of advanced structural ceramics, composites, and coatings:
 - Thermal barrier coatings and environmental barrier coatings
 - Ceramic/carbon nanotubes composites
 - Ultra-high temperature ceramic composites
 - Ultra-hard nanoceramics

- Synthesis, characterization, device fabrication, and properties of functional nanomaterials, including graphene, oxides, and perovskites:
 - Novel solid-state photovoltaics
 - Graphene-based devices

CURRENT TEACHING INTERESTS

- Introductory Materials Science and Engineering
- Science and Engineering of Composite Materials
- Mechanical Behavior of Materials
- Ceramics Processing
- Materials in Nanotechnology

PUBLICATIONS*

- 129 Refereed-journal publications, including 2 in *Science*, 1 in *Nature Materials*, 3 in *Advanced Materials*
- 8 Refereed conference-proceedings publications
- 4 Patents awarded (3 *United States* and 1 *European*)
- 1 Invited book chapter

CITATIONS AND IMPACT[§]

- 41 *h*-Index (41 journal publications with at least 41 citations each)
- 1.78 *m*-Number (*h*-Index of 41 normalized by 23 total years of publishing)
- 5,700 Citations in total
- 44 Citations per publication
- 11 Publications with 100+ citations each
- Most number of citations for a publication: 842

PRESENTATIONS*

- 156 Invited/keynote/plenary talks (101 in the United States, 55 international)
- 155 Contributed talks and posters at professional conferences

RESEARCH FUNDING RECORD (1995 - present)

- PI or co-PI on total external grants: ~\$28 million
- Total N.P. Padture share of external grants: ~\$9 million
- Current total N.P. Padture share of external grants: \$1.9 million (\$615,000/year)

* Please see Supplementary Information section for details.

[§] ISI Web of Science Citation Index

PROFESSIONAL ACTIVITIES AND SERVICE

- **Member:**
 - American Ceramic Society (since 1985); Fellow (since 2005)
 - American Association for Advancement of Science (since 2002); Fellow (since 2008)
 - Materials Research Society (since 1989)
- **Editor:** *Scripta Materialia* (Impact Factor: 3.145), 2012 - present
- **Principal Editor:** *Journal of Materials Research*, 2002 - 2012
- **Associate Editor:** *Journal of the American Ceramic Society*, 1998 - 2012
- **Guest Co-Editor:** *Materials Research Society Bulletin*, October 2012 theme issue on “Thermal Barrier Coatings for More Efficient Gas-Turbine Engines”
- **Co-Editor:** “Coatings 2005,” Proceedings of Materials Science & Technology Meeting, Pittsburgh, PA, 2005
- **Co-Editor:** “Thermal Barrier Coatings,” Proceedings of the Materials Research Society Fall Meeting, Boston, MA, 2000
- **Ad Hoc Reviewer for Journals:** ACS Nano, Acta Biomaterialia, Acta Materialia, Advanced Functional Materials, Advanced Materials, Applied Physics Letters, Carbon, Chemistry of Materials, Composites Science & Technology, Corrosion Science, Electrochemical & Solid State Letters, Inorganic Materials, International Journal of Computational Engineering & Science, International Journal of Solids & Structures, Journal of Applied Physics, Journal of Physics D, Journal of the American Ceramic Society, Journal of the American Chemical Society, Journal of Electroceramics, Journal of Materials Research, Journal of Materials Science, Journal of Materials Science Letters, Journal of Testing & Evaluation, Journal of Non-Crystalline Solids, Langmuir, Materials Chemistry & Physics, Materials Letters, Materials Research Bulletin, Materials Science & Engineering A, Materials Today, Metallurgical & Materials Transactions, Nano Letters, Nanotechnology, Nature Materials, Philosophical Magazine, Optical Materials, Progress in Materials Science, Science, Scripta Materialia, Small, Surface & Coatings Technology, Wear
- **Reviewer for Proposals:** Air Force Office of Scientific Research, Australian Research Council, Austrian Science Fund, Civilian Research and Development Foundation, Department of Energy, National Institutes of Health, National Science Foundation
- **Review Panel Member:** Department of Energy, National Science Foundation, Austrian Science Fund
- **Member:** External Advisory Board, Carnegie Mellon University NSF Materials Research Science & Engineering Center (MRSEC), 2009 - 2013
- **Lead Co-Organizer:** “International Workshop on Mechanics-Based Design of Advanced Materials, Composites and Coatings Honoring Dr. Brian Lawn on his 70th Birthday,” Perth, Australia, 2008
- **Lead Co-Organizer:** “Coatings 2005” Symposium, Materials Science & Technology Conference, Pittsburgh, PA, 2005
- **Lead Co-Organizer:** “Thermal Barrier Coatings” Symposium, Fall Meeting of the Materials Research Society, Boston, MA, 2000

- **Co-Organizer:** Materials Track, 50th Society of Engineering Science Annual Technical Conference, Providence, RI, 2013
- **Co-Organizer:** “Materials Genome Initiative Town Hall Meeting,” Brown University, Providence, RI, 2012
- **Co-Organizer:** “Solution Process Technology of Inorganic Films, Nanostructures and Functional Materials” Symposium, International Conference on Materials for Advanced Technology (ICMAT), Singapore, 2011
- **Co-Organizer:** “International Workshop on Novel Magnetic Materials,” Dresden, Germany, 2010
- **Co-Organizer:** “Advanced Ceramic Coatings: Processing, Properties, and Applications” Symposium, Pacific Rim Conference, Vancouver, Canada, 2009
- **Organizer:** “Nano Ceramics,” Annual Meeting of the American Ceramic Society, Indianapolis, IN, 1996
- **Organizer:** “*In Situ* Toughened Materials,” Fall Meeting of the American Ceramic Society, New Orleans, LA, 1995
- **Program Co-Chair:** Basic Science Division, Annual Meeting of the American Ceramic Society, Indianapolis, IN, 2001
- **Program Co-Chair:** Basic Science Division, Fall Meeting of the American Ceramic Society, San Francisco, CA, 2000
- **Member:** International Advisory Committee, International Congress on Ceramics, Beijing, China, 2014
- **Member:** International Advisory Board, International Conferences Materials and Technologies, Montecatini Terme, Italy, 2013
- **Member:** International Advisory Committee, European Materials Research Society Fall Meeting, Warsaw, Poland, 2012
- **Member:** International Advisory Committee, Thermal Barrier Coatings Workshop, Engineering Conferences International, Irsee, Germany, 2011
- **Member:** International Advisory Board, International Conferences Materials and Technologies, Montecatini Terme, Italy, 2010
- **Member:** International Scientific Advisory Committee, 3rd International Congress on Ceramics, Osaka, Japan, 2010
- **Member:** International Advisory Committee, Thermal Barrier Coatings Workshop, Engineering Conferences International, Irsee, Germany, 2007
- **Member:** International Advisory Board, International Symposium on Advanced Ceramics and Technology for Sustainable Energy Applications, Kenting, Taiwan, 2007
- **Member:** International Advisory Board, Engineering Ceramics Conference, Osaka, Japan, 2004
- **Member:** Executive Committee, American Ceramic Society, 1998 -2002
- **Session Chair:** International Conference on Materials for Advanced Technologies (ICMAT), Singapore, 2013
- **Session Chair:** Materials Genome Initiative Town Hall Meeting, Brown University,

