

KAUSHIK BHATTACHARYA

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Education

Ph.D. 1991 University of Minnesota
B.Tech. 1986 Indian Institute of Technology, Madras

Professional Experience

2000–Current Professor, California Institute of Technology
1999 Associate Professor, California Institute of Technology
1993–99 Assistant Professor, California Institute of Technology
1991–93 Associate Research Scientist, Courant Institute of Mathematical Sciences
1986–91 Graduate Assistant, University of Minnesota

Visiting Positions

2006 Jet Propulsion Laboratories
2001 Indian Institute of Science, Bangalore
1999 Isaac Newton Institute, Cambridge University
1997–98 Max-Planck-Institute for Mathematics in the Sciences, Leipzig
1992 International Center for Mathematical Sciences, Edinburgh
1988 Mathematical Sciences Institute, Cornell University

Awards and Professional Recognition

Midwest Mechanics Lecturer, 2006-2007.

NASA Tech Brief Award, 2007

Special Achievement Award in Applied Mechanics, Applied Mechanics Division, American Society of Mechanical Engineering, 2004.

Society of Engineering Sciences Young Investigator Award, 2004.

2004 Best Paper Award in the area of active materials (with E. Burcsu and G. Ravichandran), American Society of Mechanical Engineering, 2005.

Invited participant, Frontiers of Engineering, National Academy of Engineering, 2002; Japan - American Frontiers of Engineering, National Academy of Engineering, 2003; German-American Frontiers of Science, National Academy of Science, 1998.

Charles Lee Powell Award, California Institute of Technology, 1997

NSF Young Investigator, 1994

Professional and Administrative Activities

Editor, Journal of the Mechanics and Physics of Solids, from January 2004.

Executive Officer for Mechanical Engineering, California Institute of Technology, from October 2007.

Member, Board of Directors, Society of Engineering Sciences, from January 2005.

Member of the Editorial Board, Archive for Rational Mechanics and Analysis from 1999, Applied Mathematics Research Express from 2003, Communications on Mathematical Sciences for Applications from 2001-2004.

Option Representative (Director of Graduate Studies) of Mechanical Engineering, California Institute of Technology, 2003-2006.

Organizer (with Weinan E) of the fourth SIAM conference on the Mathematical Aspects of Materials Science, May 2004.

Organizer (with J.R. Willis and P. Suquet) of a four-month programme on the “Mathematical developments in solid mechanics and materials science”, Isaac Newton Institute, Cambridge, 1999.

Publications: Books and Book Chapters

- [1] K. Bhattacharya. *Microstructure of martensite. Why it forms and how it gives rise to the shape-memory effect*, Oxford University Press, 2003.
- [2] R. Abeyaratne, K. Bhattacharya, and J.K. Knowles. Strain-energy functions with local minima: Modeling phase transformations using finite thermoelasticity. In *Nonlinear elasticity: Theory and applications* (ed. Y. Fu and R.W. Ogeden), Cambridge University Press, 433-490, 2001.
- [3] K. Bhattacharya, J. Li and Y. Xiao. Electro-mechanical models for optimal design and effective behavior of electro-active polymers. In *Electroactive polymer (EAP) actuators as artificial muscles. Reality, potential and challenges* (ed. Y. Bar-Cohen), SPIE Press, 309-330, 2001.
- [4] K. Bhattacharya. The microstructure of martensite and its implications on the shape-memory effect. In *Microstructure and phase transition* (ed. D. Kinderlehrer, R.D. James and M. Luskin) IMA volumes in mathematics and its applications, Springer Verlag, 1-25, 1993.

