

Abhijit Bhattacharyya, PhD
P.O. Box 1740, State University, AR 72467
Email: abhattacharyya@astate.edu

LIST OF CONTENTS

1. SYNOPSIS		2
	<i>Summary</i>	2
	<i>Professional Interests</i>	2
	<i>Education</i>	2
	<i>Professional Experience</i>	2
	<i>Honors and Awards</i>	3
2. SCHOLARSHIP		4
	<i>Journal Publications</i>	4
	<i>Conference Proceedings</i>	8
	<i>Invited Lectures</i>	10
	<i>Other selected presentations</i>	11
	 <i>Funded Research Grants</i>	 13
	 <i>Post-doctoral Fellows</i>	 14
	<i>Graduate students</i>	14
	<i>Placement of former graduate students</i>	16
	<i>Undergraduate & high school students</i>	16
5. INSTRUCTION		18
	 <i>Courses taught</i>	
	<i>(University of Arkansas at Little Rock)</i>	18
	<i>(University of Alberta)</i>	18
	<i>(Texas A&M University, & Rutgers University)</i>	19
3. CONTRIBUTIONS AS ASSOCIATE DEAN		20
6. SERVICE (from 2002 to 2010)		24
	 <i>Administration & related activities</i>	 24
	<i>Other Activities</i>	25

CURRICULUM VITAE

SYNOPSIS

SUMMARY

My professional journey in the United States began with doctoral studies in Mechanical and Aerospace Engineering at Rutgers University, New Jersey. Since then, I have been at Texas A&M University (postdoc), University of Alberta, Canada (first faculty appointment) before moving to the University of Arkansas at Little Rock (UA Little Rock). I have progressed from the position of Associate Professor to Professor and the Graduate Coordinator of the interdisciplinary Applied Science Graduate Program, and then the position of Associate Dean in the Donaghey College of Engineering and Information Technology (EIT). I have served as the Interim Dean of the Donaghey College of Engineering and Information Technology and currently serve as the Interim Vice Provost for Research and Dean of Graduate School. I have taught a wide variety of undergraduate and graduate courses in Mechanical Engineering and have graduated five MS and seven Ph.D. students. I have raised about \$1.3 million in research funds from the Defense Advanced Research Projects Agency (DARPA), US Army Research Office, Department of Energy and NSF-EPSCOR. I am humbled by the recognition from my colleagues in the mechanical engineering community when they recently elected me as a Fellow of the American Society of Mechanical Engineers (ASME). There are 3000 fellows among an active membership of 120,000, i.e. 2.5% of the ASME membership has achieved the distinction of being elected Fellow¹. I am also very active in my professional community as an ABET evaluator on behalf of ASME.

PROFESSIONAL INTERESTS

As a dean for engineering and computer science, it is my objective to provide the vision, the proactive leadership and motivation for the college to become a model of pedagogy, creation of new knowledge and intellectual property in harmony with the environment and the society at large.

EDUCATION

1. Rutgers University, New Jersey, Ph.D., 1994, Mechanical and Aerospace Engineering.
Thesis: Plasticity and stress-induced phase transformation in dual-phase systems
2. Rutgers University, New Jersey, M.S., 1990, Applied Mechanics.
3. Indian Institute of Technology, Kharagpur, India, B.Tech.(Hons.), 1985, Mechanical Engineering.

PROFESSIONAL EXPERIENCE

1. Arkansas State University, Inaugural dean, **College of Engineering and Computer Science**, 7/19 – present.
2. University of Arkansas at Little Rock, **Interim Vice Provost for Research and Dean of Graduate School**, 7/16-6/19.
3. University of Arkansas at Little Rock, **Associate Dean**, Donaghey College of Engineering and Information Technology, 7/15-6/16.
4. University of Arkansas at Little Rock, **Interim Dean**, Donaghey College of Engineering and Information Technology, 1/15-6/15.
5. University of Arkansas at Little Rock, **Associate Dean**, Donaghey College of Engineering and Information Technology, 1/11-12/14.
6. Graduate Coordinator, Applied Science Graduate Program, 8/06-7/10.
7. **ABET Program Evaluator (PEV)** for ASME 2008 – until now.
8. Arkansas State University, Professor of Mechanical Engineering, 6/19-present.