Providence, RI, 2012

- **Session Chair:** Portuguese-Spanish Congress on Ceramics & Glasses, Aveiro, Portugal, 2011
- **Session Chair:** Materials Science & Technology Meeting, Houston, TX, 2010
- **Session Chair:** EUROMAT '09, Glasgow, United Kingdom, 2009
- **Session Chair:** International Workshop on Nanotechnology and Advanced Functional Nanomaterials, Pune, India, 2009
- **Session Chair:** International Conference on Materials for Advanced Technology, Singapore, 2009
- **Session Chair:** International Workshop on Mechanics-Based Design of Advanced Materials, Composites and Coatings, Perth, Australia, 2008
- **Session Chair:** 3rd International Conference on Materials for Advanced Technologies, Singapore, 2005
- **Session Chair:** Functionally Graded Materials Conference, Beijing, China, 2002
- **Session Chair:** Fall Meeting of the Materials Research Society, Boston, MA, 2000
- **Session Chair:** Annual Meetings of the Materials Research Society, 1993, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2004
- **Discussion Leader:** Gordon Research Conference, Solid State Studies in Ceramics, New London, NH, 2010

FACULTY ACTIVITIES

- **Current Fulltime Advisees*:** 3 Ph.D. Students and 3 Post-Doctoral Scholars
- **Past Fulltime Advisees*:** 15 M.S.; 10 Ph.D.; 11 Post-Doctoral Scholars; 4 Visiting Scholars; Several Undergraduates

Service at University of Connecticut

- **Interim Department Head:** Department of Materials Science & Engineering, 2003 - 2004
- **Chairman:** Departmental Alumni Relations and Awards Committee, 2003 - 04
- **Chairman:** Departmental Undergraduate Program Committee, 2001 - 02
- **Chairman:** Departmental Faculty Search Committees, 1999 - 2000; 2002 - 03
- **Chairman:** Departmental Graduate Program Committee, 1998 - 2000; 2001 - 03
- **Chairman:** Departmental Colloquium Committee, 1995 - 96
- **Member:** School of Engineering Academic Council, 2003 - 04
- **Member:** Institute of Materials Science Faculty Advisory Committee, 2003 - 04
- **Member:** Departmental Promotion, Tenure & Reappointment Committee, 2004 - 05
- **Member:** Departmental Faculty Search Committees, 1998 - 99, 2001
- **Member:** School of Engineering Graduate Committee, 1998 - 2001
- **Member:** School of Engineering Department-Head Evaluation Committee, 2001
- **Member:** School of Engineering Department-Head Search Committee, 1998

* Please see Supplementary Information section for details.

- **Faculty Advisor:** Materials Research Society Student Chapter at the University of Connecticut (1995 - 2004)

Service at The Ohio State University

- **Founding Director:** NSF Materials Research Science & Engineering Center, 2008 - 2011
- **Chairman:** MRSEC Executive Committee, 2008 - 2011
- **Chairman:** Departmental Faculty Search Committee, 2006 - 07
- **Member:** Executive Committee, OSU Materials Week Conferences, 2008 - 2011
- **Member:** Departmental Laboratory and Facilities Committee, 2005 - 06
- **Member:** Departmental Outreach Team, 2006 - 08
- **Member:** Departmental Graduate Studies Committee, 2006 - 11
- **Member:** Departmental Long Range Planning Team, 2005 - 11
- **Member:** Departmental Chair's Advisory Council, 2008 - 11
- **Member:** College of Engineering Research Planning Committee, 2005 - 11

Service at Brown University

- **Director:** Institute for Molecular and Nanoscale Innovation, 2014 - present
- **Director:** Center for Advanced Materials Research, 2012 - 2013
- **Member:** School of Engineering Executive Committee, 2012 - 2013
- **Member:** Institute for Molecular and Nanoscale Innovation (IMNI) Faculty Leadership Team, 2012 - present
- **Member:** School of Engineering Faculty Search Committee, 2012
- **Member:** School of Engineering Associate Dean Search Committee, 2012
- **Member:** School of Engineering Graduate Committee, 2012

Service to the *Alma Mater* IIT-Bombay

- Co-leading the Legacy Projects, in conjunction with the Silver Jubilee Reunion of the Class of 1985 at Indian Institute of Technology, Bombay (IIT-B), which include:
 - Class of 1985 Endowed Chair in Technology & Sustainable Development (T&SD)
 - Class of 1985 Business Plan Competition in T&SD to promote social entrepreneurship
 - Contribution to Young Faculty Awards for the recruitment of top junior faculty
 - Contribution to Faculty Wellness Fund for retired faculty lacking medical insurance.
- Active member of the IIT-B Faculty Alumni Network (FAN).

Supplementary Information

LIST OF RESEARCH ADVISEES

Current Advisees

Ph.D.

- Ms. Amanda Krause
- Mr. Lin Zhang
- Mr. Yuanyuan Zhou

Post-Doctoral Scholars

- Dr. (Mr.) Hector Garces
- Dr. (Ms.) Bilge Senturk
- Dr. (Ms.) Wen-wen Wu

Past Advisees

M.S.

- Mr. David C. Pender, M.S. 1997; Employer: Saint-Gobain Sekurit ZAF, Germany
- Mr. Hui Ye, M.S. 1997; Employer: Stellant, Minneapolis, MN
- Mr. Robert P. Jensen, M.S. 1998; Employer: H.C. Starck, Newton, MA
- Ms. Huiwen Xu, M.S. 1999; Employer: Applied Materials, Santa Clara, CA
- Ms. Swarnima Deshpande, M.S. 1999; Employer: unknown
- Mr. Shixiao Zhou, M.S. 1999; Employer: unknown
- Mr. Scott C. Thompson, M.S. 2001; Employer: Saint-Gobain Ceramics, East Granby, CT
- Ms. Anjali Pandit, M.S. 2002; Employer: University of Nottingham, England
- Mr. Pavitra Bansal, M.S. 2002; Employer: GL Industrial Services, England
- Ms. Xiaotong Wang, M.S. 2004; Employer: Intel, Chandler, AZ
- Mr. Jason Tresback, M.S. 2005 and M.S. 2008; Employer: Harvard Univ., Cambridge, MA
- Ms. Rebecca Cochran, M.S. 2006; Employer: Owens-Corning, Granville, OH
- Mr. Andrew Gledhill, M.S. 2006; Employer: Diamond Innovations, Worthington, OH
- Ms. Tengfei Jiang, M.S. 2009; Employer: University of Texas, Austin, TX
- Ms. Caitlin Toohey, M.S. 2011; Employer: ATI- Wah Chang, Portland, OR

Ph.D.