Publications: Journal Articles

- [1] V. Gavini, J. Knap, K. Bhattacharya and M. Ortiz. Non-Periodic Finite-Element Formulation of Orbital-Free Density Functional Theory. *J. Mech. Phys. Solids*, 55: 669-696, 2007.
- [2] V. Gavini, K. Bhattacharya and M. Ortiz. Quasi-continuum orbital-free density-functional theory: A route to multi-million atom non-periodic DFT calculation. *J. Mech. Phys. Solids*, 55: 697-718, 2007.
- [3] K. Dayal and K. Bhattacharya. A real-space non-local phase-field model of ferroelectric domain patterns in complex geometries. *Acta Mater.*, 55: 1907-1917, 2007.
- [4] K. Dayal and K. Bhattacharya Active tuning of photonic device characteristics during operation by ferroelectric domain switching. *J. Appl. Phys.* 102: Art No. 064102, 2007.
- [5] A. Yavari, M. Ortiz and K. Bhattacharya. Anharmonic lattice statics analysis of 180° and 90° ferroelectric domain walls in PbTiO₃. *Phil. Mag.* 87: 3997-4026, 2007.
- [6] A. Yavari, M. Ortiz and K. Bhattacharya. A theory of anharmonic lattice statics for the analysis of defective crystals. *J. Elas* 86: 41-83, 2007.
- [7] D. Shilo, E. Burcsu, G. Ravichandran and K. Bhattacharya. A model for large electrostrictive actuation in ferroelectric crystals. *Int. J. Solids Struct.* 44: 2053-2065. 2007.

- [8] S. Daly, G. Ravichandran and K. Bhattacharya. Stress-induced martensitic phase transformation in thin sheets of Nitinol. *Acta Mater*, 55: 3593-3600, 2007.
- [9] A. Sadjadpour and K. Bhattacharya. A micromechanics inspired constitutive model for shape-memory alloys: The one-dimensional case. *Smart Mat. Struct.* 16:S51-S62, 2007.
- [10] A. Sadjadpour and K. Bhattacharya. A micromechanics inspired constitutive model for shape-memory alloys. *Smart Mat. Struct.*, 16: 1751-1765, 2007.
- [11] P.W. Dondl, C-P Shen and K. Bhattacharya. Computational Analysis of Martensitic Thin Films using Subdivision Surfaces. *Int. J. Num. Meth. Engng.* 72: 72-94, 2007.
- [12] V. Gavini, K. Bhattacharya and M. Ortiz. Vacancy clustering and prismatic dislocation loop formation in aluminum. *Phys. Rev. B*, to appear, 2007.
- [13] I.V. Chenchiah and K. Bhattacharya. The relaxation of two-well energies with possibly unequal moduli. *Arch. Rat. Mech. Anal.*, to appear, 2007.
- [14] Y. Xiao and K. Bhattacharya A continuum theory of deformable, semiconducting ferroelectrics. *Arch. Rat. Mech. Anal.*, to appear, 2007.
- [15] S. Daly, A. Miller, G. Ravichandran and K. Bhattacharya. An experimental investigation of crack initiation in thin sheets of Nitinol. *Acta Mater.*, to appear, 2007.
- [16] K. Dayal and K. Bhattacharya The kinetics of phase boundaries in the peridynamic formulation of continuum mechanics. *J. Mech. Phys. Solids*, 54:1811-1842, 2006.
- [17] C. Franck, G. Ravichandran and K. Bhattacharya. Characterization of domain walls in BaTiO₃ using simultaneous atomic force and piezo-response force microscopy. *Appl. Phys. Lett.* 88:102907, 2006.
- [18] J.L. Ruglovsy, J. Li, K. Bhattacharya and H.A. Atwater The effect of biaxial texture on the effective electromechanical constants of polycrystalline barium titanate and lead titanate thin films. *Acta Mat.* 54: 3657-3663, 2006.
- [19] M.Y. El-Naggar, K. Dayal, D.G. Goodwin and K. Bhattacharya. Graded ferroelectric capacitors with robust temperature characteristics. *J. Appl. Phys.* 100:114115, 2006.
- [20] R. Zhang, D. Shilo, G. Ravichandran and K. Bhattacharya. Mechanical characterization of released thin films by contact loading. *J. Appl. Mech.* 7: 730-736, 2006.
- [21] K. Bhattacharya and R.D. James. The material is the machine. *Science* 307: 53-54, 2005.
- [22] J. Li, R. Rogan, E. Üstündag and K. Bhattacharya. Domain switching in polycrystalline ferroelectric ceramics. *Nature Materials* 4: 776-781, 2005.
- [23] W. Zhang and K. Bhattacharya. A computational model of ferroelectric domains. Part I: Model formulation and domain switching. *Acta Mat.* 53: 185-198, 2005.
- [24] W. Zhang and K. Bhattacharya. A computational model of ferroelectric domains. Part II: Grain boundaries and defect pinning. *Acta Mat.* 53: 199-209, 2005.
- [25] K. Bhattacharya and P.M. Suquet. A model problem concerning recoverable strains of shape-memory polycrystals. *Proc. Royal Soc. Lond. A* 461:2797-2816, 2005.
- [26] I.V. Chenchiah and K. Bhattacharya. Examples of nonlinear homogenization in plane strain involving degenerate energies. *Proc. Royal Soc. Lond. A* 461:3681-3703, 2005.
- [27] Y. Xiao, V.B. Shenoy, and K. Bhattacharya. Depletion layers and domain walls in semiconducting ferroelectric thin films. *Phys. Rev. Lett.*, 95: 247603, 2005.
- [28] D. Shilo, G. Ravichandran and K. Bhattacharya. Investigation of twin wall structure at the nanometer scale using atomic force microscopy. *Nature Mat.* 3: 453-457, 2004.
- [29] K. Bhattacharya, S. Conti, G. Zanzotto and J. Zimmer. Symmetry and reversibility of martensitic transformations. *Nature* 428: 55-59, 2004.
- [30] B. Craciun and K. Bhattacharya. Effective motion of a curvature sensitive interface through a heterogeneous medium. *Inter. Free. Bound.* 6: 151-173, 2004.