¹ <https://www.asme.org/about-asme/get-involved/honors-awards/fellows>

9. University of Arkansas at Little Rock, **Professor**, 7/06-6/19.
10. University of Arkansas at Little Rock, **Associate Professor**, 1/02- 6/06.
11. University of Alberta, Canada, **Associate Professor**, 7/01-12/01 (tenured from 7/01).
12. University of Alberta, Canada, **Assistant Professor**, 1/97 – 6/01.
13. Texas A&M University, **Senior Research Associate**, 3/94-12/96.
14. Rutgers University, **Teaching Assistant**, Mechanical and Aerospace Engineering, 1/91-5/93.
15. Rutgers University, **Teaching Assistant**, Mechanics and Materials Science, 1/88-12/90.
16. University of Iowa, **Teaching Assistant**, Chemical and Materials Engineering, 8/87-12/87.
17. Oil & Natural Gas Commission, India, **Assistant Executive Engineer (Mech.)**, 10/85-7/87.

HONORS AND AWARDS

1. Fellow, American Society of Mechanical Engineers.
2. U.S. Army Workshop on “Advanced Active Thin Film Materials for the Next Generation of Meso-Micro Scale Army Applications”, May 10 – 12, 2005, Destin, Florida (*by invitation only*).
2. 2003 Faculty Excellence Award in Research, Donaghey College of Information Science and Systems Engineering, University of Arkansas at Little Rock.
3. NATO Conference on Martensitic Transformations, April 23 – 26, 2002, Metz, France (*by invitation only*).
4. “MEMS Software” for virtual experiments in smart materials and MEMS, cited in OE Magazine, Society of Photo-Optical and Instrumentation Engineering (SPIE), July 2001 (<http://oemagazine.com/fromTheMagazine/jul01/edu.html>).
5. Outstanding Graduate Student Award, Department of Mechanical and Aerospace Engineering, Rutgers University, 1994
6. Louis Bevier Graduate Fellowship, Rutgers University, 1993-1994.
7. Dr. Bhattacharyya and his group’s research on energy-efficient coatings for smart materials was featured as part of an article on “Strong R&D aids Innovation”, Page 17 of the Autumn 2007 issue of the professional journal, “Urethanes Technology, North America”, and published by Urethanes Technology International.
8. Tan Chin Chuan Academic Exchange Fellowship, awarded by the Nanyang Technological University, Singapore (was to be have been taken up during June – July, 2008 but could not due to personal reasons).
9. Attended Training as an ABET program evaluator on behalf of ASME at Charlotte, North Carolina, April 26 and 27, 2008.

SCHOLARSHIP

JOURNAL PUBLICATIONS

1. Bhattacharyya, A., Sakaki, T. and Weng, G.J., 1993, "The Influence of Martensite Shape, Concentration and Phase Transformation Strain on the Deformation Behavior of Stable Dual-Phase Steels," *Metallurgical Transactions A*, 24A, pp. 301-314.
2. Bhattacharyya, A. and Weng, G.J., 1994, "Pressure Sensitivity and Strength-Differential Effect of Fiber-Reinforced Polymer Matrix Composites", *Mechanics of Materials*, 17, pp.329-349.
3. Bhattacharyya, A. and Weng, G.J., 1994, "The Elastoplastic Behavior of a Class of Two-Phase Composites Containing Rigid Inclusions", *Applied Mechanics Reviews*, 47, No.1, part 2, pp.45-65.
4. Bhattacharyya, A. and Weng, G.J., 1994, "Plasticity of Isotropic Composites with Randomly Oriented and Packeted Inclusions", *International Journal of Plasticity*, 10, No.5, 553-578.
5. Bhattacharyya, A., Weng, G.J., 1994, "An Energy Criterion for Stress-Induced Transformations in a Ductile System", *Journal of Mechanics and Physics of Solids*, 42, No.11, pp.1699-1724.
6. Bhattacharyya, A., Lagoudas, D.C., Wang, Y., Kinra, V.K., 1995, "On the role of Thermoelectric Heat Transfer in the Design of SMA Actuators: Theoretical Modeling and Experiment", *Smart Materials and Structures*, 4, pp.252-263.
7. Bhattacharyya, A. and Weng, G.J., 1995, "Effective Elastoplastic Behavior of a Class of Two-Phase Composites with a Polycrystal-like Microstructure", in *Contemporary Research in Engineering Science*, Ed: R.C.Batra, pp.97-177, Springer-Verlag, NY.
8. Bhattacharyya, A. and Weng, G.J., 1996, "Theoretical Calculation of the Stress-Strain Behavior of Dual-Phase Metals with Randomly Oriented Spheroidal Inclusions", *Metallurgical Transactions A*, 27A, pp.2359-2365.
9. Lagoudas, D.C., Bhattacharyya, A., 1997, "On the Correspondence between Micromechanical Models for Isothermal Pseudoelastic Response of Shape Memory Alloys and the Preisach Model for Hysteresis", *Mathematics and Mechanics of Solids*, 2, 405-440.
10. Bhattacharyya, A., Lagoudas, D.C., 1997, "A Stochastic Thermodynamic Model for the Gradual Thermal Transformation of SMA Polycrystals", *Smart Materials and Structures*, 6, 235-250.
11. Bhattacharyya, A. and Lagoudas, D.C., 1997, "Thermoelectric Shape Memory Alloy Actuators and the Issue of Thermomechanical Coupling", *Journal de Physique IV*, Colloque C5, 673-678.
12. Lagoudas, D.C., Bhattacharyya, A., 1998, "Modeling of Thin Layer Extensional Thermoelectric SMA Actuators", *International Journal of Solids and Structures*, 35, Nos.3-4, 331-362.
13. V.Stoilov, O. Iliev, A. Bhattacharyya and Yu. I. Chumlyakov, 1999, "A finite element model for the solution of one-dimensional moving boundary value problems in shape memory alloys", *Metal Science and Heat Treatment*, No 8.
14. Goh, A.Y.L., Kariuki, J.K., Skelhome, A.W., Bhattacharyya, A., McDermott, M.T., Forest, T.W. and Steadman, G., 2001, "Preliminary results on the effect of methanol-based fuels on the tensile properties of FRP micro-specimens", *Advanced Composites Letters*, 10 (4), 155-169.

