JENNIFER A. LEWIS
Curriculum Vitae

Harvard University
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EDUCATION

Sc.D. Ceramics Science, MIT, Cambridge, MA, February 1991.

B.S. High Honors, Ceramic Engineering, University of Illinois, Urbana, IL, May 1986.

PROFESSIONAL EXPERIENCE

9/1/2014	Founder, Voxel8, Inc.
12/1/2014	Co-Director, Harvard MRSEC
1/1/2013	Wyss Professor of Biologically Inspired Engineering, School of Engineering and Applied Sciences, Harvard University
1/1/2013	Co-Founder, Electroninks, Inc.
	Core Faculty Member, Wyss Institute for Biologically Inspired Engineering
7/2007 – 9/30/12	Director, Frederick Seitz Materials Research Laboratory (MRL)

Research: MRL brings together approximately 50 faculty from six major departments and two colleges on campus who participate in several large-scale, multidisciplinary research programs totaling more than $15M/year in research expenditures. The MRL occupies nearly 100,000 sq. ft. of research space, including the Central Facilities. 8 full-time staff members assist in the administration and operation of the MRL.

Central Facilities: MRL houses a shared user facility for materials characterization and fabrication that is widely recognized as one of the finest in the nation. It contains more than 40 major instruments, embedded within its Center for Microanalysis of Materials (CMM), the Laser/Spectroscopy Laboratory, and the Micro/Nanofabrication Laboratory. The annual operating budget is $2.2 M, which is supported through a combination of university funds and user fees. 17 staff scientists and engineers help train users and maintain the instrumentation in this facility.

Additional information is provided at http://mrl.illinois.edu/

2006 – 7/2007	Interim Director, Frederick Seitz Materials Research Laboratory
Fall 2005	Associate Director, Frederick Seitz Materials Research Laboratory
2003 – present	Professor at the University of Illinois at Urbana-Champaign, Department of Materials Science and Engineering, Institute Affiliate at the Beckman Institute for Advance Science and Technology, and Faculty Affiliate, Department of Chemical Engineering. (Appointed as Hans Thurnauer Professor of Materials Science and Engineering in Fall 2004.)
2001-present	IRG Thrust Leader, NSF NSEC on Directed Assembly of Nanostructures (jointly funded center between RPI and Illinois – PI R. Seigel)

1997 – 2002	Associate Professor at the University of Illinois at Urbana-Champaign, Department of Materials Science and Engineering, Institute Affiliate at the Beckman Institute for Advance Science and Technology, and Faculty Affiliate, Department of Chemical Engineering.
Fall 1997	Visiting Professor, University of California at Santa Barbara (sabbatical leave)
Summer 1996	Visiting Scientist, Schlumberger Cambridge Research, Cambridge, England
12/1990 –1997	Assistant Professor at the University of Illinois at Urbana-Champaign, Department of Materials Science and Engineering, and Research Professor at the Beckman Institute for Advance Science and Technology.
1986 –1990	Massachusetts Institute of Technology, Cambridge, MA; Department of Materials Science and Engineering, Research Assistant (Ceramics Processing Research Laboratory). *Thesis Advisor:* Prof. Michael J. Cima
1986	University of Leeds, Leeds, England; Department of Ceramic Engineering, Summer Intern
1985-1986	University of Illinois at Urbana-Champaign, Department of Ceramic Engineering, Undergraduate Research Assistant (Fall and Spring)
1984, 1985	Summer Research Scholar, General Motors, Flint, MI.

MAJOR AWARDS AND HONORS

Sosman Award, American Ceramic Society (2016)
Fellow, World Academy of Ceramics (2014)
MRS Medal, Materials Research Society (2012)
Fellow, American Academy of Arts and Sciences (2012)
Fellow, Materials Research Society (2011)
Langmuir Lecture Award, American Chemical Society (2009)
Fellow, American Physical Society (2007)
Fellow, American Ceramic Society (2005)
Brunauer Award, American Ceramic Society (2003)
NSF Presidential Faculty Fellow Award (1994)
NSF Research Initiation Award (1992)

OTHER AWARDS AND HONORS

Fast Company's 100 Most Creative People in Business (2015)
Harvard Public Science Lecture (2015)
Discover Magazine's Top 100 Stories in Science (2015) – in recognition of our 3D bioprinting of vascularized tissue constructs
Foreign Policy's 100 Leading Global Thinkers (2014)
The Executives Club of Chicago – Panelist (2014), Women on the Cutting Edge: Trailblazers in Disruptive Technologies and Emergent Scientific Advances
MIT Technology Review EmTech – Featured Speaker (2014)
Brumley D. Pritchett Lecture – Georgia Tech (2014)
Dow Lecture – Northwestern University (2014)
TechConnect National Innovation Award (2014) – in recognition of our reactive silver ink
MIT Technology Review "Top 10 Breakthrough Technologies" (2014) – in recognition of our microscale 3D printing research
ID Tech Printed Electronics | Best Academic Research Award (2013) – in recognition of our 3D printed, rechargeable microbatteries
Interviewed on NPR's Science Friday (June 28, 2013)
Scientific American cited our reactive silver ink as one of the "9 Materials That Will Change the Future of

Manufacturing" (2013)
Keynote Lecture, Science, Engineering, and Technology in the City (for H.S. Girls), Cambridge, MA (2013).
Wulff Lecture, MIT (2013)
Maddin Lecture, UPenn (2013)
Editorial Board, *Advanced Materials* (2013)
Editorial Board, *3D Printing and Additive Manufacturing* (2013)
Editorial Board, *Soft Matter* (2013)
Editorial Board, *Advanced Functional Materials* (2012-present)
C&E News selected our video on pen-on-paper flexible electronics research as the top science video (2011) |http://cenblog.org/newscripts/2011/12/science-is-awesome-top-10-video-clips-of-the-year/
TTI/ Vanguard - NextGens Technology Conference Lecturer (2011)
GE Whitney Symposium Lecturer (2011)
George Weatherly Lecture – Composites at Lake Louise (2011)
Plenary Lecture – Colloids 2011
Interviewed on the radio program *Science Fantastic* (2011)
Physical Sciences Advisory Committee, Argonne National Laboratory (2009-present)
MIT DMSE Visiting Committee Member (2008 – 2014)
SciAm50 – collaborative research on self-healing materials with embedded microvascular networks (2007)
Plenary Lecture, Composites at Lake Louise (2007)
Plenary Lecture, Society of Rheology (2007)
Penn Engineering Grace Hopper Lecture (2007)
Featured Public Lecture, Boulder School for Condensed Matter and Materials Physics (2006)
Plenary Talk, International Conference on Ceramic Processing Science (2006)
DuPont Young Investigator Award (2004-2005)
International Editorial Advisory Board Member, *Soft Matter* (2005 – 2012)
NSF Advance Distinguished Lecturer, Case Western Reserve University (2005)
Research highlighted in *Science&Vie* as a nanoscience image of the year (2005)
Editorial Advisory Board Member, *Langmuir* (2003 – 2011)
Research highlighted in C&E News as a top achievement in materials chemistry (2002)
Willett Faculty Scholar Award, College of Engineering, University of Illinois (2002)
University Scholar, University of Illinois (2001)
Xerox Award for Faculty Research, College of Engineering, University of Illinois (2001)
Selected by the National Academy of Engineering, Frontiers of Engineering Meeting (2000)
Allied Signal Foundation Award (1998; 1999)
Associate Editor, Journal of the American Ceramic Society (1997-2008)
Xerox Award for Junior Faculty Research, College of Engineering, University of Illinois (1996)
Schlumberger Foundation Award (1995)
MRS Travel Award for Young Scientists, International Conference on Advanced Materials, ICAM (1995)
Arnold O. Beckman Research Award – Research Board, University of Illinois (1994)
Burnett Teaching Award - UIUC Materials Science and Engineering Department (1994)
College of Engineering Council's Outstanding Advisors List (1994; 1995; 2002)
Daily Illini's Incomplete List of Teachers Ranked Excellent by Their Students (1992-1994; 1999 – 2004)
Gordon Research Conference in Ceramics, Graduate Student Scholar (1989)
IAESTE Fellowship, University of Leeds (1986)
General Motors Scholar (1984 – 1986)
Knights of St. Patrick Award, College of Engineering, University of Illinois (1986)
A.W. Allen Award, Ceramic Engineering Department, University of Illinois (1984)
Sigma Xi, Tau Beta Pi, and Keramos

CONSULTING ACTIVITIES

Dow Chemical (2013-present)
British Petroleum (2011)
Dow Corning Technical Advisory Board Member (2010 – present)
Oxane, Houston, TX (2005, 2007-2009)
Unilever, Netherlands (2003)

Bosch, Germany (2002)
BASF, Germany (2001)
W.R. Grace, Cambridge, MA (2000 – present)
Schlumberger, Inc. Paris, France (1999)
Caterpillar Inc., Peoria, IL (1998 – 2000)
Sandia National Laboratories (1997 – 1998)
St. Gobain/Norton, Northboro, MA (1996)
Argonne National Laboratory, STA appointment (1993 – 96)
Coors Electronic Packaging, Co., Chattanooga, TN (1992 – 94)
Gardner-Denver Machinery, Inc., Quincy, IL (1994; 1996; 2000; 2002)
Technology Management, Inc, Cleveland, OH (1995)

TEACHING EXPERIENCE

Harvard Courses

BE 191: Introduction to Biomaterials

AP 225: Introduction to Soft Matter

University of Illinois Courses

MatSE 200: Introduction to Materials Science and Engineering

ME 100: Introduction to Manufacturing Systems (team taught, Mechanical Engineering Dept.)

CerE 205: Phase Equilibria

MatSE 421: Ceramics Processing and Microstructural Development

MatSE 420: Structure-Property Relations in Ceramics

PRECOLLEGE EDUCATION ACTIVITIES

Director: NSF Materials Technology Workshop for High School Science Teachers, 1993 –1996.