- Dr. (Ms.) Juthamas Jitcharoen, Ph.D. 1999
Thesis Title: “Contact-Damage Resistance in Alumina Based Ceramics with Elastic-Modulus-Graded Surfaces”
Employer: Ubon Ratchathani University, Thailand (Faculty Member and Vice President)
- Dr. (Mr.) David C. Pender, Ph.D. 1999
Thesis Title: “Ceramics with Graded Surfaces for Contact Damage Resistance”
Employer: Sage Electrochromics, Inc., Faribault, MN (Director of Operations)
- Dr. (Mr.) Kevin W. Schlichting, Ph.D. 2000
Thesis Title: “Failure Modes in Plasma-Sprayed Thermal Barrier Coatings”
Employer: Pratt & Whitney, East Hartford, CT (Technical Staff)
- Dr. (Ms.) Jie Wu, Ph.D. 2004
Thesis Title: “Novel Low-Thermal Conductivity Ceramics for Thermal Barrier Coatings”
Employer: Kennametal, Pittsburgh, PA (Technical Staff)
- Dr. (Mr.) Xuezheng Wei, Ph.D. 2004
Thesis Title: “Hydrothermal Synthesis of Barium Strontium Titanate (BST) Powders, and Continuous and Patterned Thin Films”
Employer: Schlumberger, Huston, TX (Technical Staff)
- Dr. (Mr.) Amol Jadhav, Ph.D. 2007

Thesis Title: “Processing, Characterization, and Properties of Some Novel Thermal Barrier Coatings”

Employer: Intel, Chandler, AZ (Technical Staff)

- Dr. (Ms.) Aysegul Aygun, Ph.D. 2008
Thesis Title: “Novel Thermal Barrier Coatings (TBCs) that are Resistant to High-Temperature Attack by CaO-MgO-Al₂O₃-SiO₂ (CMAS) Glassy Deposits”
Employer: Pertan Group, Champaign, IL (Technical Staff)
- Dr. (Mr.) Edward Herderick, Ph.D. 2009
Thesis Title: “Synthesis, Characterization, and Property-Measurements of Novel Metal-Oxide-Metal Heterojunction Nanowires with Ferroelectric Functionality”
Employer: Rapid Prototyping + Manufacturing, Avon Lake, OH (Director of R&D)
- Dr. (Ms.) Julie Drexler, Ph.D. 2011
Thesis Title: “Thermal Barrier Coatings Resistant to Glassy Deposits”
Employer: Boeing, Everett, WA (Technical Staff)
- Dr. (Mr.) Andrew Gledhill, Ph.D. 2011
Thesis Title: “Thermal Barrier Coatings Chemo-Mechanically Resistant to Molten Ashes”
Employer: Diamond Innovations, Worthington, OH (Technical Staff)

Post-Doctoral Scholars

- Dr. (Mr.) Vijay V. Pujar, 1996-1998; Employer: BF Goodrich, San Diego, CA (Manager)
- Dr. (Ms.) Tania Bhatia, 1999-2002; Employer: Pratt & Whitney, East Hartford, CT (Manager)
- Dr. (Mr.) Fang Wu, 2002-2003; Employer: Chengdu University, China (Research Associate)
- Dr. (Mr.) Jing-Jong Shyue, 2005-2006; Employer: Academia Sinica and National Taiwan University, Taipei, Taiwan (Faculty Member)
- Dr. (Ms.) Rosalía Poyato, Fulbright Scholar 2004-2006; Employer: University of Seville, Spain (Faculty Member)
- Dr. (Mr.) Sung Sic Hwang, Korean Government Scholar 2005-2006; Employer: SKC Solmics, S. Korea (Senior Researcher)
- Dr. (Mr.) Alexander L. Vasiliev, 2004-2007; Employer: Russian Academy of Sciences, Moscow (Research Fellow)
- Dr. (Mr.) Michael D. Rauscher, 2008; Employer: Cornerstone Research Group, Dayton, OH (Technical Staff)
- Dr. (Ms.) Dongsheng Li, 2007-2009; Employer: Lawrence Berkeley Laboratory, Berkeley, CA (Research Scientist)
- Dr. (Mr.) Chun-Hu Chen, 2010-2012; Employer: National Sun Yat-sen University, Taiwan (Faculty Member)
- Dr. (Mr.) Kongara M. Reddy, 2008-2012; Employer: Boise State University, Boise, ID (Research Associate)

Visiting Scientists/Faculty

- Prof. (Mr.) Angel L. Ortiz, 1999-2000; from Universidad de Extremadura, Badajoz, Spain
- Prof. (Mr.) Oscar Borrero, 2003-2004; from Universidad de Extremadura, Badajoz, Spain

LIST OF PUBLICATIONS

Refereed Journal Papers ([‡] papers with 100+ citations each)

1. N.P. Padture and L.D. Pye, "Crystallization Kinetics of a Glass in the Y_2O_3 - Fe_2O_3 - B_2O_3 System," *Journal of Materials Science Letters*, **10**, 269-71 (1991).
2. N.P. Padture and L.D. Pye, "Glass Formation and Structure of Glasses in the Y_2O_3 - Fe_2O_3 - B_2O_3 System," *Glastechnische Berichte*, **64** [5] 128-36 (1991).
3. N.P. Padture and H.M. Chan, "Influence of Grain Size and Degree of Crystallization of Intergranular Glassy Phase on the Mechanical Behaviour of a Debased Alumina," *Journal of Materials Science*, **29**, 2711-15 (1991).
4. S.J. Bennison, N.P. Padture, J.L. Runyan, and B.R. Lawn, "Flaw-Insensitive Ceramics," *Philosophical Magazine Letters*, **64** [4] 191-95 (1991).
5. N.P. Padture and H.M. Chan, "On the Constrained Crystallization of Synthetic Anorthite ($CaO \cdot Al_2O_3 \cdot 2SiO_2$)," *Journal of Materials Research*, **7** [1] 170-77 (1992).
6. N.P. Padture and H.M. Chan, "Improved Flaw Tolerance in Alumina Containing 1 vol% Anorthite Via Crystallization of the Intergranular Glass," *Journal of the American Ceramic Society*, **75** [7] 1870-75 (1992).
7. N.P. Padture, "Post-Failure Subsidiary Cracking from Indentation Flaws in Brittle Materials," *Journal of Materials Research*, **8** [6] 1411-17 (1993).
8. N.P. Padture, S.J. Bennison, and H.M. Chan, "Flaw-Tolerance and Crack-Resistance Properties of Alumina-Aluminum Titanate Composites with Tailored Microstructures," *Journal of the American Ceramic Society*, **76** [9] 2312-20 (1993).
9. B.R. Lawn, N.P. Padture, L.M. Braun, and S.J. Bennison, "Model for Toughness-Curves in Two-Phase Ceramics: I. Basic Fracture Mechanics," *Journal of the American Ceramic Society*, **76** [9] 2235-40 (1993).
10. N.P. Padture, J.L. Runyan, S.J. Bennison, L.M. Braun, and B.R. Lawn "Model for Toughness-Curves in Two-Phase Ceramics: II. Microstructural Variables," *Journal of the American Ceramic Society*, **76** [9] 2241-47 (1993).
- [‡] 11. F. Guiberteau, N.P. Padture, H. Cai, and B.R. Lawn, "Indentation Fatigue: A Simple Cyclic Hertzian Test for Measuring Damage Accumulation in Polycrystalline Ceramics," *Philosophical Magazine, A* **68** [5] 1003-16 (1993).
Times Cited: 147
- [‡] 12. B.R. Lawn, N.P. Padture, H. Cai, and F. Guiberteau "Making Ceramics 'Ductile'," *Science*, **263**, 1114-16 (1994).
Times Cited: 213
- [‡] 13. N.P. Padture, "In Situ-Toughened Silicon Carbide," *Journal of the American Ceramic Society*, **77** [2] 519-23 (1994).
Times Cited: 345
14. H. Cai, N.P. Padture, B.M. Hooks, and B.R. Lawn "Flaw Tolerance and Toughness-Curves in 2-Phase Particulate Composites: SiC/Glass," *Journal of the European Ceramic Society*, **13**, 149-57 (1994).
15. C-F. Chen, M.E. Perisse, A.E. Ramirez, N.P. Padture, and H.M. Chan "Effect of Grain Boundary Phase on the Thermal Conductivity of AlN Ceramics," *Journal of Materials Science*, **29**, 1595-1600 (1994).
16. B.R. Lawn, N.P. Padture, F. Guiberteau, and H. Cai "A Model for Microcrack Initiation and Propagation Beneath Hertzian Contacts in Polycrystalline Ceramics," *Acta Metallurgica et Materialia*, **42** [5] 1683-93 (1994).