15. Faulkner, M.G., Amalraj, J.J. and Bhattacharyya, A., 2000, "Experimental Determination of Thermal and Electrical Properties of NiTi Shape Memory Wires", *Smart Materials and Structures*, 9, 632-639.
16. Bhattacharyya, A., Stoilov, V. and Iliev, O., 2000, "Evaluation of structural influence on performance of shape memory alloy linear actuators by sharp phase front-based constitutive models", *Computational Materials Science*, 18, 269-282.
17. Bhattacharyya, A. and Tobushi, H., 2000, "Analysis of the Isothermal Mechanical Response of a Shape Memory Polymer Rheological Model", *Journal of Polymer Engineering and Science*, 40 (12), 2498- 2510.
18. A.Bhattacharyya, M.G.Faulkner and J.J.Amalraj , 2000 , "Finite element modeling of cyclic thermal response of shape memory alloy wires with variable material properties", *Computational Materials Science*, 17, 93-104.
19. Bhattacharyya, A. and E.J.Appiah, 2000, "On the Exact Solution of Elastoplastic response of an Infinitely long composite cylinder during cyclic radial loading" , *Journal of the Mechanics and Physics of Solids*, 48, 1065-1092.
20. Appiah, E.J. and Bhattacharyya, A., 2000, "Analytical determination of cyclic hydrostatic stress-strain relations for a composite sphere with a soft inclusion and a hard bilinear, isotropically hardening matrix", *Acta Mechanica*, 139, 105-128.
21. Amalraj, E.J., Bhattacharyya, A. and Faulkner, M.G., 2000 , "Finite element modeling of phase transformation in shape memory alloy wires with variable material properties", *Smart Materials and Structures*, 9, 622-631.
22. Stoilov, V., Iliev, O. and Bhattacharyya, A., 2000, "A Moving Boundary Finite Element Method-based Numerical Approach for the solution of one-dimensional problems in shape memory alloys", *Computer Methods in Appl. Mech. & Eng.*, 190(13-14), 1741-1762.
23. Bhattacharyya, A. and Lagoudas, D.C., 2000, "Effective elastic moduli of two-phase transversely isotropic composites with aligned clustered fibers", *Acta Mechanica*, 145 (1-4), 65-93.
24. Yang, J., Bhattacharyya, A., Masliyah, J.H. and, Kwok, D., 2002, "Oscillating laminar electrokinetic flow in infinitely extended rectangular microchannels", *Journal of Colloid and Interface Science*, 261, 21-31.
25. Stoilov, V. and Bhattacharyya, A., 2002, "A theoretical framework of one-dimensional sharp phase fronts in shape memory alloys", *Acta Materialia*, 50, 4939-4952.
26. Bhattacharyya, A., Sweeney, L. and Faulkner, M.G., 2002, "Experimental characterization of free convection during thermal phase transformations in shape memory alloy wires", *Smart Materials and Structures*, 11, 411-422.
27. Zaiane, O.R., Bhattacharyya, A., Andrusky, K. and Samborsky, S., 2003, "eSMART: A web-based prototypical virtual laboratory of MEMS and Smart Materials", *International Journal of Engineering Education* (accepted).
28. Bhattacharyya, A., 2003, "Isothermal response of shape memory polymers (SMP)-based Analysis of the damping capacity of shape memory polymer-based hybrid models and SMP-composites", *Journal of Mechanical Behavior of Materials*, 15(1-2), 107-134.