- 8 teaching modules were created in partnership with H.S. Teachers and UI faculty
- MAST modules are online at http://matse1.matse.illinois.edu/

PROFESSIONAL ACTIVITIES (selected)

Co-Director:	Harvard MRSEC (2014-present)
Thrust Leader:	NSF Center for Directed Assembly of Nanostructures (RPI/UIUC, 2001 – 2011)
Meeting Chair:	Materials Research Society (Spring Meeting, 2007)
Meeting Co-Chair:	Composites at Lake Louise (2013) International Conference on Ceramics Processing Science (2013)
Workshop Organizer:	Workshop on Programmable Functional Materials (May 2009)
NIH Study Section:	Biomaterials & Biointerfaces (BMBI) (October, 2013)
Center Analyst:	NSF Center for Industrial Sensors and Measurements, Ohio State University. Director: Prof. Henk Verweij (2002– 2003)
External Reviewer:	Machinable Ceramics: Optimizing Performance and Properties, NIH Grant (PI, Prof. Dianne Rekow, New York University College of Dentistry) (2003 – 2007)
Panel Reviewer:	NSF (1992, 1996, 1998, 2005), NASA Microgravity Materials Science Program (1994, 1995; 1999), DOE (2005)
Panelist:	NSF Workshop on the Future of Ceramics Research (June 1996)
	NSF Workshop on Future of Self-Assembled Materials (January 1997)
Officer:	Secretary, Ceramics Education Council (1997 – 98)

Vice President, Ceramics Education Council (1998 – 99)
President Elect, Ceramics Education Council (1999 – 2000)
President, Ceramics Education Council (2000 – 2001)

Program Committee: Workshop on "Nanocomposites: Materials, Neutrons, and Data Interpretation" Argonne National Laboratory, Argonne, IL (March 2002)
Society of Rheology Meeting, Minneapolis, MN (October 2002)
Second International Conference on Shaping of Advanced Ceramics, Genth, Belgium (October 2002)
Composites at Lake Louise (2003; 2005; 2007; 2009; 2011)
International Conference on Porous Ceramics, Brugge, Belgium (October 2005)
International Conference on Ceramic Processing Science (January 2006)
Third International Conference on Shaping of Advanced Ceramics, Limoges, France (May 2006)
International Symposium on Inorganic Interfacial Engineering, Stockholm, Sweden, (June 2006)

Symposium Organizer: American Ceramic Society (1997; 1998; 2000; 2002), Society of Rheology Meeting (2002)
American Chemical Society, Colloids Division Symposium (2005)
Materials Research Society (Spring 2006)
Wyss Institute Symposium on Bioinspired Adaptive Materials (2014)

Member: Materials Research Society; American Ceramic Society; Society of Rheology; American Chemical Society; American Physical Society; Association for Women in Science; Sigma Xi

PUBLICATIONS (see press coverage at http://lewisgroup.seas.harvard.edu/)

Books Edited

Polymers in Particulate Systems: Properties and Applications, Surfacant Science Series, Vol. 104, eds. V. Hackley, P. Somasundaran, and J.A. Lewis, Marcel Dekker, Inc., (2001).

Book Chapters

1. J.A. Lewis, "Colloid-Filled Polymer Gels: A Novel Approach to Ceramics Fabrication," in *Polymers in Particulate Systems: Properties and Applications*, Surfactant Science Series, Vol. 104, eds. V. Hackley, P. Somasundaran, and J.A. Lewis, Marcel Dekker, Inc., (2001).
2. J.A. Lewis and J.E. Smay, "Direct-Write Assembly of 3-D Periodic Lattices," *Cellular Ceramics* (2005).
3. D.W. Hutmacher, T. Woodfield, P.D. Dalton, and J.A. Lewis, "Scaffold Design and Fabrication," in *Tissue Engineering*, ed. Clemens van Blitterswijk, Academic Press Series in Biomedical Engineering, *Elsevier* (2008).
4. S. Parker and J.A. Lewis, "Direct-Write Assembly of 3D Micro-Patterned Polymer Structures", in *Generating Micro-and Nanopatterns in Polymeric Materials*, eds. A. del Campo and E. Arzt , Wiley (in press).
5. J.E. Smay and J.A. Lewis, "Solid Freeform Fabrication of Ceramic Structures", (in press).

Guest Editor

1. *Advanced Materials* – Focus Issue on the Frederick Seitz Materials Research Laboratory (March 2010).

Invited Reviews

1. J.A. Lewis and W.M. Kriven, "Microstructure-Property Relationships in Macro-Defect-Free Cement," *MRS Bulletin.*, 18 [3] 72-77 (1993). *(invited)*

2. J.A. Lewis and J.B. Adams, "Materials Technology Workshop for High School Science Teachers," *Ceramics Bulletin*, 72 [4] 107-8 (1993). *(invited)*
3. J.A. Lewis, "Binder Removal from Ceramics", *Annual Review of Materials Science*, Vol. 27 (1997) pp. 147-174.
4. J.A. Lewis, "Organic Processing Aids," Encyclopedia of Materials: Science and Technology, eds. K.H.J. Buschow, R.W. Cahn, M.C. Flemings, B. Ilschner, E.J. Kramer, S. Mahajan, Elsevier, Oxford, England (2001).
5. J.A. Lewis, "Organic Aid Removal," Encyclopedia of Materials: Science and Technology, K.H.J. Buschow, R.W. Cahn, M.C. Flemings, B. Ilschner, E.J. Kramer, S. Mahajan, Elsevier, Oxford, England (2001).
6. J.A. Lewis, "Direct-Write Assembly of Ceramics from Colloidal Inks" *Current Opinion in Solid State and Materials Science*, 6 245-50 (2002). *(invited)*
7. J.A. Lewis and G.M. Gratson, "Direct Writing in Three Dimensions," *Materials Today* 32-39 (July/August, 2004). (*invited cover article).*
8. J.A. Lewis, "Novel Inks for Direct-Write Assembly of 3D Periodic Structures," *Materials Matters*, Sigma-Aldrich, (2008) (*invited*).
9. J.C. Conrad, S.R. Ferreira, J. Yoshikawa, R.F. Shepherd, B.Y. Ahn, and J.A. Lewis, "Designing Colloidal Suspensions for Directed Materials Assembly," *Current Opinions in Colloid and Interface Science,* 16 71-79 (2011) (*invited*).

Peer Reviewed Journal Articles

1. M.J. Cima, M.Dudziak, and J.A. Lewis, "Observation of Poly(vinyl butyral) - Dibutyl Phthalate Binder Capillary Migration," *Journal of the American Ceramic Society.*, 72 [6] 1087-90 (1989).
2. M.J. Cima, J.A. Lewis, and A.D. Devoe, "Binder Distribution Processes in Ceramic Greenware During Thermolysis," *Journal of the American Ceramic Society*, 72 [7] 1192-99 (1989).
3. J.A. Lewis and M.J. Cima, "Diffusivities of Dialkyl Phthalates in Plasticized Poly(vinyl butyral): Impact on Binder Thermolysis," *Journal of the American Ceramic Society*, 73 [9] 2702-07 (1990).
4. J.A. Lewis, C.E. Platt, M. Wegmann, M. Teepe, J.L. Wagner, and D.G. Hinks, "Superconducting Properties of Grain-Aligned $HgBa_2CuO_{4+x}$," *Physical Review B Rapid Communications* 48 [10] 7739-41 (1993).
5. J.A. Lewis, T. Suratwala, and K.C. Arndt, "Partial Melt Processing of Magnetically-Aligned $YBa_2Cu_3O_{7-x}$ Thick Films," *IEEE Transactions on Applied Superconductivity*, 3 [1] 1702-05 (1993).
6. J.A. Lewis, M. Wegmann, C.E. Platt, and M. Teepe, "Platinum Enhanced Densification of Grain Aligned $YBa_2Cu_3O_{7-x}$ Films," *Applied Physics Letters,* 64 [1] 103-5 (1994).
7. M. Wegmann, J.A. Lewis, and C.E. Platt, "Platinum Enhanced Textured Growth of $YBa_2Cu_3O_{7-x}$ Thick Films, *J. Appl. Phys.,* 75 [10] 5218-26 (1994).
8. J.A. Lewis, M.A. Boyer, and D.P. Bentz, "Binder Distribution in Macro-Defect-Free Cement: Relation Between Percolation Properties and Moisture Absorption Kinetics," *Journal of the American Ceramic Society*, **77** [3] 711-16 (1994).
9. P. Desai, J.A. Lewis, and D.P. Bentz, "Unreacted Cement Content in Macro-Defect-Free Cement: Impact on Processing-Structure-Property Relations" *J. Mater. Sci.,* 29 [24] 6445-52 (1994).'
10. J.A. Lewis, M.J. Cima, and W.R. Rhine, "Direct Observation of Preceramic and Organic Binder Decomposition in 2-D Model Microstructures," *Journal of the American Ceramic Society,* 77 [7] 1839-45 (1994).
11. C. Cofer and J.A. Lewis, "Catalytic Nitridation of Silicon," *J. Mater. Sci.,* 29 [22] 5880-86 (1994).

12. M.R. Wegmann and J.A. Lewis, "The Role of Platinum in Partial Melt Textured Growth of Bulk YBCO," *IEEE Transactions on Applied Superconductivity*, 5 [2] 1560-63 (1995).

13. J. Guo, J.A. Lewis, and K. Goretta, "Effects of Bi and Bi_2O_3 Additions on the Microstructure and Superconducting Properties of Powder-in-tube BSCCO (2212) Tapes," *IEEE Transactions on Applied Superconductivity*, 5 [2] 1860-63 (1995).

14. J. Guo, J.A. Lewis, J. Schwartz, and K. Goretta, "Properties and Chemical Stability of Ag(7 at% Cu)-Sheathed $Bi_2Sr_2CaCu_2O_X$ Powder-in-Tube Tapes", *Journal of Applied Physics,* 78 [7] 4596-4607 (1995).

15. K.C. Goretta, V.R. Todt, D.J. Miller, M.T. Lanagan, Y.L. Chen, U. Balachandran, J. Guo, and J.A. Lewis, "Engineered Flux Pinning Centers in $Bi_2Sr_2CaCu_2O_X$ and $TlBa_2Ca_2Cu_3O_X$ Superconductors," *Journal of Electronic Materials*, 24 [12] 1961-65 (1995).

16. J.A. Lewis, V. Vinokur, D. Hinks, and J. Wagner, "Surface Barrier Effects in Grain-Aligned $HgBa_2CuO_{4+\partial}$, $HgBa_2CaCu_2O_{6+\partial}$, and $HgBa_2Ca_2Cu_3O_{8+\partial}$ Compounds," *Physical Review B Rapid Communications*, 52 [6] R3852-55 (1995).

17. J.A. Lewis and M.R. Wegmann, "Transport Properties of Magnetic Field/Liquid Assisted Textured $YBa_2Cu_3O_{7-x}$ Thick Films," *Applied Physics Letters*, 67 [20] 3028-3030 (1995).