- § 17. F. Guiberteau, N.P. Padture, and B.R. Lawn, “Effect of Grain Size on Hertzian Contact Damage in Al_2O_3 ,” *Journal of the American Ceramic Society*, **77** [7] 1825-31 (1994).
Times Cited: 187
- § 18. N.P. Padture and B.R. Lawn, “Toughness Properties of a Silicon Carbide with an *in Situ* Induced Heterogeneous Grain Structure,” *Journal of the American Ceramic Society*, **77** [10] 2518-22 (1994).
Times Cited: 197
19. N.P. Padture, C.J. Evans, H.H.K. Xu, and B.R. Lawn “Enhanced Machinability of a Silicon Carbide Ceramic via Microstructural Design,” *Journal of the American Ceramic Society*, **78** [1] 215-17 (1995).
20. H.H.K. Xu, L. Wei, N.P. Padture, B.R. Lawn, and R.L. Yeckley, “Effect of Microstructural Coarsening on Short-Crack Toughness Properties of Si_3N_4 ,” *Journal of Materials Science*, **30**, 869-78 (1995).
21. N.P. Padture and B.R. Lawn, “Fatigue in Ceramics with Interconnecting Weak Interfaces: A Study Using Cyclic Hertzian Contacts,” *Acta Metallurgica et Materialia*, **43** [4] 1609-17 (1995).
22. N.P. Padture and B.R. Lawn “Contact Fatigue of a Silicon Carbide with a Heterogeneous Grain Structure,” *Journal of the American Ceramic Society*, **78** [6] 1431-38 (1995).
23. N.P. Padture, D.C. Pender, S. Wuttiphon, and B.R. Lawn “*In Situ* Processing of Layered Structures in Silicon Carbide,” *Journal of the American Ceramic Society*, **78** [11] 3160-62 (1995).
24. H.H.K. Xu, N.P. Padture, and S. Jahanmir, “Effect of Microstructure on Material-Removal Mechanisms and Damage Tolerance in the Abrasive Machining of Silicon Carbide,” *Journal of the American Ceramic Society*, **78** [9] 2443-48 (1995).
25. L. An, H.M. Chan, N.P. Padture, and B.R. Lawn “Damage-Resistant Alumina-Based Layer Composites,” *Journal of Materials Research*, **11** [1] 204-10 (1996).
26. S. Wuttiphon, B.R. Lawn, and N.P. Padture “Crack Suppression in Strongly-Bonded Homogeneous/Heterogeneous Laminates: A Study on Glass/Glass-Ceramic Bilayers,” *Journal of the American Ceramic Society*, **79**, [3] 634-40 (1996).
27. A. Pajares, L. Wei, B.R. Lawn, N.P. Padture, and C.C. Berndt, “Mechanical Characterization of Plasma-Sprayed Ceramic Coatings on Metal Substrates by Contact Testing,” *Materials Science & Engineering*, **A208**, 158-65 (1996).
28. B.A. Latella, B.H. O’Connor, N.P. Padture, and B.R. Lawn, “Hertzian Contact Damage in Porous Alumina Ceramics,” *Journal of the American Ceramic Society*, **80** [4] 1027-31 (1997).
29. N.P. Padture and P.G. Klemens, “Low Thermal Conductivity in Garnets,” *Journal of the American Ceramic Society*, **80** [4] 1018-20 (1997).
30. J. Jitcharoen, N.P. Padture, A.E. Giannakopoulos, and S. Suresh, “Hertzian-Crack Suppression in Ceramics with Elastic-Modulus-Graded Surfaces,” *Journal of the American Ceramic Society*, **81** [9] 2301-08 (1998).
31. D.C. Pender and N.P. Padture, “Surface-Layered Silicon Carbide for Enhanced Contact-Damage Resistance,” *Journal of Materials Science Letters*, **17**, 999-1002 (1998).
32. H. Ye, V.V. Pujar, and N.P. Padture “Coarsening in Liquid-Phase-Sintered α -SiC,” *Acta Materialia*, **47** [2] 481-87 (1999).
33. S. Suresh, M. Olsson, A.E. Giannakopoulos, N.P. Padture, and J. Jitcharoen, “Engineering the Resistance to Sliding-Contact Damage Through Controlled Gradients in Elastic Properties at Contact Surfaces,” *Acta Materialia*, **47** [14] 3915-26 (1999).

34. R.P. Jensen, W.E. Luecke, N.P. Padture, and S.M. Wiederhorn “High-Temperature Properties of Liquid-Phase-Sintered α -SiC,” *Materials Science and Engineering*, **A282** [1-2] 109-114 (2000).
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Patents

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4. M. Gell, X. Ma, E.H. Jordan, N.P. Padture, L. Xie, D. Xiao, and A. DeCarminé, "Coatings, Materials, Articles, and Methods of Making Thereof," *U.S. Patent*, **No. 7,563,503** (2009).