- [31] C. Huang, Q.M. Zhang, G. deBotton and K. Bhattacharya. All-organic dielectric-percolative three-component composite materials with high electromechanical response. *Appl. Phys. Lett.* 84: 4391-4393, 2004.
- [32] E. Burcu, G. Ravichandran, K. Bhattacharya. Large electrostrictive actuation of barium titanate single crystals. *J. Mech. Phys. Solids* 52: 823-846, 2004.
- [33] M. Jabbour and K. Bhattacharya. A continuum model of multispecies film growth by chemical vapor deposition. *J. Elasticity* 73: 13-74, 2003.
- [34] B. Craciun and K. Bhattacharya. Homogenization of a Hamilton-Jacobi equation associated with the geometric motion of an interface. *Proc. Royal Soc. Edin. A* 133: 773-805, 2003.
- [35] K. Bhattacharya and G. Ravichandran. Ferroelectric perovskites for electromechanical actuation. *Acta Mater.* 51: 5941-5960, 2003. (Invited paper for the 50th anniversary volume of Acta Materialia).
- [36] P.K. Purohit and K. Bhattacharya. Dynamics of strings made of phase-transforming materials. *J. Mech. Phys. Solids* 51: 593-624, 2003.
- [37] K. Bhattacharya and A. Braides. Thin films with many small cracks. *Proc. Royal Soc. London A* 458: 823-840, 2002.
- [38] K. Bhattacharya, I. Fonseca and G.A. Francfort. An asymptotic study of the debonding of thin films. *Arch. Rat. Mech. Anal* 161: 205-229, 2002.
- [39] R.V. Kukta and K. Bhattacharya. A micromechanical model of surface steps. *J. Mech. Phys. Solids* 50: 615-649, 2002.
- [40] P.K. Purohit and K. Bhattacharya. On beams made of a phase transforming material. *Int. J. Solids Structures* 39: 3907-3929, 2002.
- [41] K. Bhattacharya and G. Dolzmann. Relaxation of some multiwell problems. *Proc. Royal Soc. Edin. A* 131A: 279-320, 2001.
- [42] Y.C. Shu and K. Bhattacharya. Domain patterns and macroscopic behavior of ferroelectric materials *Phil. Mag. B* 81:2021-2054, 2001.
- [43] K. Bhattacharya and G. Dolzmann. Relaxed constitutive relations for phase-transforming materials. *J. Mech. Phys. Solids* 48:1493-1517, 2000
- [44] N.K. Simha and K. Bhattacharya. Kinetics of phase boundaries with edges and junctions in a three-dimensional multi-phase body. *J. Mech. Phys. Solids* 48: 2619-2641, 2000.
- [45] E. Burcu, G. Ravichandran and K. Bhattacharya. Large strain electrostrictive actuation in barium titanate, *Appl. Phys. Lett.* 77: 1698-1700, 2000.
- [46] K. Bhattacharya and R. D. James. A theory of thin films of martensitic materials with applications to microactuators. *J. Mech. Phys. Solids* 47: 531-576, 1999.
- [47] K. Bhattacharya, R.V. Kohn and S. Kozlov. Some examples of nonlinear homogenization involving nearly degenerate energies. *Proc. Royal Soc. London A* 455: 567-583, 1999.
- [48] K. Bhattacharya. Crystallographic attributes of a shape-memory alloy. *ASME J. Engng. Mat. Tech.*, 121: 93-97, 1999.
- [49] K. Bhattacharya, Phase boundary propagation in heterogeneous bodies. *Proc. Royal Soc. London A*, 455: 757-766, 1999.
- [50] K. Bhattacharya, R.D. James and G. Friesecke. The mathematics of microstructure and the design of new materials. *Proc. National Acad. Sciences USA*, 96: 8332-8333, 1999.
- [51] K. Bhattacharya, B. Li and M. Luskin. The simply laminated microstructure in martensitic crystals that undergo a cubic to orthorhombic phase transformation. *Arch. Rat. Mech. Anal*, 149:123-154, 1999.
- [52] R.V. Kukta and K. Bhattacharya. A 3-D model of step flow mediated crystal growth under the combined influences of stress and diffusion. *Thin Solid Films*, 357: 35-39, 1999.