18. J.A. Lewis and M.A. Boyer, "The Effects of an Organotitanate Cross-Linking Additive on the Processing and Properties of Macro-Defect-Free Cement," *Journal of Advanced Cement-Based Materials,* 2 [1] 2-7 (1995).

19. P. Desai and J.A. Lewis, "Synthesis and Characterization of $Al_2O_3/CaAl_2O_4$ Microcomposite Powders," *Journal of the American Ceramic Society* 78 [11] 2881-88 (1995).

20. J.A. Lewis, M. Galler, and D.P. Bentz, "Computer Simulations of Binder Removal from Model 2-D and 3-D Particulate Bodies," *Journal of the American Ceramic Society,* 79 [5] 1377-88 (1996).

21. A.L. Ogden and J.A. Lewis, "Effect of Nonadsorbed Polymer on the Stability of Weakly Flocculated Nonaqueous Suspensions," *Langmuir,* 12 [14] 3413-24 (1996).

22. J.A. Lewis, K. Blackman, A.L. Ogden, J. Payne, and L. Francis, "Rheological Property and Stress Development during Drying of Tape-Cast Ceramic Layers, *Journal of the American Ceramic Society,* 79 [12] 3225-34 (1996).

23. J.A. Lewis, A.C. Read, and T.K. Holmstrom, "Transport Properties of Magnetic Field/Liquid Assisted Texturing of Tape-Cast $YBa_2Cu_3O_{7-x}$ Thick Films", *IEEE Trans. on Applied Superconductivity*, 7 [2] 1440-42 (1997).

24. S. Morissette and J.A. Lewis, "Chemorheology of Aqueous Alumina-Poly(vinyl alcohol) Gelcasting Suspensions," *Journal of the American Ceramic Society,* 82 [3] 521-28 (1999).

25. J. Guo and J.A. Lewis, "Aggregation Effects on Compressive Flow Properties and Drying Behavior of Colloidal Silica Suspensions," *Journal of the American Ceramic Society,* 82 [9] 2345-58 (1999).

26. J.A. Lewis and A.C. Read, "Bulk Texture and Transport Properties of Magnetic Field/Liquid Assisted Texturing of Tape-Cast $YBa_2Cu_3O_{7-x}$ Thick Films", *IEEE Transactions on Applied Superconductivity*, 9 [2] 1463-66 (1999).

27. J. Guo and J.A. Lewis, "Salt Concentration Effects on the Rheological Properties and Sedimentation Behavior of Colloidal Silica Suspensions," *Journal of the American Ceramic Society,* 83 [2] 266-72 (2000).

28. M. Huha and J.A. Lewis, "Polymer Effects on the Chemorheological and Drying Behavior of Alumina-Poly(vinyl alcohol) Gel Casting Suspensions, *Journal of the American Ceramic Society,* 83 [8] 1957-63 (2000).

29. H. Matsuyama, J.A. Lewis, and J.F. Young, "Polyelectrolyte Effects on the Rheological Behavior of Concentrated Cement Suspensions," *Journal of the American Ceramic Society,* 83 [8] 1905 –13 (2000).

30. S.L. Morissette, J.A. Lewis, J. Cesarano, D. Dimos, and T. Baer, "Solid Freeform Fabrication of Aqueous Alumina-Poly(vinyl alcohol) Gelcasting Suspensions," *J. Am. Ceram. Soc.,* 83 [10] 2409-16 (2000). (*cover article*)

31. J.A. Lewis, "Colloidal Processing of Ceramics," Centennial Feature Article, *Journal of the American Ceramic Society,* 83 [10] 2341-59 (2000). (*invited cover article*)

32. V. Tohver, J.E. Smay, A. Braem, P. Braun, and J.A. Lewis, "Nanoparticle Halos: A New Colloid Stabilization Mechanism" *Proceedings of the National Academy of Science*, 98 [16] 8950-54 (2001) (*invited cover article*).

33. B.A. Tuttle, J.E. Smay, J. Cesarano, III., J.A. Voight, T.W. Scofield, W.R. Olsen, and J.A. Lewis, "Robocast $Pb(Zr_{0.95}Ti_{0.05})O_3$ Ceramic Monoliths and Composites," *Journal of the American Ceramic Society* 84 [4] 872-74 (2001).

34. S.L. Morissette, J.A. Lewis, P. Clem, J. Cesarano, and D. Dimos, "Direct-Write Fabrication of $Pb(Nb,Zr,Ti)O_3$ Devices: Influence of Paste Rheology on Print Morphology and Component Properties, *Journal of the American Ceramic Society,* 84 [11] 2462-68 (2001).

35. J. Smay and J.A. Lewis, "Structural and Property Evolution of Aqueous-Based Lead Zirconate Titanate Tape-Cast Layers," *Journal of the American Ceramic Society* 84 [11] 2495-2500 (2001).

36. K. Blackman, R. Slilaty, and J.A. Lewis, "Competitive Adsorption Phenomena in Nonaqueous Tape Casting Suspensions *Journal of the American Ceramic Society,* 84 [11] 2501-06 (2001).

37. V. Tohver, A. Chan, O. Sakurada, and J.A. Lewis, "Nanoparticle Engineering of Complex Fluid Behavior," *Langmuir* 17 [26] 8414-21 (2001).

38. V. Tohver, S. Morissette, J.A. Lewis, B. Tuttle, J.A. Voight, and D. B. Dimos, "Direct-Write Fabrication of Zinc Oxide Varistors", *Journal of the American Ceramic Society* 85 [1] 123-28 (2002).

39. C. Martinez and J.A. Lewis, "Structural and Stress Evolution during Formation of Latex-Silica Films," *Langmuir* 18 [12] 4689-98 (2002).

40. J.E. Smay, J. Cesarano, and J.A. Lewis, "Colloidal Inks for Directed Assembly of 3-D Periodic Structures", *Langmuir* 18 [14] 5429-37 (2002). (*cover article*).

41. C. Martinez and J.A. Lewis, "Rheological, Structural, and Stress Evolution in Aqueous Al_2O_3:Latex Tape-Cast Layers" *Journal of the American Ceramic Society* 85 [10] 2409-16 (2002).

42. J.E. Smay, G.M. Gratson, R. F. Shepherd, J. Cesarano, and J.A. Lewis, "Directed Colloidal Assembly of 3-D Periodic Structures", *Advanced Materials.* 14 [18] 1279-83 (2002).

43. J.E. Smay, J. Cesarano, B. Tuttle, and J.A. Lewis, "Piezoelectric Properties of Periodic 3-X Piezoelectric Composites, *Journal of Applied Physics* 92(10), 6119-6127 (2002).

44. G.H. Kirby and J.A. Lewis, "Rheological Property Evolution in Concentrated Cement-Polyelectrolyte Suspensions," *Journal of the American Ceramic Society* 85 [12] 2989-94 (2002).

45. C. P. Whitbey, P.J. Scales, F. Grieser, T.W. Healy, G. Kirby, J.A. Lewis, and C.F. Zukoski, "PEO/PAA Comb Polymer Effects on Rheological Properties and Interparticle Forces in Aqueous Silica Suspensions," *Journal of Colloid and Interface Science* 262 274-81 (2003).

46. D. Therriault, S. White, and J.A. Lewis, "Chaotic mixing in 3-D microvascular networks fabricated by direct-write assembly," *Nature Materials* 2, 265-71 (2003).

47. Q. Li and J.A. Lewis, "Nanoparticle Inks for Directed Assembly of 3-D Periodic Structures", *Advanced Materials* 15 [19] 1639-43 (2003).

48. C. San Marchi, M. Kouzeli, R. Rao, J.A. Lewis, D.C. Dunand, "Alumina-Aluminum Interpenetrating-Phase Composites with Three-Dimensional Periodic Architecture," *Scripta Materials* 49 (9) 861-866 (2003).

49. G. Gratson, M. Xu, and J.A. Lewis, "Microperiodic Structures: Direct writing of three-dimensional webs" *Nature* 428 386 (2004).

50. P. Wedin, C.J. Martinez, J.A. Lewis, J. Daicic, and L. Bergstrom, "Stress Development during Drying of Calcium Carbonate Suspensions containing Carboxy-Methylcellulose and Latex Particles," *Journal of Colloid and Interface Science,* 272 1-9 (2004).

51. G.H. Kirby, D.J. Harris, Q. Li, and J.A. Lewis, "PAA/PEO Comb Polymer Effects on Stability of $BaTiO_3$ Nanoparticle Suspensions"*Journal of the American Ceramic Society* 87 [2] 181-86 (2004).

52. J.E. Smay, J. Cesarano, B. Tuttle, and J.A. Lewis, "Directed Colloidal Assembly of Linear and Annular PZT Arrays," *Journal of the American Ceramic Society*, 87 [2] 293-95 (2004).

53. W. Lee, A. Chan, J.A. Lewis, and P.V. Braun, " Nanoparticle-Mediated Epitaxial Assembly of Colloidal Microspheres on Patterned Substrates," *Langmuir* 20, 5262-70 (2004). (*cover article*)

54. G.H. Kirby and J.A. Lewis, "Comb Polymer Architecture Effects on Rheological Property Evolution of Concentrated Cement Suspensions" *Journal of the American Ceramic Society*, 87 [9] 1643-52 (2004).

55. G.H. Kirby and J.A. Lewis, "Rheological Property Evolution of Concentrated Cement-Polyelectrolyte Suspensions: II, Influence of Cement Composition," *Journal of the American Ceramic Society*, 87 [10] 1836-42 (2004).

56. M.A. Bevan, J.A. Lewis, P.V. Braun, and P. Wiltzius, "Direct Observation of Colloidal Crystal Assembly via Controlled Electrolyte Addition," *Langmuir*, 20 5262-70 (2004).

57. G. Gratson and J.A. Lewis, "Polyelectrolyte Inks for Direct-Write Assembly of 3-D Micro-Periodic Scaffolds," *Langmuir* 21 [1] 457-464 (2005).