Refereed Conference Proceedings Papers

1. N.P. Padture, H.M. Chan, B.R. Lawn, and M.J. Readey, "The Role of Crystallization of an Intergranular Glassy Phase in Determining Grain Boundary Residual Stresses in Debased Aluminas," *MRS Symp. Proc.*, Vol. **170**, Tailored Interfaces in Composites, Eds. C. Pantano and E. Chen, Mater. Res. Soc., Pittsburgh, PA, pp. 245-50 (1990).
2. N.P. Padture, S.J. Bennison, J.L. Runyan, J. Rödel, H.M. Chan, and B.R. Lawn, "Flaw Tolerant Al₂O₃-Al₂TiO₅ Composites," *Ceram. Trans.*, Vol. **19**, Advanced Composite Materials, Ed. M.D. Sacks, American Ceramic Society, Westerville, OH, pp. 715-21 (1991).
3. N.P. Padture, "Microstructural Effects in the Machining of Ceramics," *Supergrind '95 Proc.*, Eds. I.D. Marinescu and F. Gray, The Industrial Diamond Association of America, Skyland, NC, pp. 167-82 (1995).
4. N.P. Padture, D.C. Pender, and J. Jitcharoen, "Microstructural Tailoring of Ceramics for Mechanical Properties," *Proc. VIth Natl. Cong. Mech. Props. Solids*, Eds. A. Pajares, F.L. Cumbreira and F. Guiberteau, University of Extremadura, Badajoz, Spain, pp. 19-29 (1998).
5. K.W. Schlichting, N.P. Padture, and P.G. Klemens, "Thermal Conductivity of Zirconia Containing Ytria," *Proc. Therm. Cond.*, Vol. **25**, Eds. C. Uher and D. Morelli, Technomic Publishing Co., Lancaster, PA, pp. 162-67 (2000).
6. X. Ma, T.D. Xiao, J. Roth, L. Xie, E.H. Jordan, N.P. Padture, M. Gell, and J.R. Price, "Thick Thermal Barrier Coatings with Controlled Microstructures Using Solution Precursor Plasma Spray Process," *Proc. Intl. Thermal Spray Conf.*, Ed. D. von Hofe, ASM International, Materials Park, OH, pp. 1103-1109 (2004).
7. E. Zapata-Solvas, R. Poyato, D. Gómez-García, A. Domínguez-Rodríguez, and N.P. Padture, "High-Temperature Mechanical Properties of Al₂O₃/SWNT (10 vol%) and Al₂O₃/Graphite (10 vol%) Composites," (in Spanish) *TRATERMAT '05*, Eds. A.

- Domínguez-Rodríguez, J.A. Odriozola, D. Gómez-García and F. Guteriérrez Mora, CSIC and University of Seville, Seville, Spain, pp. 369-374 (2005).
8. M. Gell, F. Wu, E.H. Jordan, N.P. Padture, B.M. Cetegen, L. Xie, A. Ozturk, A.D. Jadhav, D. Chen, and X. Ma, "The Solution Precursor Plasma Spray Process for Making Durable Thermal Barrier Coatings," *Proc. ASME Turbo Expo*, ASME, New York, Vol. 2, pp. 905-911 (2005).

Book Section (Invited)

1. N.P. Padture "Hertzian Contacts," *Encyclopedia of Materials: Science and Technology*, Eds. K.H.J. Buschow, R.W. Cahn, M.C. Flemings, B. Ilschner, E. Kramer and S. Mahajan, Elsevier, New York, NY, pp. 3750-52 (2001).

LIST OF INVITED TALKS PRESENTED[#]

1. "Crack-Resistance and Strength Properties of Some Alumina-Based Ceramics," National Institute of Standards and Technology, Gaithersburg, MD, September 1991.
2. "Toughening of Structural Ceramics," Ohio University, Athens, OH, May 1992.
3. "Flaw Tolerance and Toughness-Curves in Two-Phase Ceramics," Ames Laboratory, Iowa State University, Ames, IA, February 1993.
4. "Flaw Tolerance and Toughness-Curves in Two-Phase Ceramics," Johns Hopkins University, Baltimore, MD, March 1993.
5. "Toughness-Curves in Two-Phase Ceramic Composites: Model and Experiment," Annual Meeting of the American Ceramic Society, Cincinnati, OH, April 1993.
6. "Microstructural Tailoring of Structural Ceramics: Toughness and Contact Damage," General Electric Corporate R&D Laboratory, Schenectady, NY, September 1993.
7. "Microstructural Tailoring of Structural Ceramics: Toughness and Contact Damage," Michigan Technological University, Houghton, MI, October 1993.
8. "Contact Fatigue in Polycrystalline Ceramics," DuPont Central Research and Development, Wilmington, DE, March 1994.
9. "Microstructural Design of Structural Ceramics: Toughness and Contact Damage," University of Connecticut, Storrs, CT, August 1994.
10. "Microstructural Design of Structural Ceramics: Toughness and Contact Damage," Northwestern University, Evanston, IL, October 1994.
11. "*In Situ*-Toughened Silicon Carbide," Fall Meeting of the American Ceramic Society, Los Angeles, CA, October 1994.
12. "*In Situ*-Toughened Silicon Carbide," Rational Design & Processing of Ceramics Workshop, University of California, San Diego, CA, June 1995.
13. "Microstructural Effects in the Machining of Ceramics," Supergrind '95, Industrial Diamond Association of America, Storrs, CT, November 1995.
14. "Novel Contact-Damage Resistant Ceramics," Air Force Office of Scientific Research Review Meeting, Hueston Woods, OH, May 1996.
- † 15. "*In Situ*-Toughened Silicon Carbide: Microstructural Tailoring and Mechanical Behavior," International Conference on Advances in Metallurgy, Bangalore, India, July 1997.
16. "Microstructural Tailoring of Ceramics for Mechanical and Thermal Properties," Meeting of the CT Chapter of the Metals/Materials/Minerals Society, Cromwell, CT, March 1997.

[#] Does not include co-authored invited talks presented by other co-authors.

[†] Talk presented abroad.

17. "Novel Concepts in Contact-Damage-Resistant Ceramics and Thermal-Barrier Ceramics," National Institute of Standards and Technology, Gaithersburg, MD, March 1997.
18. "Microstructural Tailoring of Ceramics for Mechanical Properties," Yale University, New Haven, CT, April 1997.
19. "Novel Concepts in Contact-Damage-Resistant Ceramics and Thermal-Barrier Ceramics," Air Force Office of Scientific Research Review Meeting, Cincinnati, OH, May 1997.
20. "Microstructural Tailoring of Structural Ceramics: Challenges and Opportunities," National Science Foundation Workshop on Fundamental Research Needs in Ceramics, Arlington, VA, June 1997.
21. "*In Situ* Processing and Mechanical Behavior of Novel Ceramics," Office of Naval Research Review Meeting, Woods Hole, MA, June 1997.
- † 22. "Microstructural Tailoring of Ceramics for Mechanical and Thermal Properties," International Materials Research Congress, Cancún, Mexico, September 1997.
23. "Tailoring of Ceramic Micro- and Macro-Structures for Mechanical Properties," Purdue University, West Lafayette, IN, November 1997.
24. "Novel Concepts in Contact-Damage-Resistant Ceramics and Thermal-Barrier Ceramics," New England Chapter of the American Ceramic Society, Auburn, MA, December 1997.
25. "Microstructural Tailoring of Ceramics for Mechanical Properties," Olin Corporation, New Haven, CT, February 1998.
26. "Microstructural Tailoring of Ceramics for Mechanical and Thermal Properties," State University of New York, Stony Brook, NY, April 1998.
27. "NSF Workshop on Fundamental Research Needs in Ceramics: Report of the Working Group on Structural and Electromechanical Ceramics," Annual Meeting of the American Ceramic Society, Cincinnati, OH, May 1998.
28. "Microstructure, Toughness, Contact Damage, and Fatigue: *In Situ* -Reinforced SiC," Annual Meeting of the American Ceramic Society, Cincinnati, OH, May 1998.
29. "Novel Concepts in Contact-Damage-Resistant Ceramics and Thermal-Barrier Ceramics," Air Force Office of Scientific Research Review Meeting, Cincinnati, OH, May 1998.
- † 30. "YAG-Based Thermal Barrier Coatings," US-Europe Joint Workshop on Thermal Barrier Coatings, Irsee, Germany, May 1998.
31. "*In Situ* Processing and Mechanical Behavior of SiC Ceramics," Office of Naval Research Review Meeting, Woods Hole, MA, May 1998.
- † 32. "Microstructural Tailoring of Ceramics for Mechanical Properties," VIth National Conference on the Mechanical Properties of Materials, Badajoz, Spain, June 1998.
- † 33. "*In Situ* Processing of and Hertzian-Crack Suppression in Novel Ceramics Microstructures," World Ceramics Congress, Florence, Italy, June 1998.
34. "Novel Concepts in Contact-Damage-Resistant Ceramics," Air Force Office of Scientific Research Review Meeting, Indianapolis, IN, April 1999.
- † 35. "Thermal Barrier Coatings Based on Zirconia Ceramics: Nanostructure, Microstructure, Properties and Performance," United Engineering Foundation Conference on Nanomaterials, Québec City, Canada, August, 1999.
36. "Tailoring of Micro- and Macro-Structure of Ceramics for Mechanical Properties," Army Research Laboratory, Aberdeen Proving Grounds, MD, October 1999.
37. "Novel Concepts in Contact-Damage-Resistant Ceramics," Air Force Office of Scientific Research Review Meeting, St. Louis, MO, May 2000.
38. "Thermo-Mechanical Properties of YSZ-Based TBCs Processed Using Conventional and Solution-Precursor Plasma-Spray Processes," Office of Naval Research Review Meeting,