- [53] M. Jabbour and K. Bhattacharya. A multispecies step-flow model of growth of compound thin films by MOCVD. *Thin Solid Films*, 357:26-30, 1999.
- [54] N.K. Simha and K. Bhattacharya, Edge effects on the propagation of phase boundaries *Mat. Sci. Engng. A* 273-275: 241-244, 1999.
- [55] K. Bhattacharya, A. Desimone, K. Hane, R.D. James and C.P. Palmstrøm, Tents and tunnels on martensitic films. *Mat. Sci. Engng., A* 273-275:685-689, 1999.
- [56] Y.C. Shu and K. Bhattacharya. The influence of texture on the shape-memory effect in polycrystals. *Acta Mater.* 46: 5457-5473, 1998.
- [57] K. Bhattacharya, M. Ortiz and G. Ravichandran. An energy-based model of compressive failure in inhomogeneous brittle solids. *J. Mech. Phys. Solids* 46: 2171-2181, 1998.
- [58] N.K. Simha and K. Bhattacharya. Kinetics of phase boundaries with edges and junctions. *J. Mech. Phys. Solids* 46: 2323-2359, 1998.
- [59] K. Bhattacharya and R.V. Kohn. Energy minimization and the recoverable strains of polycrystalline shape-memory alloys. *Arch. Rat. Mech. Anal.* 139: 99-180, 1997.
- [60] K. Bhattacharya, R.D. James and P.J. Swart. Relaxation in shape-memory alloys. Part I: Mechanical model. *Acta Mater.* 45: 4547-4560, 1997.
- [61] K. Bhattacharya, R.D. James and P.J. Swart. Relaxation in shape-memory alloys. Part II: Thermo-mechanical model and proposed experiments. *Acta Mater.* 45: 4561-4568, 1997.
- [62] N.K. Simha and K. Bhattacharya. Equilibrium conditions at corners and edges of an interface in a multiphase solid. *Mat. Sci. Engng. A* 238: 32-41, 1997.
- [63] K. Bhattacharya and R.V. Kohn. Symmetry, texture and the recoverable strain of shape-memory polycrystals. *Acta Mater.* 44: 529-542, 1996.
- [64] K. Bhattacharya, N.B. Firoozye, R.D. James and R.V. Kohn. Restrictions on microstructure. *Proc. Royal Soc. Edin.* A 124: 843-878, 1994. (Selected for a featured review in Mathematical Reviews)
- [65] K. Bhattacharya. Comparison of the geometrically nonlinear and linear theories of martensitic transformation. *Cont. Mech. Thermodyn.* 5: 205-242, 1993.
- [66] K. Bhattacharya. Self-accommodation in martensite. *Arch. Rat. Mech. Anal.* 120: 201-244, 1992.
- [67] K. Bhattacharya. Korn's inequality for sequences. *Proc. Royal Soc. London* A 434: 479-484, 1991.
- [68] K. Bhattacharya. Wedge-like microstructure in martensites. *Acta Metall. Mater.* 39: 2431-2444, 1991.