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22. B.A. Tuttle, J.E. Smay, J. Ceserano, M.R. Bourbina, E.L. Venturini, D.H. Zuech, W.R. Olson, J.S. Wheeler, J.A. Voight, and J.A. Lewis, "Robocast 3-3 PZT-5H – Polymer Composites," Proceedings of the Tenth US-Japan Seminar on Dielectric & Piezoelectric Ceramics (held September 27-29, 2001.)
23. J.E. Smay, J.Cesarano, III, S.Y. Lin, J.N. Stuecker, and J.A. Lewis, "Robocasting of photonic band gap structures," *Solid Freeform Fabrication Symposium Proceedings*, 175-178, 2001.
24. J.A. Lewis and J.E. Smay, "Agile Fabrication of Mesoscale Periodic Structures, *Proceedings of the 2000 NSF Design and Manufacturing Systems Conference,* 2001.
25. J.A. Lewis and K.S. Schweizer, "Nanoparticle Engineering of Complex Fluids," Proceedings of the Twentieth Symposium on Energy Engineering Sciences, DOE, Argonne National Laboratory, Argonne, IL (May, 2002).
26. P.G. Clem, J.F. Carroll, M.K. Niehaus, J. Cesarano, J.E. Smay, and J.A. Lewis, "Materials for Freeform Fabrication of GHz Tunable Dielectric Photonic Crystals," Proceedings of the MRS Society Fall Meeting, (2002).
27. R. Rao, J.A. Lewis, A. Morales, and K. Krafcik, "Directed Assembly of High Aspect Ratio, 3-D Periodic Structures using Micro-Designed Deposition Nozzles," 2003 HARMST Conference, Monterrey, CA (June, 2003).
28. G.H. Kirby, D.J. Harris, Q. Li, and J.A. Lewis, "PAA-PEO Comb Polymer Dispersants for Colloidal Processing," European Ceramic Society Meeting, Istanbul, Turkey (2003).
29. M.L. Young, J.D. Almer, U. Lienert, D.R. Haeffner, R. Rao, J.A. Lewis, and D.C. Dunand, "Diffraction Measurements of Load Transfer in Interpenetrating-Phase Al_2O_3/Al Composites," TMS Conference Proceedings, (2003).
30. S.J. Yoon, C.F. Zukoski, and J.A. Lewis, "Flow Instability and Jamming in the Extrusion of Nanoparticle Suspensions," Proc. XIVth Int. Congress on Rheology, Seoul, Korea (August, 2004).
31. J.J. Adams, E.B. Duoss, T.F. Malkowski, J.A. Lewis, and J.T. Bernhard, "Design of Spherical Meanderline Antennas", Antennas and Propagation International Symposium, Spokane, WA (July 2011).
32. J. J. Adams, S. C. Slimmer, J. A. Lewis, and J. T. Bernhard, "Bandwidth limitations, matching, and fabrication of multimode electrically small antennas," in Proceedings of the 2011 Antenna Applications Symposium, Monticello, IL, September 2011.

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1. S. Morissette, J. Cesarano III, J. Lewis, D. Dimos, "Solid freeform fabrication using chemically reactive suspensions." US-Patent 6,454,972. September 24, 2002.
2. J.A. Lewis, G.H. Kirby, J. Cheung, A. Jeknavorian, "Controlled Dispersion of Colloidal Suspension by Comb Polymers", US-Patent 7,053,125. May 30, 2006.
3. G. Gratson and J.A. Lewis, "Directed Assembly of Three-Dimensional Structures with Micron-Scale Features," US-Patent 7,141,617. November 28, 2006 and Great Britain-Patent GB2418918, July 9, 2008.
4. G. Gratson and J.A. Lewis, "Directed Assembly of Three-Dimensional Structures with Micron-Scale Features," US-Patent 7,790,061. September 7, 2010.
5. D. Therriault, J.A. Lewis, and S.R. White, "Microcapillary Networks" US-Patent 7,799,251 B2. September 21, 2010; US-Patent 8,101,139. January 24, 2012.
6. B.Y. Ahn, E.B. Duoss, J.A. Lewis, "Metallic Nanoparticle Inks", US-Patent 7,922,939. April 12, 2011.
7. J.A. Lewis, E.B. Duoss, M. Twardowski, "Sol-Gel Inks," US-Patent 7,956,102. June 7, 2011.
8. J.A. Lewis, Q. Li, R. Rao, "Biphasic Inks" US-Patent 8,187,500. May 29, 2012.
9. R. Aines, C. Spadaccini, J. Stolaroff, W. Bourcier, J. Lewis, E. Duoss, J. Vericella, "Separation of a Target Substance from a Fluid or Mixture using Encapsulated Sorbents" U.S. Patent 8,834,605. September 16, 2014.
10. S.R. White, N. Sottos, K.S. Toohey, J.S. Moore, J.A. Lewis, "Self-Healing Materials with Microfluidic Networks" U.S. Patent 8,920,879. December 30, 2014.

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1. R. F. Shepherd, S.T. Parker, J.N. Hanson, R.A. Barry, R.G. Nuzzo, P. Wiltzius, and J.A. Lewis, "Direct Writing of 3-D Tissue Engineering Scaffolds" (PCT pending/US2011/29429)
2. C.J. Hansen, W. Wu, J. Vericella, and J.A. Lewis, "High Throughput Printing via Microvascular Multinozzle Printheads" (PCT/US12/44794 6/7/2011).
3. D. Lorang, D. Tanaka, J.A. Lewis, "Photocurable Liquid Core-Fugitive Shell Printing of Optical Waveguides" (provisional filed 8/16/2011).
4. Roger Aines, William Bourcier, Eric Duoss, Christopher Spadaccini, Joshua Stolaroff, Jennifer Lewis, Elizabeth Glogowski, and John Vericella, "Polymer-Encapsulated Liquid Ion Exchange Media," U.S. Provisional Patent Application Serial No. 13/666781 (filed 8/19/2011).
5. S.B. Walker and J.A. Lewis, "Ink Composition for Making a Conductive Silver Structure" (PCT/US2012/071034, 12/20/2012).
6. J.A. Lewis, S.J. Dillon, K. Sun, B.-Y. Ahn, T.-S. Wei, "Three Dimensional (3D) Electrode Architecture for a Microbattery," (provisional patent filed 5/10/13; full patent filed 5/9/14).
7. J.A. Lewis, M.A. Bell, T. Busbee, and J. Minardi, "Printed Three-Dimensional (3-D) Functional Part and Method of Making (PCT/US2014/043860, 6/24/14).
8. W.L. Boucier, R.D. Aines, S.E. Baker, E.B. Duoss, A. Maiti, J.J. Roberts, C.M. Spadaccini, J.K. Stolaroff, J.J. Vericella, J.A. Lewis, J.O. Hardin, W.C. Floyd, "Systems for production of polymer encapsulated solids" U.S. Application No: 14/066,503 (filed 10/29/13).
9. J.A. Lewis, D.B. Kolesky, K.A. Homan, R. Truby, and A.S. Gladman, "Method of Printing a Tissue Construct with Embedded Vasculature," U.S. Provisional Patent Application Serial No. 61/900,029 (filed 11/5/13).

10. J.A. Lewis, J.T. Muth, D.M. Vogt, R.L. Truby, M. Yigit, D.B. Kolesky, R.J. Wood, "Printed Stretchable Strain Sensor," U.S. Provisional Patent Application Serial No. 61/900,029 (filed 11/18/13).
11. J.A. Lewis and B.G. Compton, "Three-Dimensional (3D) Printed Composite Structure and 3D Printable Composite Ink Formulation," U.S. Provisional Patent Application Serial No. 61/905,489 (filed 2/10/14); No. PCT/US2015/15148 (filed 2/10/15).
12. J.A. Lewis and B.G. Compton, "3D Printed Polishing Pad for Chemical-Mechanical Planarization (CMP)," U.S. Provisional Patent Application Serial No. (filed 2/10/14); No. PCT/US2015/15149 (filed 2/10/15).
13. J.A. Lewis and B.G. Compton, "Printed Composite Structure Including Oriented High Aspect Ratio Particles," U.S. Provisional Patent Application Serial No. 61/937,818 (filed 11/17/14).
14. J.A. Lewis, M.A. Scott, D.B. Kolesky, K.A. Homan, "Method of Generating Functional Human Tissue," U.S. Provisional Patent Application Serial No. # (filed 3/3/15).
15. J.A. Lewis, B.Y. Ahn, P.-M. N. Meyitang, and R.J. Wood, "Method of Making an Electrode Structure and a Microbattery Cell," U.S. Provisional Patent Application Serial No. # (filed 3/9/15).
16. J.A. Lewis, T.A. Busbee, and A.D. Valentine, "3D Printed Flexible Electronic Device," U.S. Provisional Patent Application Serial No. # (filed 3/11/15).
17. J.A. Lewis, T.-S. Wei, "Biphasic Electrode Suspensions for a Semi-Solid Flow Cell," U.S. Provisional Patent Application Serial No. #62/137,973 (filed 3/25/15).
18. J.A. Lewis, T. Ober, "Microfluidic Active Mixing Nozzle for Three-Dimensional Printing of Viscoelastic Inks," U.S. Provisional Patent Application Serial No. 62/144,078.
19. J.A. Lewis, K.A. Homan, D.B. Kolesky, R.L. Truby, and M.A. Scott, "Tubular Tissue Construct and A Method of Printing," U.S. Provisional Patent Serial No. #62/157,239 (filed 5/5/15).
20. J.A. Lewis, J.T. Muth, "Foam Ink Composition and 3D Printed Hierarchical Porous Structures," U.S. Provisional Patent Serial No. #62/162,998 (filed 5/18/15).

INVITED PRESENTATIONS

Professional Meetings

1. Argonne National Laboratory, Bulk High T_c Superconductor Processing Workshop, "Magnetically-Assisted Processing of $YBa_2Cu_3O_{7-x}$ Thick Films," Argonne, IL (April 1992).
2. 95th Annual Meeting of the American Ceramic Society, "Microstructure-Property Relationships in Chemically-Bonded Materials," Cincinnati, OH (April 1993).
3. University of Illinois, Beckman Institute of Advanced Science and Technology, Symposia on Nanophase Processing, "The Rheological Behavior of Polymer-Stabilized Ceramic Suspensions: Role of the Free Polymeric Species," Urbana, IL (April 1994).
4. 96th Annual Meeting of the American Ceramic Society, "Microstructure-Property Relations in Chemically-Bonded Materials," Indianapolis, IN (April 1994).
5. TMS Meeting, "Platinum Effects on the Partial Melt Processing of Grain-Aligned $YBa_2Cu_3O_{7x}$," Las Vegas, NV (February 1995).
6. 1995 MRS/ISTEC International Workshop on Superconductivity: Controlled Processing of High Temperature Superconductors; Fundamentals and Applications, "Controlled Processing of Highly-Textured YBCO Thick Films," Maui, HI (June 1995).
7. International Conference on Advanced Materials (ICAM), "Materials Technology Workshop for High School Science Teachers," Cancun, Mexico (August 1995)
8. 98th Annual Meeting of the American Ceramic Society, "Rheological Property Evolution and Stress Development in Tape-Cast Ceramic Layers," Indianapolis, IN (April 1996).