Woods Hole, MA, May 2000.

- † 39. “Microstructural Tailoring of Ceramics for Mechanical Properties,” Instituto de Ceramica y Vidrio, Madrid, Spain, July, 2000.
- † 40. “Novel Concepts in Contact-Damage-Resistant Ceramics,” Universitat Politècnica de Catalunya, Barcelona, Spain, July 2000.
- † 41. “Thermal Barrier Coatings,” Instituto de Ciencia de Materiales, Madrid, Spain, July 2000.
42. “Novel Concepts in Contact-Damage-Resistant Ceramics,” University of California, Santa Barbara, CA, September, 2000.
43. “Solution-Precursor Plasma Spray: A New Method for the Deposition of Nanostructured Ceramic Coatings,” University of California, Santa Barbara, CA, March, 2001.
44. “Solution-Precursor Plasma Spray: A New Method for the Deposition of Nanostructured Ceramic Coatings,” Rockwell Science Center, Thousand Oaks, CA, May, 2001.
45. “Contact-Damage-Resistant Ceramics with Gradients in Elastic Modulus,” University of California, Santa Barbara, CA, May, 2001.
46. “Novel Concepts in Thermal Barrier Coatings,” Gordon Conference on Solid State Studies in Ceramics, Meriden, NH, August 2001.
47. “Fundamental Studies in Novel Contact-Damage-Resistant Ceramics,” Air Force Office of Scientific Research Review Meeting, Snowbird, UT, August, 2001.
48. “Advanced Thermal Barrier Coatings for Industrial Gas-Turbine Engines,” Advanced Gas Turbine Systems Research Materials Workshop, Greenville, SC, October 2001.
- † 49. “Novel Concepts in Thermal Barrier Coatings for Gas-Turbine Engines,” Indian Institute of Technology, Bombay, India, January 2002.
50. “Chemical Solution Precursor Routes to Nanoceramics,” Office of Naval Research and Defense Advanced Research Projects Agency Workshop, Arlington, VA, March 2002.
51. “Contact-Damage-Resistant Si-Based Ceramics,” Annual Meeting of the American Ceramic Society, St. Louis, MO, May 2002.
52. “Processing and Mechanical Properties of Nanoceramics,” Defense University Research Initiative on Nanotechnology Review Meeting, Cambridge, MA, April 2002.
53. “Towards Durable Thermal Barrier Coatings with Novel Microstructures Deposited Using Solution-Precursor Plasma Spray”, Office of Naval Research Review Meeting, Woods Hole, MA, May 2002.
54. “Novel Concepts in Contact-Damage- and Wear-Resistant Ceramics,” Air Force Office of Scientific Research Review Meeting, Bar Harbor, ME, August 2002.
- † 55. “Graded Ceramics,” Functionally Graded Materials 2002, Beijing, China, October, 2002.
- † 56. “Next Generation Ceramic Thermal Barrier Coatings,” Kyoto Institute of Technology, Kyoto, Japan, October 2002.
- † 57. “Novel Concepts in Ceramic Thermal Barrier Coatings,” National Institute of Advanced Industrial Science and Technology, Synergy Ceramics, Nagoya, Japan, October 2002.
- † 58. “Novel Concepts in Contact-Damage Resistant Ceramics,” National Institute for Materials Science, Tsukuba, Japan, October 2002.
- † 59. “Next Generation Ceramic Thermal Barrier Coatings,” Instituto de Ceramica y Vidrio, Madrid, Spain, March 2003.
- † 60. “Next Generation Ceramic Thermal Barrier Coatings,” Universidad de Sevilla, Seville, Spain, March 2003.
- † 61. “Next Generation Ceramic Thermal Barrier Coatings,” Universidad de Extremadura, Badajoz, Spain, March 2003.
- † 62. “Highly Durable Solution-Precursor Plasma-Sprayed TBCs,” Engineering Foundation

Conference on Thermal/Environmental Barrier Coatings, Irsee, Germany, August 2003.

63. "Next Generation Ceramic Thermal Barrier Coatings," National Institute of Standards and Technology, Gaithersburg, MD, September 2003.
64. "Advanced Thermal Barrier Coatings," South Carolina Institute of Energy Studies at Clemson University, Clemson, SC, October 2003.
- † 65. "Advanced Ceramic Coatings," International Ceramic Congress, Chennai, India, January 2004.
66. "Next Generation Ceramic Thermal Barrier Coatings," Ohio State University, Columbus, OH, January 2004.
- † 67. "Contact-Damage-Resistant Ceramics," IXth National Congress on the Mechanical Properties of Materials, Huelva, Spain, June 2004.
68. "Nano- and Micro-Scale Tailoring of Structural and Functional Ceramics," Ohio State University, Columbus, OH, July 2004.
69. "Ultra-Thick Thermal Barrier Coatings," South Carolina Institute of Energy Studies at Clemson University, Clemson, SC, September 2004.
- † 70. "Novel Thermal Barrier Coatings," Engineering Ceramics Conference, Osaka, Japan, November 2004.
- † 71. "Nanomaterials," Ubonratchathani University, Ubonratchathani, Thailand, November 2004.
72. "Thermal Properties of Ceramics," Diamond Innovations, Columbus, OH, March 2005.
- † 73. "Novel 1-D and 2-D Functional Nanostructures," International Conference on Materials for Advanced Technologies (ICMAT), Singapore, July 2005.
74. "Research Opportunities in Ultra-High Temperature Materials," Air Force Office of Scientific Research Workshop on Ultra-High Temperature Materials, Washington DC, September 2005.
75. "Superior Ultra-Thick Thermal Barrier Coatings," South Carolina Institute of Energy Studies at Clemson University, Clemson, SC, October 2005.
- † 76. "Novel 1-D, 2-D, and 3-D Multi-Functional Nanomaterials," National Chemical Laboratory, Pune, India, December 2005.
77. "Thermal Barrier Coatings," General Electric Aviation, Evendale, OH, March 2006.
78. "Materials Challenges and Opportunities in Nanotechnology," Central Ohio Chapter of the American Ceramic Society, Columbus, OH, April, 2006.
79. "Novel 1-D and 2-D Nanostructures of Functional Oxides," Physics Department, The Ohio State University, Columbus, OH, May 2006.
80. "Novel Thermal Barrier Coatings for Resistance Against CMAS Degradation," Office of Naval Research Review Meeting, Falmouth, MA, May 2006.
- † 81. "Next Generation Thermal Barrier Coatings," International Workshop on Mechanical Properties of Advanced Materials, Fuenteheridos, Spain, June 2006.
82. "Novel 1-D, 2-D, and 3-D Nanomaterials and Nanoceramics for Functional and Structural Applications," Engineering Foundation Conference on Novel & Emerging Ceramics & Composites, Kona, Hawaii, June 2006.
83. "Novel 1-D and 2-D Nanostructures of Functional Oxides," Material Science & Technology Conference, Cincinnati, OH, October 2006.
84. "Superior Ultra-Thick Thermal Barrier Coatings," South Carolina Institute of Energy Studies at Clemson University, Clemson, SC, October 2006.
- † 85. "Novel Concepts in 0-D, 1-2, 2-D, and 3-D Nanomaterials for Functional and Structural Applications," University Vienna, Vienna, Austria, October, 2006.