29. Sadek, K., Bhattacharyya, A., Moussa, W., 2003, Effect of variable material properties and environmental conditions on thermomechanical phase transformations in shape memory alloy wires", *Computational Materials Science*, 27, 493-506.
30. Bhattacharyya, A., Masliyah, J.H. and Yang, J., 2003, "Oscillating laminar electrokinetic flow in infinitely extended circular microchannels", *Journal of Colloid and Interface Science*, 261, 12-20.
31. Kannarpady, G.K., Trigwell, S., Bhattacharyya, A., Pulnev, S., Viahhi, I., 2004, Effect of a high recovery temperature on cyclic isothermal stress-induced transformations in Cu-13.3% Al-4.0% Ni shape memory alloy single crystal, *Mechanics of Materials*, 38(5-6), 493-509.
32. Imran, M., Bhattacharyya, 2005, Thermal response of an on-chip assembly of RTD heaters, sputtered sample and microthermocouples, *Sensors and Actuators*, 121, 306-320.
33. Mazumder, P., Bhattacharyya, A., 2006, On the anisotropic thermal conductivity of shape memory alloy single crystals, *Acta Mechanica*.
34. Imran, M., Bhattacharyya, A., 2006, Effect of thin film thicknesses and materials on the response of RTDs and microthermocouples, *IEEE Sensors journal*, 6(6), 1459-1467.
35. Bhattacharyya, A., Mohan, B., Kannarpady, G., 2006, Electrical resistivity of graphite-polyurethane and carbon nanotube-polyurethane coatings, *Journal of Applied Polymer Science* (in press).
36. Imran, M., Bhattacharyya, 2006, Characterization of the closed circuit response of an on-chip thin film thermopile, *Sensors and Actuators*, 32(2), 487-498.
37. Kannarpady, G.K., Bhattacharyya, A., Pulnev, S., Viahhi, I., 2006, The effect of isothermal mechanical cycling on Cu-13.3Al-4.0Ni (wt.%) on shape memory alloy single crystal wires, *Journal of Alloys and Compounds*, 425, 112-122.
38. Kannarpady, G.K., Bhattacharyya, A., 2006, Cyclic isothermal stress-induced transformations in high temperature Cu-13.1Al-4.0Ni (wt.%) shape memory alloy single crystal wires, *Materials Science and Engineering A*, (438-440), 719-722.
39. Imran, M., Bhattacharyya, 2006, A Steady State, Thermal Model of an On-chip Assembly of RTD Heaters, Sputtered Sample and Microthermocouples, *Integrated Ferroelectrics*, 342, 107-127.
40. Kannarpady, G., Brown, D., Bhattacharyya, A., 2007, The study of pseudoelastic phase transformation in Cu-13.1Al-4.0Ni (wt.%) single crystal shape memory alloy using neutron diffraction, *J. of Neutron Research*, 15, 3-4, 249-258.
41. Bhattacharyya, A., Dervishi, E., Berry, B., Viswanathan, T., Bourdo, S., Kim, H., Sproles, R., Hudson, M.K., 2007, Energy efficient graphite-polyurethane coatings for thermal activation of smart materials, *Smart Materials and Structures*, 16, S187-S195.
42. Post, J.W., Bhattacharyya, A., 2008, Saline soak tests to determine the short-term reliability of an in-situ thin film resistance temperature detector, *Microelectronics Reliability*, doi:10.1016/j.microrel.2008.05.002.