9. 98th Annual Meeting of the American Ceramic Society, "Materials Technology Workshop for High School Science Teachers," Indianapolis, IN (April 1996).
10. University of California at Berkeley, International Materials Conference - Ceramic Microstructures '96, "Colloidal Stability in Complex Fluids," Berkeley, CA (June 1996).
11. MAETA Workshop on High Flexural Polymer-Cement Composites, "Microstructure-Property Relations in MDF Cements," Yamagata-ken, Japan (October 1996).
12. National Science Foundation, Ceramics Program, "Workshop on Future Research on Ceramic Materials," Arlington, VA (June 1997).
13. Gordon Conference on Solid State Studies of Ceramics, "Colloidal Stability in Complex Fluids," Kimball, NH (August 1997).
14. International Workshop on Colloidal Processing of High-Performance Ceramics, "Aggregation Effects on Rheological Properties and Drying Behavior of Colloidal Silica Dispersions," Max-Planck-Institute fur Metallforschung, Schloss Ringberg, Germany (March 1998).
15. 72nd American Chemical Society (ACS) Colloid and Surface Science Symposium, "Aggregation Effects on Rheological, Sedimentation, and Drying Behavior of Colloidal Silica Dispersions," Pennsylvania State University, PA (June 1998).
16. Fall Meeting ACerS/IMAPS, "Development of Thick Film Pastes for Direct-Write Fabrication of Highly Integrated Electroceramic Devices," San Diego, CA (November 1998).
17. Gordon Conference on Cements, "Tailored Interfaces for Rheological Control of Concentrated Cement Suspensions," Barga, Italy (May 1999).
18. Acta Materialia International Workshop on Ceramic and Bimaterial Interfaces: Designing for Properties, "Model Polyelectrolyte Effects on the Flow Properties of Colloidal Silica Suspensions," Seville, Spain (Sept 1999).
19. Materials Science of Concrete Workshop, "Exploring the Role of Organic Admixtures on Cement Rheology," Eagle Creek Resort, IL (April 2000).
20. Particles 2001, "Nanoparticle Halos: A Novel Colloid Stabilization Route," Orlando, FL (February 2001).
21. Workshop on Nanocomposites, "Phase Behavior of Colloidal Microsphere-Nanoparticle Mixtures," Argonne National Laboratory, Argonne, IL (March 2002).
22. 106th Annual Meeting of the American Ceramic Society, "Aqueous Tape Casting of Ceramics," St. Louis, MO (April 2002).
23. CIMTEC, "Directed Colloidal Assembly of Mesoscale Periodic Structures: From Colloidal Crystals to Functional Ceramics, Florence, Italy (July 2002).
24. Gordon Conference on Solid State Studies in Ceramics, "Colloidal Assembly of 3-D Periodic Structures Spanning Multiple Length Scales" (August 2002).
25. International Conference on Shaping of Advanced Ceramics, "Colloidal Assembly of Functional Ceramics," Genth, Belgium (October 2002). ***Keynote Lecture***
26. International Conference on Colloids and Surface Technology: Fundamentals and Applications, "Nanoparticle Engineering of Complex Fluids," Lund, Sweden (November 2002).
27. ACerS 27th International Conference on Advanced Ceramics and Composites, "Colloidal Assembly of Electroceramics", Cocoa Beach, FL (January 2003).
28. 107th Annual Meeting of the American Ceramic Society, Symposium on Nanostructured Materials and Nanotechnology, Nashville, TN (April 2003).
29. American Concrete Institute, "Comb Polymer Effects on Cement Rheology", Vancouver, British Columbia, (March 2003).
30. Optical Society of America, Integrated Photonics Research (IPR2003), "Nanoparticle-Mediated Assembly of Colloidal Crystals," Washington DC (June 16-18, 2003).

31. Applied Statistical Physics: Molecular Engineering Conference (ASTATPHYS-MEX-2003), Symposium of Complex Fluids, "Nanoparticle Engineering of Complex Fluids," Puerto Vallarta, Mexico (August 25-30, 2003).
32. Particles 2003, "Directed Assembly of 3-D Periodic Structures", Toronto, Canada (August 2003).
33. Fall MRS Meeting, "Directed Assembly of 3-D Periodic Structures", Boston, MA (December 2003).
34. DARPA Workshop on Bridging Direct-Write Technology Dimensions, "Direct Writing in Three Dimensions," Seward, Alaska (July 2004).
35. Euresco/European Science Foundation Meeting: Structure and Dynamics of Polymers at Interfaces and Colloidal Systems, "Directed Assembly of 3-D Periodic Structures," Giens, France (September 2004).
36. International Conference on Surface and Colloid Chemistry Applied to Nanoscience, " Lund, Sweden (November 2004).
37. Fall MRS Meeting, "Direct-Write Assembly of 3-D Micro-Periodic Structures", Boston, MA (December 2004).
38. Japan Society for the Promotion of Science (JSPS), 3rd International Workshop for Advanced Ceramics, "Nanoparticle Stabilization and 3D Assembly", Nagoya, Japan (May 2005).
39. Gordon Conference on Polymer Colloids, "Phase Behavior, Structure, and Assembly of Microsphere-Nanoparticle Mixtures" Tilton, NH (July 2005).
40. Gordon Conference on Solid State Ceramics, "Direct Writing of 3D Micro-Periodic Structures" Tilton, NH (July 2005).
41. American Chemical Society Meeting, "Bioinspired Assembly of 3D Micro-Periodic Polyelectrolyte Scaffolds" Washington DC (August 2005).
42. International Conference on Digital Fabrication, "Novel Inks for Direct Writing in Three Dimensions," Baltimore, MD (September 2005).
43. Composites at Lake Louise, "Direct-Write Assembly of 3D Micro-Periodic Structures," Lake Louise, Canada (October 2005).
44. 9th International Conference on Ceramic Processing Science, "Directed Assembly of Patterned Ceramic Films, Granules, and 3D Structures" Coral Springs, FL (January 2006). **Plenary Lecture**
45. American Physical Society, March Meeting, "Phase Behavior, Structure, and Assembly of Microsphere-Nanoparticle Mixtures", Baltimore, MD (March 2006).
46. Nanotech 2006, "Directed Assembly of Colloidal Films, Granules, and 3D Periodic Structures" Boston, MA (May 2006)
47. International Symposium on Bioinspired Synthesis and Materials -- From Organic Templates to Functional Nanoscalic Structures, "Bio-Inspired Assembly of Complex 3-D Structures", Max Planck Institute, Schloss Ringberg, Germany (October 2006).
48. American Chemical Society, Spring Meeting, (Bio)Polymer-Directed Mineralization Symposium, "Bio-inspired mineralization of 3D polyelectrolyte scaffolds," Chicago, IL (March 25-29, 2007).
49. American Chemical Society, Spring Meeting, Symposium Honoring 2007 ACS Colloid and Surface Chemistry Award Winner William B. Russel, "Directed Assembly of Colloidal Films, Granules, and 3D Periodic Structures," Chicago, IL (March 25-29, 2007).
50. 2007 Spring MRS, "Direct-Write Assembly of 3-D Micro-Periodic Photonic Crystals", San Francisco, CA (April 2007).
51. 2007 Annual Meeting, Society for Biomaterials, "Recent Developments in Rapid Prototyping of Biomaterials", Chicago, Illinois (April 17 - 21, 2007).
52. MS&T Meeting, "Directed Assembly of Patterned Colloidal Films, Granules, and 3D Periodic Structures," Detroit, MI (September 2007).
53. Society of Rheology, "Novel Inks for Direct Writing in Three Dimensions", Salt Lake City, UT (October 2007). ***Plenary Lecture***

54. Composites at Lake Louise, "Directed Assembly of Patterned Colloidal Films, Granules, and 3D Periodic Structures", Lake Louise, Canada (October 2007). ***Plenary Lecture***
55. 32nd International Conference & Exposition on Advanced Ceramics and Composites, "Patterning Hard and Soft Biomaterials via Direct-Write Assembly," Daytona Beach, FL (January 2008).
56. International Conference on Ceramic Processing Science, "Directed Assembly of Patterned Colloidal Films, Granules, and 3D Periodic Structures", Nagoya, Japan (May 2008). ***Keynote Lecture***
57. 45th Annual Technical Meeting of the Society of Engineering Science, "Novel Inks for Direct-Write Assembly of 3D Structures," Champaign, IL (October 12-15, 2008). ***Keynote Lecture***
58. Australian Colloid and Interface Symposium (ACIS), "Colloidal Inks for Direct-Write Assembly of Functional Materials," Adelaide, Australia (Feb 1-4, 2009). ***Keynote Lecture***
59. Royal Society of Chemistry, Discussion on Colloids and Granular Materials, "Directed Assembly of Patterned Colloidal Films, Granules, and 3D Periodic Structures," London, England (March 10, 2009).
60. 2009 Spring MRS, "Microscale Patterning of Functional Materials via Direct-Write Assembly," San Francisco, CA (April 13-17, 2009).
61. Ceramic Interconnects and Ceramic Microsystems (CICMT), "Omnidirectional Printing of Flexible, Stretchable, and Spanning Silver Microelectrodes," Denver, CO (April 21, 2009).
62. American Chemical Society, Colloid and Surface Science Symposium, "Omnidirectional Printing of Silver Nanoparticle Inks," Columbia University (June 14-19, 2009).
63. American Chemical Society, Fall Meeting, "Microscale Patterning of Functional Colloidal Architectures," Washington DC (August 18, 2009). ***Langmuir Lecture***
64. Composites at Lake Louise, "Microscale Patterning of Functional Materials", Lake Louise, Canada (October 26, 2009). ***Keynote Lecture***
65. 2010 Spring MRS, "Patterning of Metal Nanoparticle and Sol-Gel Inks for Flexible Electronic and Photonic Devices," San Francisco, CA (April 2010).
66. 2010 Spring MRS, "Microfluidic Assembly of Patterned Colloidal and Polymeric Microparticles", San Francisco, CA (April 2010).
67. 2010 Spring MRS, "Evaporative Lithographic Patterning of Colloidal-Nanoparticle Films", San Francisco, CA (April 2010).
68. International Conference on Ceramic Processing Science (ICCPS-11), "Microscale Patterning of Metallic and Ceramic Structures", Zurich, Switzerland (August, 2010).
69. Fall MRS Meeting, "Design and Patterning of Multiscale Functional Architectures", Boston, MA (November, 2010).
70. High Polymer Research Group 51st Meeting, "Microscale Patterning of Functional Polymer Structures" Pott Shrigley, England (April, 2011).
71. Center for Nanoscale Science and Technology (CNST) Workshop, "Printed Microelectrode Architectures on Flexible, Rigid, and Curvilinear Substrates," Urbana, IL (May, 2011).
72. UK Colloids 2011, "Designing Colloidal Inks for Direct-Write Assembly of Functional Materials," London, England (July, 2011) **Plenary Lecture**
73. ACS Meeting, "Microscale Patterning of Functional Polymer Structures," Denver, CO. (August, 2011).
74. MS&T 2011 Conference, "Microscale Patterning of Transparent Conductive Electrodes", Columbus, OH (October, 2011).
75. MS&T 2011 Conference, "Direct-Write Assembly of 3D Periodic Architectures", Columbus, OH (October, 2011).
76. Composites at Lake Louise, "Novel Inks for Direct-Write Assembly of Functional Architectures," Lake Louise, Canada (November, 2011). **George Weatherly Lecture**
77. Fall MRS Meeting, "Microscale Patterning of Functional Architectures," Boston, MA (December 2011).