- † 86. “Novel Concepts in 0-D, 1-D, 2-D, and 3-D Nanomaterials for Functional and Structural Applications,” Hungarian Academy of Sciences, Budapest, Hungary, November, 2006.
- † 87. “Novel 1-D, 2-D, and 3-D Nanomaterials and Nanoceramics for Functional and Structural Applications,” 3rd International Symposium on Advanced Ceramics, Singapore, December 2006.
- † 88. “Novel 1-D, 2-D, and 3-D Nanomaterials and Nanoceramics for Functional and Structural Applications,” Institute of Materials Research and Engineering, Singapore, December 2006.
- † 89. “Novel 1-D, 2-D, and 3-D Nanomaterials and Nanoceramics for Functional and Structural Applications,” National Chemical Laboratory, Pune, India, December 2006.
- 90. “Engineered Top-Coats for Advanced Thermal Barrier Coatings,” International Conference on Advanced Ceramics and Composites, Daytona Beach, FL, January 2007.
- 91. “Next Generation Thermal Barrier Coatings,” Annual Meeting of the Metals/Materials/Minerals Society (TMS), Orlando, FL, February 2007.
- 92. “Novel Thermal Barrier Coatings for Resistance Against CMAS Degradation,” Office of Naval Research Review Meeting, Golden CO, May 2007.
- 93. “Novel Concepts in Ceramic Coatings and Composites,” Wright Patterson Air Force Base, Dayton, OH, June 2007.
- † 94. “Nanowires, Nanotubes, Thin Films, and Nanocomposites for Functional and Structural Applications,” National Chemical Laboratory, Pune, India, August 2007.
- † 95. “Engineered Top-Coats for Advanced Thermal Barrier Coatings,” Engineering Conferences International Workshop on Thermal Barrier Coatings, Irsee, Germany, August 2007.
- 96. “Novel Processing of Advanced Thermal Barrier Coatings,” Materials Science & Technology (MS&T) Conference, Detroit, MI, September 2007.
- 97. “Novel Concepts in 1-D, 2-D, and 3-D Functional and Structural Nanoceramics: Nanowires, Nanotubes, Thin Films, and Nanocomposites,” Richard M. Fulrath Award Symposium, Materials Science & Technology (MS&T) Conference, Detroit, MI, September 2007. [**Keynote Lecture**]
- 98. “Synthesis, Characterization, Device Fabrication, and Properties of Novel Functional-Oxide Nanowires,” Materials Science & Technology (MS&T) Conference, Detroit, MI, September 2007.
- 99. “Novel Concepts in Advanced Structural Ceramics: Thermal Barrier Coatings and Contact-Damage-Resistant Nanocomposites,” Pennsylvania State University, State College, PA, October 2007.
- † 100. “Novel Concepts in Advanced Structural Ceramics: Thermal Barrier Coatings and Contact-Damage-Resistant Nanocomposites,” Ceramic Society of Japan Annual Meeting, Nagaoka, Japan, March 2008.
- † 101. “Novel Concepts in 1-D, 2-D, and 3-D Functional and Structural Nanoceramics: Nanowires, Nanotubes, Thin Films, and Nanocomposites,” National Institute of Materials Science, Tsukuba, Japan, March 2008.
- 102. “Novel Concepts in Nanomaterials for Functional and Structural Applications: Nanowires, Nanotubes and Nanocomposites,” Ohio Nano Summit, Mason, OH, April, 2008.
- 103. “Materials Engineering of Nanowires, Nanotubes, and Nanocomposites,” Tulane University, New Orleans, May 2008.
- 104. “Novel Thermal Barrier Coatings,” ONR Review Meeting, Woods Hole, MA, May 2008.
- † 105. “Ceramic/Carbon Nanotubes Composites — A Case of Multifunctional Composites with

Truly Engineered Grain Boundaries,” International Workshop on Mechanics-Based Design of Advanced Materials, Composites and Coatings, Perth, Australia, July 2008.

106. “Center for Emergent Materials, A NSF-Funded Materials Research Science and Engineering Center at the Ohio State University,” Ohio State University Materials Week, Columbus, OH, September 2008.
107. “Structural and Functional Nanocomposites with Hierarchical Structures in 1-D, 2-D, and 3-D,” Materials Science & Technology Conference, Pittsburgh, PA, October 2008.
108. “Center for Emergent Materials, A NSF-Funded Materials Research Science and Engineering Center at the Ohio State University,” National Science Foundation Materials Research Science and Engineering Centers Directors’ Meeting, Arlington, VA, October 2008.
109. “Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D),” Northwestern University, Evanston, IL, November 2008.
110. “Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D),” University of Michigan, Ann Arbor, MI, January 2009.
111. “Novel Concepts in Structural Ceramics: Thermal Barrier Coatings and Contact-Damage-Resistant Ceramic Nanocomposites,” Case Western Reserve University, Cleveland, OH, February 2009.
- † 112. “Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D),” Universidad de Sevilla, Seville, Spain, March 2009.
- † 113. “Fracture and Microstructure Design of Ceramics and Composites,” Universidad de Sevilla, Seville, Spain, March 2009.
- † 114. “Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D),” Universidad de Extremadura, Badajoz, Spain March 2009.
115. “Novel Thermal Barrier Coatings,” Office of Naval Research Review Meeting, Woods Hole, MA, May 2009.
116. “Nanostructured Ceramics and Composites,” Engineering Conferences International Workshop on Nanomaterials, Colorado Springs, CO, June 2009.
- † 117. “Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D),” International Conference on Materials for Advanced Technologies (ICMAT), Singapore, June 2009.
- † 118. “Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D), Graphene (2-D), and Nanocomposites (3-D),” International Workshop on Nanotechnology and Advanced Functional Materials, National Chemical Laboratory, Pune, India, July 2009.
- † 119. “Novel Concepts in Ceramic Thermal Barrier Coatings,” EUROMAT’09, Glasgow, United Kingdom, September 2009.
- † 120. “A Perspective on Structural Nanoceramics and Nanocomposites,” EUROMAT’09, Glasgow, United Kingdom, September 2009. [**Keynote Lecture**]
121. “Degradation of Thermal Barrier Coatings From Deposits and Its Mitigation,” Department of Energy Workshop, Orlando, FL, October, 2009.
122. “Extreme Materials Engineering: From Jet-Engine Turbines to Graphene Devices,” Physics Colloquium, The Ohio State University, Columbus, OH, January 2010.
- † 123. “Towards Rational Tailoring of Functional and Structural Nanomaterials: Nanowires (1-D),