Publications: Conference Proceedings

- [1] K. Dayal and K. Bhattacharya. Dynamics of phase boundaries in the peridynamic formulation of continuum mechanics. In *Proceedings of the International Conference on Computational and Experimental Engineering and Sciences, ICES05*, to appear, 2005.
- [2] Y. Xiao and K. Bhattacharya. Interaction of oxygen vacancies with domain walls and its impact on fatigue in ferroelectric thin films. In *Smart Structures and Materials 2004: Active Materials: Behavior and Mechanics* Proc. SPIE, 2004.
- [3] K. Bhattacharya and A. Schlömerkemper. Transformation yield surface of shape-memory alloys. *J. de Phys. IV* Vol. 115 (Proc. 7th European Mechanics and Materials Conference (EMMC 7)), 155-162,2004.
- [4] K. Bhattacharya. Thin films of active materials. In *Proceedings of the NATO Advanced Research Workshop on Nonlinear Homogenization and Its Application to Composites, Polycrystals and Smart Materials* (ed. J.J. Telega), Kluwer, to appear, 2003.

- [5] W. Zhang and K. Bhattacharya. Modeling large strain electrostriction of ferroelectrics under combined electromechanical loads. In *Smart Structures and Materials 2003: Active Materials: Behavior and Mechanics* (ed. D.C. Lagoudas), Proc. SPIE Vol. 5053, 2003.
- [6] R. Zhang, G. Ravichandran and K. Bhattacharya. Electromechanical characterization and domain visualization during large electrostriction in ferroelectrics. In *Smart Structures and Materials 2003: Active Materials: Behavior and Mechanics* (ed. D.C. Lagoudas), Proc. SPIE Vol. 5053, 2003.
- [7] K. Bhattacharya, P. Purohit and B. Craciun. The mobility of twin and phase boundaries. *J. de Phys. IV* Vol. 112(Proc. ICOMAT-02), 163-166, 2003.
- [8] J. Li and K. Bhattacharya. A mesoscopic electromechanical theory of ferroelectric films and ceramics. In *2002 Workshop on Fundamental Physics of Ferroelectrics* (ed. R.E. Cohen), 2002.
- [9] E. Burcu, G. Ravichandran, K. Bhattacharya. Observation of Domain Motion in Single-Crystal Barium Titanate Under Combined Electromechanical Loading Conditions. *Proc. IUTAM Symposium on Mechanics of Martensitic Phase Transformations in Solids, Hong Kong* (ed. Q.P. Sun), 63-70, Kluwer Academic Publishers, 2002.
- [10] K. Bhattacharya and J. Li. Domain patterns, texture and macroscopic electro-mechanical behavior of ferroelectrics. In *2001 Workshop on Fundamental Physics of Ferroelectrics* (ed. H. Krakauer), AIP Conference Proceedings Vol 582, 72-81, 2001.
- [11] E. Burcu, G. Ravichandran and K. Bhattacharya. Electro-mechanical Behavior of 90-degree Domain Motion in Barium Titanate Single Crystals. In *Smart Structures and Materials 2001: Active Materials: Behavior and Mechanics* (ed. C.S. Lynch), Proc. SPIE Vol. 4333, 121-130 SPIE, 2001.
- [12] Y. Xiao and K. Bhattacharya. Modeling electromechanical properties of ionic polymers. In *Proc. SPIE: Electroactive Polymer, Actuators and Devices-Smart Structures and Materials* (ed. Y. Bar-Cohen), 292-300, SPIE, 2001.
- [13] E. Burcu, G. Ravichandran and K. Bhattacharya. Mechanics of large electrostriction in ferroelectrics, In *Smart Structures and Materials 2000: Active Materials: Behavior and Mechanics* (ed. C.S. Lynch) Proc. SPIE Vol. 3992: 296-304, SPIE, 2000
- [14] K. Bhattacharya, Energy minimization and nonlinear problems in polycrystalline solids. In *Computer aided design of high temperature materials* (ed. A. Pechenik, R.K. Kalia and P. Vaishishta) Oxford Univ. Press., 139-148, 1999.
- [15] K. Bhattacharya, R.V. Kohn and Y.C. Shu. The Taylor estimate of recoverable strain in shape-memory polycrystals. In *The proceedings of the IUTAM symposium on 'Transformation problems in composite and active materials'* (ed. Y.A. Bahei-el-Din and G.J. Dvorak) Kluwer. 1998.
- [16] K. Bhattacharya and R.D. James. A theory of shape-memory thin films with applications. In *Materials for smart systems II* (ed. E.P. George et al.), MRS Proceedings Volume 459, 311-316, 1997.
- [17] K. Bhattacharya. The kinematics of crossing twins. In *Contemporary research in mechanics and mathematics of materials, Proceedings of a symposium in honor of J.L. Ericksen* (ed. R.C. Batra and M.F. Beatty), CIMNE, 251-262, 1996.
- [18] K. Bhattacharya and R.V. Kohn. Recoverable strains in shape-memory polycrystals. *J. de Phys. IV Colloque C8 5*: 261-266, 1995.
- [19] K. Bhattacharya. Shape-memory effect: implications of a theory of martensite microstructure. In *Adaptive materials systems* (ed. G. Carmen, N. Sottos and C. Lynch), ASME AMD-Vol. 206: 97-109, 1995.