78. Fall MRS Meeting, “Patterning of 3D Microvascular Networks and Hydrogel Scaffolds,” Boston, MA (December 2011).
79. SME RAPID 2012, “Printing Functional Materials,” Atlanta, GA (May 2012).
80. Fall MRS Meeting, Symposium X, “Printing Functional Materials,” Boston, MA (November 2012).
81. Gordon Research Conference, “Printing Polymer Architectures,” Ventura, CA (January 2013).
82. The Science of Digital Fabrication (meeting co-sponsored by OSTP), “Printing Functional Materials”, MIT Media Lab, Cambridge, MA (March 2013).
83. Society of Biomaterials, Rapid Fabrication Workshop, “Printing Biomaterials”, Boston, MA (April 2013).
84. Fall MRS Meeting, “Printing Biomaterials”, Boston, MA (December 2013).
85. Fall MRS Meeting, “3D Printing of Functional Materials,” (December 2013).
86. Keystone Conference “3D Bioprinting of Heterogeneous, Vascularized Tissue Constructs,” Lake Tahoe, CA (April 2014).
87. 12th NJ Symposium on Biomaterials Science, “3D Bioprinting of Heterogeneous, Vascularized Tissue Constructs,” New Brunswick, NJ (October 2014).
88. Fall MRS Meeting, “Programmable Assembly of 3D Mesoscale Architectures,” Boston, MA (December 2014).
89. SELECTBIO, “3D Bioprinting of Vascularized Living Tissue”, Boston, MA (February 2015).
90. Spring MRS Meeting, “3D Printing of Soft Electronics and Sensors,” San Francisco, CA (April 2015).

University Colloquia

1. Florida State University, National High Magnetic Field Laboratory and Department of Mechanical Engineering Colloquium "Processing-Structure-Property Relations in Grain-Aligned High T_c Superconductors," Tallahassee, FL (November 1993).
2. Purdue University, School of Materials Engineering Colloquium, "The Rheological Behavior of Polymer-Stabilized Ceramic Suspensions: Role of the Free Polymeric Species," West Lafayette, IN (November 1994).
3. University of Michigan, Materials Science and Engineering Colloquium, "Free Polymer Effects on the Structure and Properties of Nonaqueous Ceramic Suspensions," Ann Arbor, MI (May 1995).
4. University of California at Santa Barbara, Materials Engineering Department Colloquium, "Free Polymer Effects on the Structure and Properties of Nonaqueous Ceramic Suspensions," Santa Barbara, CA (October 1995).
5. University of Washington, Materials Science and Engineering Dept. Colloquium, "Nonadsorbed Polymer Effects on the Stability of Nonaqueous Ceramic Suspensions," Seattle, WA (October 1995).
6. Arizona State University, Center for Solid State Science Colloquium, "Colloidal Stability in Complex Fluids: Impact on Ceramics Processing," Tempe, AZ (March 1996).
7. Florida State University, National High Magnetic Field Laboratory Colloquium "Controlled Processing of High T_c Superconductors," Tallahassee, FL (March 1996).
8. University of Florida, Materials Science and Engineering Dept. Colloquium, "Colloidal Stability in Complex Fluids: Impact on Ceramics Processing," Gainesville, FL (March 1996).
9. University of Illinois at Urbana-Champaign, Materials Science and Engineering Department Colloquium, "Colloidal Stability in Complex Fluids," Urbana, IL (April 1996).
10. University of Minnesota, Department of Chemical Engineering and Materials Science, "Colloidal Stability in Complex Fluids," Minneapolis, MN (October 1996).
11. Alfred University, Ceramic Engineering Department, "Colloidal Stability in Complex Fluids," Alfred, NY (November 1996).

12. University of California at Santa Barbara, "Aggregation Effects on Rheological, Sedimentation, and Drying Behavior of Colloidal Silica Dispersions," Santa Barbara, CA (December 1997).
13. California Institute of Technology, "Aggregation Effects on Rheological Properties and Drying Behavior of Colloidal Silica Dispersions," Pasadena, CA (May 1998).
14. University of Pennsylvania, "Depletion Enhanced Crystallization of Binary Colloidal Systems: Templates for Photonic Bandgap Materials," Philadelphia, PA (March 2000).
15. Ohio State University, "Depletion Enhanced Crystallization of Binary Colloidal Systems: Templates for Photonic Bandgap Materials," Columbus, OH (April 2000).
16. University of Illinois, "Colloidal Assembly of Mesoscale Periodic Structures," (December, 2000).
17. Pennsylvania State University, "Colloidal Assembly of Mesoscale Periodic Structures" (October 2001).
18. Purdue University, "Colloidal Assembly of 3-D Periodic Structures for Functional Ceramic Applications" (January 2002).
19. Northwestern University, "Colloidal Assembly of 3-D Periodic Structures for Functional Ceramic Applications" (April 2002).
20. Princeton University, "Colloidal Assembly of 3-D Periodic Structures", (April 2003).
21. Nanotechnology/Industry Workshop, University of Illinois (May 2003).
22. University of Michigan, "Direct-Write Assembly of 3-D Periodic Structures" (September 2003).
23. University of Delaware, "Direct-Write Assembly of 3-D Periodic Structures" (October 2003).
24. NIH Grant Review, New York University, "Direct-Write Assembly of 3-D Periodic Structures," (January 2004).
25. California Institute of Technology, "Directed Assembly of 3-D Periodic Structures" (February 2004)
26. Stanford University, "Directed Assembly of 3-D Periodic Structures" (March 2004).
27. Harvard University, "Directed Assembly of 3-D Micro-Periodic Structures from Microsphere-Nanoparticle and Polyelectrolyte Complexes," (October 2004).
28. University of Illinois, "Direct Writing in Three Dimensions," (December 2004).
29. Case Western Reserve University, NSF Advance Lecturer, "Novel Inks for Direct Writing in Three Dimensions"; "Nanoparticle Stabilization and 3-D Assembly"; "Directed Assembly of Microsphere-Nanoparticle Mixtures and Polyelectrolyte Complexes" (March 2005).
30. MIT, "Direct Writing in Three Dimensions" (September 2005).
31. University of Wisconsin at Madison, "Direct-Write Assembly of 3-D Micro-Periodic Structures" (April 2006).
32. University of California at Berkeley, "Novel Inks for Direct Writing of 3-D Periodic Structures" (April 2006).
33. University of Colorado at Boulder, "Mimicking Nature by Directed Materials Assembly" (public lecture in conjunction with the Boulder Summer School for Condensed Matter and Materials Physics) (July 2006).
34. University of Pennsylvania, Grace Hopper Lecture "Direct-Write Assembly of 3-D Micro-Periodic Structures" (April 2007).
35. University of California at Santa Barbara, Chemical Engineering Dept., "Novel Inks for Direct-Write Assembly of 3-D Periodic Structures" (April 2008).
36. Smith College, "Mimicking Nature by Directed Materials Assembly" (April 2008).
37. MIT, Materials Science and Engineering Department, "Novel Inks for Direct-Write Assembly of Functional Materials" (December 2008).

38. University of Melbourne, “Novel Inks for Direct-Write Assembly of Functional Materials” (February 2009).
39. MIT, Mechanical Engineering Department, “Direct-Write Assembly of Functional Materials,” Cambridge, MA (March 2009).
40. Harvard University, Applied Physics Colloquium, “Direct-Write Assembly of Functional Materials,” Cambridge, MA (September 2010).
41. MIT Media Lab, “Printing Functional Materials,” Cambridge, MA (February 2012).
42. Harvard Wyss Institute, “Printing Biomimetic Materials”, Boston, MA (February 2012).
43. North Carolina State University, “Printing Functional Materials,” Raleigh, NC (March 2012).
44. California Institute of Technology, Chemical Engineering Department, “Designing Colloidal Suspensions for Directed Materials Assembly,” Pasadena, CA (April 2012).
45. Michigan State University, “Printing Functional Materials,” East Lansing, MI (September 2012).
46. Yale University, “Printing Biomimetic Materials,” New Haven, CT (October 2012).
47. University of Pennsylvania, Maddin Lecture, “Printing Functional Materials,” Philadelphia, PA (February 2013).
48. MIT Wulff Lecture, “Printing Functional Materials,” Cambridge, MA (April 2013).
49. Harvard University, “Printing Biomaterials,” Cambridge, MA (April 2013).
50. Wake Forest Institute for Regenerative Materials, “Printing Biomaterials,” Wake Forest, NC (May 2013).
51. New York University, Evolution of Colloidal Matter Conference (Pinefest), “Aniostropic Assemblies: From Model Colloids to 3D Functional Devices,” New York City, NY (June 2013).
52. Northwestern University, Dow Lecture, “3D Printing of Functional and Biological Materials”, Evanston, IL (May 2014).
53. Wyss Institute Symposium on Bioinspired Adaptive Materials, “Programmable Assembly of Functional and Bioinspired Architectures,” (June 2014).
54. Georgia Tech’s MSE Pritchett Lecture, “3D Printing of Functional and Biological Materials,” Atlanta, GA (September 2014).
55. International Institute for Nanotechology Symposium, “3D Printing of Functional and Biological Materials,” Evanston, IL (October 2014).
56. ETH Distinguished Lecture Series, “3D Printing of Functional and Biological Materials,” Zurich, Switzerland (October 2014).
57. UC Davis, “3D Printing of Functional and Biological Materials,” Davis, CA (December 2014).