Graphene (2-D), and Nanocomposites (3-D),” Instituto de Ciencia de Materiales de Madrid, Spain, March 2010.

124. “Novel Concepts in Advanced Structural Ceramics: Thermal Barrier Coatings and Multifunctional Nanocomposites,” Instituto de Ceramica y Vidrio, Madrid, Spain, March 2010.
125. “Novel Thermal Barrier Coatings,” International Conference on Metallurgical Coatings and Thin Films, San Diego, CA, April 2010.
126. “Novel Thermal Barrier Coatings and Environmental Barrier Coatings,” Office of Naval Research Review Meeting, Woods Hole, MA, May 2010.
- † 127. “Interdisciplinary Materials Research at the Ohio State University,” International Workshop on Novel Magnetic Materials, Dresden, Germany, August 2010.
128. “A Perspective on Mechanical Properties of Nanoceramics and Nanocomposites,” Materials Science & Technology (MS&T) Conference, Houston, TX, October 2010.
129. “Degradation of Thermal Barrier Coatings From Deposits and Its Mitigation,” Department of Energy Workshop, State College, PA, October 2010.
- † 130. “Extreme Materials Engineering: From Jet-Engine Turbines to Graphene Devices,” National Chemical Laboratory, Pune, India, December 2010.
131. “Extreme Materials Engineering: From Jet-Engine Turbine Coatings to Carbon Nanotube Composites to Graphene Devices,” Brown University, RI, February 2011.
132. “Carbon-Based Materials for Spintronics,” National Science Foundation Materials Research Science and Engineering Centers Directors’ Meeting, Humacao, Puerto Rico, March 2011.
133. “Extreme Materials Engineering: From Jet-Engine Turbine Coatings to Carbon Nanotubes Composites to Graphene Devices,” University of California, Riverside, CA, May 2011.
134. “Novel Thermal Barrier Coatings and Environmental Barrier Coatings,” Office of Naval Research Review Meeting, Charleston, SC, May 2011.
- † 135. “Extreme Materials Engineering: From Jet-Engine Turbines to Graphene Devices,” Indian Institute of Technology, Bombay, India, July 2011.
- † 136. “Engineered Thermal Barrier Coatings for Extreme Environments,” Engineering International Conference on Thermal Barrier Coatings, Irsee, Germany, August 2011.
137. “Materials Engineering at the Frontiers of Energy Efficiency: From Spintronics to Gas-Turbine Engines,” Indian Institute of Technology Faculty Alumni Network Symposium on Materials in Energy, Boston, MA, October 2011.
138. “Thermal Barrier Coatings for Resistance Against Attack by Molten Silicate Deposits from CMAS Sand, Volcanic Ash, or Coal Fly Ash Ingested by Gas-Turbine Engines,” Materials Science and Technology (MS&T) Conference, Columbus, OH, October 2011.
139. “Rational Tailoring of 1-D (Nanowires), 2-D (Graphene) and 3-D (Ceramic/Carbon Nanotubes Composites) Functional and Structural Nanomaterials,” Materials Science and Technology (MS&T) Conference, Columbus, OH, October 2011.
140. “Structural Nanoceramics and Nanocomposites: Challenges and Opportunities,” Materials Science and Technology (MS&T) Conference, Columbus, OH, October 2011.
141. “Degradation of Thermal Barrier Coatings From Deposits and Its Mitigation,” Department of Energy Workshop, Columbus, OH, October 2011.
- † 142. “Renaissance of Advanced Structural Ceramics: Challenges and Opportunities,” VIth Portuguese-Spanish Congress on Ceramics & Glasses, Aveiro, Portugal, November 2011 [Opening Plenary Lecture]
143. “Extreme Materials Engineering: From Jet-Engine Turbine Coatings to Carbon Nanotubes

Composites to Graphene Devices,” Boston University, Boston, MA, February 2012.

144. “Advances in Some Structural Ceramics: Thermal Barrier Coatings and Ceramic/Carbon Nanotubes Composites,” Harvard University, Cambridge, MA, May 2012.
145. “Novel Thermal Barrier Coatings and Environmental Barrier Coatings,” Office of Naval Research Review Meeting, Charleston, SC, May 2012.
- † 146. “Perspective on Nanoceramics, Ceramic Nanocomposites and Carbon Nanomaterials,” NANO2012, Rhodes, Greece, August 2012.
- † 147. “Perspective on Nanoceramics, Ceramic Nanocomposites and Carbon Nanomaterials,” European Materials Research Society Fall Meeting, Warsaw, Poland, September 2012.
148. “Extreme Materials Engineering: From Jet-Engine Turbine Coatings to Carbon Nanotubes Composites to Graphene Devices,” University of Connecticut, Storrs, CT, October, 2012.
149. “Novel Thermal Barrier Coatings and Environmental Barrier Coatings,” Office of Naval Research Review Meeting, Bozeman, MT, May 2013.
150. “Thermal Barrier Coatings for Protection Against Extreme Conditions in High-Efficiency Gas-Turbine Engines,” New England Section of the American Ceramic Society, Marlborough, MA, May 2013.
151. “Some Advances in Ceramic Coatings and Nanocomposites,” United Technologies Research Center, East Hartford, CT, May 2013.
152. “Advanced Thermal Barrier Coatings for Next Generation Syngas-Fueled Gas-Turbine Engines,” Department of Energy Workshop, Pittsburgh, PA, June 2013.
- † 153. “Thermal Barrier Coatings for Protection Against Extreme Conditions in High-Efficiency Gas-Turbine Engines,” International Conference on Materials for Advanced Technologies, Singapore, July 2013.
- † 154. “Some Advances in Structural Ceramics: Thermal Barrier Coatings and Novel Nanocomposites,” National Institute for Materials Science, Tsukuba, Japan, July, 2013.
155. “Attack of Thermal Barrier Coatings in Gas-Turbine Engines by Molten Silicate Deposits (Sand, Ash) and its Mitigation,” International Conference on Advanced Ceramics and Composites, Daytona Beach, FL, January 2014.
- † 156. “Engineered Thermal Barrier Coatings for Extreme Environments,” Engineering International Conference on Thermal Barrier Coatings, Irsee, Germany, July 2014 (to be presented).