- [20] K. Bhattacharya and R.V. Kohn. The behavior of polycrystalline shape-memory materials. In *Mechanics of phase transformations and shape-memory alloys* (ed. L.C. Brinson and B. Moran), ASME AMD-Vol. 189: 1-10, 1994.
- [21] K. Bhattacharya, R.D. James and P.J. Swart. A nonlinear dynamic model for twin relaxation with applications to Au 47.5%Cd and other shape-memory alloys. In *Twinning in advanced materials* (ed. M.H. Yoo and M. Wuttig), The Minerals, Metals and Materials Society, 239-246, 1994.
- [22] K. Bhattacharya and R.V. Kohn. Effective behavior of polycrystals of materials that undergo martensitic phase transformation. In *Mathematics in smart structures* (ed. H.T. Banks), SPIE proceedings series 1919: 207-213, 1993.
- [23] K. Bhattacharya. Linear and nonlinear thermoelasticity theory for crystalline solids. In *Recent developments in elasticity* (ed. R.C. Batra and G.P. MacSithigh) ASME AMD-Vol 124: 5-12, 1991.

Patents

H.A. Atwater, K. Bhattacharya, K. Dayal, M. Dicken, D. Psaltis, G. Ravichandran and A. Scherer. Ferroelectric nanophotonic materials and devices. US and PCT Patent Application, Filed 2006.

R. Zhang, D. Shilo, G. Ravichandran and K. Bhattacharya. Method and apparatus for measuring the mechanical response of micro-electro-mechanical systems. US Patent Application, Filed 2005.

E. Burcsu, K. Bhattacharya, G. Ravichandran, Y.C. Shu. Electrostrictive actuator using ferroelectric single crystal. US Patent 6,437,486 B1. Issued August 20, 2002.

Selected Presentations

US-China Summer Institute on Bio- and Nano-Mechanics, Beijing, Sept. 2007.

Workshop on Fundamentals of Robust and Reliable Nano/MEMS Devices, Adelphi, Aug 2007

Sixth International Congress on Industrial and Applied Mathematics, Zurich, July 2007 (Plenary)

International Conference on Shape-Memory and Superelastic Technologies (SMST-06), Asilomar, May 2006.

Workshop on Advanced Active Thin Film Materials, Destin, May 2005.

Symposium on Active Materials at the MRS Fall Meeting, December 2004.

Symposium on Prospects for Mathematics and Mechanics to celebrate the 80th birthday of Jerry Ericksen, Minneapolis, November 2004.

IMA Tutorial on Mathematics of Materials, Minneapolis, September 2004 (Series of 3 lectures).

Conference on Variational Principles in Materials Science, Trieste, Italy, September 2004.

International Congress of Theoretical and Applied Mechanics (ICTAM04), Warsaw, August 2004.

Learnshop on Multiscale Modeling, Bonn, Germany, August 2004 (Series of 5 lectures).

SIAM conference on the Mathematical Aspects of Materials Science, Los Angeles, May 2004.