Industrial Colloquia

1. BP America, Inc., Ceramics Research Group, "Binder Distribution Processes in Tape-Cast Ceramic Layers," Cleveland, OH (August 1990).
2. Coors Electronic Packaging, Co., "Binder Thermolysis of Tape-Cast Ceramic Components," Chattanooga, TN (April 1992).
3. Coors Electronic Packaging, Co., "Processing Effects on the Dimensional Control of Tape-Cast Ceramic Layers," Chattanooga, TN (April 1992).
4. Coors Electronic Packaging, Co., "Rheological Properties and Stability of Polymer-Stabilized Ceramic Suspensions, Chattanooga, TN (July 1994).
5. St. Gobain/Norton Research and Development Center, "Colloidal Stability in Complex Fluids: Impact on Ceramics Processing," and "Rheological Property Evolution and Stress Development in Tape-Cast Ceramic Layers," Northboro, MA (April 1996).

6. Schlumberger Cambridge Research, "Colloidal Stability in Complex Fluids," Cambridge, England (July 1996).
7. ICI Corporate Colloidal Science Group, "Colloidal Stability in Complex Fluids," Wilton, England (July 1996).
8. Allied Signal, Inc., "Chemorheological Behavior of Aqueous Alumina-Poly(vinyl alcohol) Gel Casting Suspensions," Torrance, CA (November 1997).
9. Caterpillar Inc., "Colloidal Processing of Bulk Ceramics and Thick Films," Peoria, IL (April 1998).
10. W.R. Grace, Inc.,"Tailored Interfaces for Rheological Control of Concentrated Cement Suspensions," Cambridge, MA (August 1999).
11. Rohm and Haas, "Structure and Property Evolution during Processing of Binary Colloidal Suspensions," Spring House, PA (July 2000).
12. 3M, "Colloidal Assembly of Mesoscale Periodic Structures," St. Paul, MN (September 2001).
13. Eastman Kodak, "Colloidal Assembly of Mesoscale Periodic Structures," *Weissberger Williams Lecture Series*, Rochester, NY (November 2001).
14. Flint Ink, "Colloidal Assembly of 3-D Periodic Structures," Ann Arbor, MI (September 2002).
15. Philips, "Colloidal Assembly of 3-D Periodic Structures," Eindhoven, Netherlands (October 2002).
16. Hewlett Packard, "Colloidal Assembly of 3-D Periodic Structures," *Advanced Lecture Series*, Corvalis, OR (March 2003).
17. Kemet, Co., "Colloidal Assembly of Electroceramics", Shelby, NC (April 2003).
18. Specialty Minerals, "Colloidal Stabilization, Assembly, and Film Drying," Bethlehem, PA (May 2004).
19. Hospira, "Nanoparticle Haloing: A New Colloidal Stabilization Mechanism", Chicago, IL (April 2005).
20. Murata Co., "Nanoparticle Stabilization and 3D Assembly," Maibara, Japan (May 2005).
21. TDK, Co., "Nanoparticle Stabilization and 3D Assembly," Narita, Japan (May 2005).
22. DuPont, "Direct Writing in Three Dimensions", Wilmington, DE (June 2005).
23. PARC, "Novel Inks for Direct Writing in Three Dimensions," Palo Alto, CA (April 2006).
24. Cabot, Co. "Phase Behavior, 3D Structure, and Assembly of Colloid-Nanoparticle Mixtures," Billerica, MA (May 2006).
25. Rohm and Haas, "Direct-Write Assembly of 3D Microvascular Networks", Wilmington, DE (May 2006).
26. Dow Corning, "Directed Assembly of Functional Materials", Midland, MI (April,2010).
27. Dow Chemical, "Directed Assembly of Functional Materials", Midland, MI (May 2010).
28. Dow Chemical, "Microscale Patterning of Polymeric and Conductive Structures", Wilmington, DE (May 2011).
29. General Electric Whitney Symposium, "3D Printing of Functional Materials", Niskayuna, NY (October 2011).
30. DuPont Electronic Materials, "Printing Functional Materials," Raleigh-Durham, NC (March 2012).
31. Dow Chemical, "Printing Functional Materials," Midland, MI (September 2012).
32. Adidas Wearable Electronics Division, "Printing Functional Materials," Philadelphia, PA (March 2013).
33. Nike, "Printing Functional Materials," Beaverton, OR (March 2013).
34. Solvay, Solar Impulse Event, "3D Printing of Functional Materials," JFK Hanger 19, New York City, NY (July 2013).
35. St. Gobain, "3D Printing of Functional Materials," Northboro, MA (September 2013).
36. PPG, "3D Printing of Functional Materials," Northboro, MA (September 2013).
37. Dow Chemical Co., Electronics Div. "3D Printing of Functional Materials," Marlboro, MA (October 2013).

38. Exxon-Mobil, "3D Printing of Functional Materials," Clinton, NJ (October 2013).
39. Xerox Distinguished Lecture Series, "3D Printing of Functional Materials," Toronto, Canada (November 2013).
40. Microsoft Research, "Embedding Function via 3D Printing," Redmond, WA (July 2014).
41. Medtronics, "3D Printing of Functional and Biological Materials," Minneapolis, MN (November 2014).
42. Roche, "Printing Living Tissue," Basel, Switzerland (March 2015).
43. Proctor & Gamble, "Printing Living Tissue," Cincinnati, OH (May 2015).

Government, National, and Other Laboratories Colloquia

1. National Research Institute for Metals (NRIM), "Magnetically-Assisted Processing of $YBa_2Cu_3O_{7-x}$ Thick Films," Tsukuba, Japan (March 1992).

2. Argonne National Laboratory, Materials and Components Technology Division Colloquium, "Platinum Effects on the Densification of Grain-Aligned $YBa_2Cu_3O_{7-x}$," Argonne, IL (October 1993).
3. Sandia National Laboratory, Advanced Materials Laboratory (AML) "2-D Computer Simulation and Experimental Studies of Multicomponent Binder Removal," Albuquerque, NM (July 1994).
4. NIST, Building Materials Division Special Seminar "Microstructure-Property-Processing Relations in Macro-Defect-Free Cements," Gaithersburg, MD (August 1994).
5. Oak Ridge National Laboratory, "Chemorheological Behavior of Aqueous Alumina-Poly(vinyl alcohol) Gel Casting Suspensions," Oak Ridge, TN (January 1998).
6. Sandia National Laboratory, "Colloidal Assembly of Mesoscale Periodic Structures," Albuquerque, NM (September 2000).
7. Sandia National Laboratories, "Directed Assembly of 3-D Periodic Structures," Livermore, CA (March 2004)
8. National Institute of Advanced Industrial Science and Technology (AIST), "Directed Assembly of 3D Ceramic Structures, Chuba, Japan (May 2005).
9. Argonne National Laboratory, "Direct-Write Assembly of Complex 3D Structures" DOE User's Workshop (May 2006).
10. National Institute of Advanced Industrial Science and Technology (AIST), "Mimicking Nature via Directed Materials Assembly, Chuba, Japan (May 2008).
11. Lawrence Livermore National Laboratory (LLNL), "Novel Inks for Direct-Write Assembly of Functional Materials", Livermore, CA (December 2008).
12. DARPA DSO Retreat, "*Living* Materials: The Next Frontier in Materials Science", Baltimore, MD (April 2009).
13. DOE Office of Science Graduate Fellowship Research Meeting, "Programming Function via Soft Materials," Argonne National Laboratory, Argonne, IL (August 2010).
14. NSF Workshop on Frontiers of Additive Manufacturing Research and Education, "3D Printing of Functional Materials and Devices", Arlington, VA (July 2013).
15. MIT Lincoln Labs, "3D Printing of Functional Materials," Lexington, MA (November 2013).
16. DARPA ISAT Workshop, "3D Bioprinting of Vascularized Tissue Constructs," Endicott House, MA (August 2014).

RESEARCH GROUP SUPERVISION

M.S. Degrees Granted, Thesis Topic, Current Employment

1. Michelle G. Boyer (1993), *The Effect of Binder Distribution and Chemical Modification on the Moisture Absorption Kinetics of MDF Cement*, Texas Instruments, Dallas, TX.

2. Rita Slilaty (1995), *The Effects of Suspension Stability on the Microstructure of As-Cast Alumina-Poly(vinyl butyral) Tapes*, Intel Corp., Portland, OR.
3. Markus Wegmann (1995), *Platinum Induced Liquid Phase Sintering of Magnetically-Aligned $YBa_2Cu_3O_{7-x}$ Thick Films,* The Federal Institute for Materials Testing and Research (EMPA), Duebendorf, Switzerland.
4. Jiyou Guo (1995), *Microstructure and Superconducting Properties of Powder-in-Tube Ag-Sheathed $Bi_2Sr_2CaCu_2O_x$ Tapes*, Intel Corp, Portland, OR.
5. Kimberly Blackman (1996), *Processing of Nonaqueous Tape-Cast Ceramic Layers*.
6. Marsha Huha (1999), *Effects of Polymer Properties on the Chemorheological Behavior and Drying Stress Evolution of an Aqueous Alumina-Poly(vinyl alcohol) Gel Casting System*, Seagate, Minneapolis, MN.
7. Matthew Janet (2000), *Mechanical Properties of Mullite-Based Composites Derived from Silica-Coated Alumina Powder,* 3M, St. Paul, MN.
8. Andrew Read (2001), *Magnetic Field and Dopant Effects on Texturing of $YBa_2Cu_3O_{7-\delta}$ Thick Films*, Edo, Salt Lake City, UT.
9. Sarah Michna (2004), *Concentrated Hydroxapatite Inks for Direct-Write Assembly of Bone Scaffolds.*
10. Mark Roberts (2006), *Rheological Properties and Micro-Particle Imaging Velocimetry of Model Colloidal Fluids and Gels,* BP, Houston, TX.
11. John Vericella (2012), *Microfluidic Assembly of Polymer Capsules for Efficient Carbon Capture*, Lawrence Livermore National Laboratory, Livermore, CA.
12. Lucas Osterbur (2013), *3D Printing of Hyaluronic Acid Scaffolds for Tissue Engineering Applications*, Chemical Education Program, Urbana, IL.
13. Steve Kranz (2013), *Multinozzle Printheads for 3D Printing of Viscoelastic Inks*.
14. David Lorang (2013), *Core-Shell Printing of Functional Polymer Filaments*, Intel, Portland, OR.

Ph.D. Degrees Granted, Thesis Topic, Current Employment

1. Andrea Ogden (1996), *Effects of Nonadsorbed Polymer on the Stability of Weakly Flocculated Ceramic Suspensions,* Cabot Corp., Billerica, MA.
2. Priyadarshi Desai (1997), *Processing-Structure-Property Relations in Novel Organocement Composites,* Vesuvius Co., Pittsburgh, PA.
3. Jiyou Guo (1997), *Aggregation Effects on the Rheological, Sedimentation, and Drying Behavior of Colloidal Silica Suspensions,* Intel Corp, Portland, OR.
4. Sherry Morissette (1999), *Compositional Effects on the Chemorheological Properties and Forming Behavior of Aqueous Alumina-Poly(vinyl alcohol) Gel Casting Suspensions,* Transform Pharmaceutical, Boston, MA.
5. Valeria Tohver (2001), *Phase Behavior, Structure, and Properties of Colloidal Microsphere-Nanoparticle Mixtures*, Associate Professor, Georgia Institute of Technology, Atlanta, GA.
6. James E. Smay (2002), *Directed Colloidal Assembly and Characterization of PZT-Polymer Composites*, Associate Professor (with tenure), Chemical Engineering Dept., Oklahoma State University, Stillwater, OK.
7. Carlos J. Martinez (2002), *Structure and Property Evolution during Film Formation from Binary Colloidal Suspensions*, Associate Professor (with tenure), Materials Engineering, Purdue University, West Lafayette, IN.
8. Glen Kirby (2003), *PAA/PEO Comb Polymer Effects on Rheological Property Evolution of Concentrated Cement Suspensions*, General Electric, Cincinnati, OH.
9. Daniel Therriault (2003), *Directed Assembly of 3-D Microvascular Networks,* Associate Professor (with tenure), Mechanical Engineering Department, Ecole Montreal, Canada (co-advised with Prof. S. White).
10. Gregory Gratson (2005), *Novel Colloidal and Polyelectrolyte Inks for Direct-Write Assembly of 3-D Periodic Structures*, GE Central Research, Schenectady, NY.
11. Angel Chan (2007), *Nanoparticle Engineering of Colloidal Suspension Behavior*, John Hopkins, Baltimore, MD.

12. Mingxie Xu (2007), *Direct-Write Assembliy of 3D Polylelectrolyte Scaffolds, Inorganic Hybrids, and Photonic Crystals*, Intel, Phoenix, AZ.
13. Ranjeet B. Rao (2008), *Biphasic Nanoparticle Inks for Direct-Write Assembly of 3-D Periodic Structures*, PARC, Palo Alto, CA.
14. Daniel J. Harris (2008), *Evaporative Lithographic Patterning of Colloidal Films*, Intel Corp., Portland, OR.
15. Eric B. Duoss (2009), *Nanoparticle and Sol-Gel Inks for Direct-Write Assembly of Functional Metallic and Metal Oxide Materials*, Postdoctoral Researcher, Lawrence Livermore National Laboratory, Livermore, CA.
16. Summer K. Rhodes (2009), *Structure, Dynamics, and Flow Behavior of Model Biphasic Colloidal Mixtures*, Postdoctoral Researcher, Sandia National Laboratories, Albuquerque, NM.
17. J. Yoshikawa (2009), *Comb Polymer Architecture and Particle Size Effects on the Behavior of Biphasic Nanoparticle Inks for Direct-Write Assembly*, NGK, Nagoya, Japan.
18. Sara T.-M. Parker (2010), *Direct-Write Assembly of 3D Microperiodic Scaffolds for Tissue Engineering Applications*, Postdoctoral Researcher, Rutgers University.
19. Robert J. Shepherd (2010), *Microfluidic Assembly and Packing Dynamics of Colloidal Granules*, Postdoctoral Researcher, Harvard University.
20. William Wu (2011), *Direct Ink Writing of Microvascular Networks*, Intel, Hillsboro, OR.
21. Christopher J. Hansen (2011), *Self-Healing Materials and Multinozzle Arrays with Embedded Microvascular Networks*, Assistant Professor, University of Massachusetts, Lowell, MA.
22. S. Brett Walker (2013), *Synthesis and Patterning of Reactive Silver Inks*, IC Postdoctoral Fellow and Co-Founder of Electroninks Incorporated, Urbana, IL.
23. Analisa Russo (2014), *Pen-on-Paper Flexible Electronics*, Urbana, IL. Co-Founder, Electroninks Writeables, Somerville, MA.

Postdoctoral Researchers, Current Employment

Michael Bevan (2004), Associate Professor, Chemical Engineering, Johns Hopkins University

James F. Gilchrist (2005), Associate Professor, Chemical Engineering, Lehigh University

Mariusz Twardowski (2005), Lab Instructor, Chemistry, MIT

Ali Mohraz (2006), Assistant Professor, Chemical and Materials Engineering, University of California at Irvine

Jacinta C. Conrad (2005-09) – Assistant Professor, Chemical Engineering, University of Houston

Bok Y. Ahn (2007- present)

Eric Duoss (2009-10) – Postdoctoral Research Fellow, Lawrence Livermore National Laboratory

Y.S. Cho (2009) – KAIST, Korea.

Elizabeth Goglowski (2008 – 2011) – Assistant Professor, University of Wisconsin at Eau Claire

Yongxiang Gao (2010 – 2012) – Postdoctoral Researcher, University of California at Santa Barbara

Jaime Juarez (2011-2013) – Assistant Professor, Iowa State University

Scott Slimmer (2010-present) – Lewis Lab Manager, Harvard University

James Hardin (2012-present) - Postdoctoral Researcher, Air Force Research Laboratory

Brett Compton (2013- present) – Staff Scientist, Oak Ridge National Laboratory

Kimberly Homan (2013 – present) - Postdoctoral Researcher, Harvard University

Thomas Ober (2013- present) - Postdoctoral Researcher, Harvard University

Mark Scott (2013 – present) - Postdoctoral Researcher, Harvard University

Jordan Raney (2014) - Postdoctoral Researcher, Harvard University

Daniele Foresti (2014) – Postdoctoral Researcher, Harvard University

GRADUATE STUDENT AND POSTDOC AWARDS

M. Bell, NSF Graduate Fellow (2012)

Dr. M. Bevan, NSF PECASE Award (2005)

N. Black, NSF Graduate Fellow (2014)

K. Blackman, AT&T Graduate Fellowship (declined), 2nd Place, Graduate Student Poster Competition, Annual American Ceramic Society Meeting, May 1995.

A. Chan, NSF Graduate Fellowship

P. Desai, 2nd Place, Graduate Student Poster Competition, Chicago-Milwaukee Section of American Ceramic Society, April 1994

A. Deconinck, NDSEG Graduate Fellowship

S. Gladman, Fall MRS 2014 Poster Award

G. Gratson, NDSEG Graduate Fellowship, Fall MRS Graduate Student Gold Award (2003), Mavis Award (2004), Racheff Award (2005)

C. Hansen, NSF Graduate Fellowship; Mavis Award

J. Hardin, IC Postdoctoral Fellow (2012)

G. Kirby, Brunauer Award, American Ceramic Society, Travel Fellowship, European Ceramic Society (Istanbul, Turkey)

D. Kolesky, Fall MRS 2013 Poster Award, Finalist MIT-Lemelson Prize (2015).

S. Morissette, Argonne National Laboratory Educational Fellowship, 3rd Place, Graduate Student Poster Competition, Chicago-Milwaukee, Section of American Ceramic Society, April, 1996

J. Muth, NSF Graduate Fellow (2012)

A. Ogden, ISHM Educational Foundation Fellowship

L. Osterbur, NSF IGERT Fellow (2010-2012), University of Illinois; 1st Prize, Poster Presentation, 2010 International Conference on Biofabrication, Philadelphia, PA

S. Parker, NSF Graduate Fellowship

R. Rao, NDSEG Graduate Fellowship, Mavis Memorial Award, NSF Travel Fellowship to the European Ceramic Society (Berlin, Germany)

S. Rhodes, NSF Graduate Fellowship, SURGE Fellowship

M. Roberts, NSF Graduate Fellowship, Carver Fellowship

A. Russo, NSF Travel Award (2010); Finalist MIT-Lemelson Prize (2014)

R. Shepherd, Lemelson-Illinois Prize Finalist (2010)

Dr. J. Smay. NSF PECASE Award (2006), Victor K. LaMer Award (2004), NSF Minority Graduate Student Fellowship (2000), IMAPS Educational Foundation Fellowship, Award for Best student paper/poster - ACerS Symposium on Ceramics for Wireless Technologies Symposium

V. Tohver, 1st Prize, Poster Competition, 21st Australian Colloid and Surface Chemistry Student Conference in Morpeth, New South Wales, September 1999.

R. Truby, NSF Graduate Fellow (2012)

S. Slimmer, IC Postdoctoral Fellow (2010)

M. Wegmann, 3rd Place, Graduate Student Poster Competition, Annual American Ceramic Society Meeting, April 1994.

S.B. Walker, 1st Place, Poster Presentation, 2010 International Conference on Ceramic Processing Science, August 2010; 2nd Place, National Collegiate Inventors Competition, November 2012; Finalist, Lemelson-Illinois Prize, April 2013; Forbes 30 under 30 (Manufacturing-Industry), January 2015.

Honorary Fellows of the Royal Society of Chemistry are recognized for substantial contributions made to the chemical science community. Honorary Fellow 2014 - Gabor Somorjai. Welch Award in Chemistry. 1976 - Neil Bartlett 1984 - Kenneth S. Pitzer 1986 - George C. Pimentel 2007 - William H. Miller* 2014 - Robert G. Bergman. Wolf Prize.