Minisymposium on Multiscale Modeling in the GAMM Annual Conference, Dresden, Germany, March 2004.

Symposium on Active Materials in the MRS Fall Meeting, Boston December 2003.

Symposium on PDEs and Materials at the Mathematisches Forschungsinstitut Oberwolfach, Germany, September 2003.

NATO ARW on Nonlinear Homogenization and Its Application to Composites, Polycrystals and Smart Materials, Kazimierz Dolny, Poland, June 2003.

Advances in Nonlinear Analysis, Carnegie Mellon University, Pittsburgh, May 2003.

First Congress on Artificial Muscles, Albuquerque, December 02.

International Conference on Martensitic Transformations, ICOMAT-02 Helsinki, June 2002.

NATO Advanced Research Workshop on New Trends in Phase Transformations and their Applications to Smart Structures, Metz, France, April 2002.

IUTAM Symposium on Mechanics of Martensitic Phase Transformation, Hong Kong, June 2001.

IUTAM Symposium on Material Instabilities and the Effect of Microstructure, Austin, May 2001.

Workshop on the Fundamental Physics of Ferroelectrics, Williamsburg, February 2001.

Symposium on Mathematical Continuum Mechanics at the Mathematisches Forschungsinstitut Oberwolfach, Germany, August 2000.

Euroconference on New Mathematical Methods in Continuum Mechanics, Anogia, Greece, July 2000 (Series of four lectures).

Seminars in various universities including College du France, Indian Institute of Science, Indian Institute of Technology, Madras, Max-Planck-Institute Leipzig, McGill University, Oxford University, Technical-University Berlin, Technical-University Darmstadt, Technion, University of Bath, University of Bonn, University of Metz, Carnegie Mellon University, Cornell University, Courant Institute of Mathematical Sciences, Georgia Institute of Technology, Harvard University, Illinois Institute of Technology, Massachusetts Institute of Technology, Northwestern University, Notre Dame University, Pennsylvania State University, Purdue University, Stanford University, University of Arizona, University of California Los Angeles, University of California San Diego, University of Illinois, University of Houston University of Maryland, University of Massachusetts, University of Minnesota, University of Pennsylvania, University of Southern California, University of Utah, Yale University

Former Doctoral Students

Samantha Daly, Ph.D 2007, Currently Assistant Professor, University of Michigan

Patrick Dondl, Ph.D 2007, Currently Post-doc, Max-Planck-Institute, Leipzig

Vikram Gavini, Ph.D 2007, Currently Assistant Professor, University of Michigan

Lixiu Tian, Ph.D 2007

Kaushik Dayal, Ph.D 2006, Currently Assistant Professor, Carnegie-Mellon University

Amir Sadjadpour, Ph.D 2006, Currently Engineer, Bechtel Corporation

Arash Yavari, Ph.D 2004, Currently Assistant Professor, Georgia Institute of Technology

Y. Xiao, Ph.D 2004, Currently Post-doc, Brown University

I.V. Chenchiah, Ph.D 2003, Currently Assistant Professor, University of Bristol, England

E. Burscu, Ph.D 2001, Currently Scientist, Lincoln Laboratory, Massachusetts Institute of Tech.

P. Purohit, Ph.D 2001, Currently Assistant Professor, University of Pennsylvania

B. Craciun, Ph.D 2001, Currently Scientist, Synopsis.

M. Jabbour, Ph.D 1999 Currently Associate Professor, University of Kentucky

Y.C. Shu, Ph.D 1998 Currently Associate Professor, National Taiwan University

Former Post-Doctoral Fellows

T. Blesgen, Currently Research Associate, Max-Planck Institute, Leipzig

D. Shilo, Currently Senior Lecturer, Technion, Israel
D. Pawaskar, Currently Assistant Professor, Indian Institute of Technology, Bombay, India
J. Zimmer, Currently Lecturer, University of Bath, UK
W. Zhang, Currently Scientist, IUPUI, Indianapolis
J. Li, Currently Assistant Professor, University of Nebraska
G. Dolzmann, Currently Associate Professor, University of Maryland
R.V. Kukta, Currently Associate Professor, SUNY Stony Brook
N.K. Simha, Currently Research Scientist, University of Minnesota.
October 23, 2007