43. Kannarpady, G.K., Bhattacharyya, A., Wolverson, M., Brown, D., Vogel, S., Pulnev, S., 2008, Phase quantification during pseudoelastic, mechanical cycling of Cu-13.1Al-4.0Ni (wt.%) single crystal shape memory alloys using neutron diffraction, *Acta Materialia*, doi:10.1016/j.actamat.2008.05.028.
44. Majumder, P., Bhattacharyya, A., 2008, Maximum attainable deflections of Shape Memory Alloy-Layered Micro-Cantilever, *Journal of Microelectronics and Electronics Packaging*, 5(2), 52-61.
45. Wolverson, M., Bhattacharyya, A., Kannarpady, G.K., 2008, Low cost, efficient, non-contact deformation measurements using video multi-extensometry, *Experimental Techniques*, doi:10.1111/j.1747-1567.2008.00370.x
46. Post, J.W., Bhattacharyya, A., Imran, M., 2008, Experiments and Modeling of Heat Transfer from an on-chip Resistance Temperature Detector, *Applied Thermal Engineering*, doi:10-1016/j.appliedthermaleng.2008.02.009.
47. Liu, B., Pidugu, S., Bhattacharyya, A., 2008, A computational study of the response of periodic piezoelectric thin films on substrates, *Physical Review B*, 77, 024102 (6 pages).
48. Mazumder, P., Bhattacharyya, A., 2008, Shape memory alloy-motivated study of temperature dependence and the effect of the Wiedemann-Franz-Lorenz Law on the thermal response of nichrome, *Modelling and Simulation in Materials Science and Engineering*, 16, 015006 (19 pages).
49. Liu, B., Bhattacharyya, A., 2010, A computational study of the piezoelectric response due to the material effect in periodic, single-island thin films and the geometric effect in periodic, bi-island thin films, *Thin Solid Films*, doi:10.1016/j.tsf.2009.12.114.
50. Wolverson, M., Kannarpady, G.K., Bhattacharyya, A., 2011, A temperature differential-model based Sieverts apparatus, *Instrumentation Science and Technology*, 39, 2, 173-197 (25).
51. Wolverson, M.J., Kannarpady, G.K., Bhattacharyya, A., D. P. Emanis, 2011, Investigation of Titanium Decorated Polyaniline and Polyphenylacetylene for use as Hydrogen Storage Materials, *Global Journal of Inorganic Chemistry*, 2(1), 12-17.
52. Post, J., Bhattacharyya, A., 2012, Burn-in and thermal cyclic tests to determine the short-term reliability of a thin film resistance temperature detector, *Microelectronics Reliability*, 52(7), 1389-1395.
53. Russalian, V.R., Bhattacharyya, A., 2013, Strain arrest during isothermal uniaxial deformations of nickel-titanium shape memory alloys and rate independent phase diagrams, *Materials Science and Technology*, 29(4), 400-411.
54. Ozturk, M. Mete, Bhattacharyya, A., 2014, Heat Transfer in Shape Memory Alloy Thin Films, *Acta Mechanica*, DOI: 10.1007/s00707-013-1074-0.
55. Russalian, V. R., Bhattacharyya, A., 2017, Pseudo-creep in Shape Memory Alloy Wires and Sheets, *Metallurgical and Materials Transactions A*, DOI: 10.1007/s11661-017-4266-8.
56. Ozturk, M. Mete, Bhattacharyya, A., 2017, A computational study of cyclic thermal response of shape memory alloy thin film island structures, *Acta Mechanica*, DOI: 10.1007/s00707-017-1879-3.

CONFERENCE PROCEEDINGS

1. Bhattacharyya, A., Sakaki, T. and Weng, G.J., 1992, "Morphological Influence of Martensite on the Stress-Strain Relations of Two-Phase Metals with a Prior Phase Transformation", in *Macroscopic Behavior of Heterogeneous Materials from the Microstructure*, ASME AMD-Vol.147, edited by S. Torquato and D.Krajcinovic, pp. 67-83.
2. Bhattacharyya, A., Lagoudas, D.C., Wang, Y. and Kinra, V.K., 1994, "Thermoelectric Cooling of Shape Memory Alloy Actuators: Theoretical Modeling and Experiment", *Proceedings of the Society of Engineering Science 31st Annual Technical Meeting*, College Station, TX, Oct 10-12, 1994.
3. Bhattacharyya, A. and Lagoudas, D.C., 1995, "The Probabilistic Influence of Material Uncertainties on the Inelastic Response of SMA Composites", in *Recent Advances in Composite Materials*, ASME AMD-Vol. 56, edited by S.R. White, H.T. Hahn and W.F. Jones, pp. 237-251.
4. Bhattacharyya, A. and Lagoudas, D.C., 1995, "A Mean-Field Framework for the Characterization of SMA Polycrystals with Material Uncertainties", in *Innovative Processing and Characterization of Composite Materials*, ASME AMD-Vol. 221, edited by R.F. Gibson, T.-W. Chou and P.K. Raju, pp. 143-158.
5. Bhattacharyya, A., Stoilov, A., Iliev, O. and Chumlyakov, Yu.I., 1999, "On the isothermal work hardening of shape memory alloys and its influence on SMA actuator performance", *Proceedings of the 8th International Conference on Mechanical Behavior of Materials (ICM8)*, May 16-21 1999, Victoria, British Columbia, Canada.
6. Chumlyakov, Yu.I., Kireeva, I., Lysuk, A., Bhattacharyya, A. and Stoilov, V., 1999, "Shape Memory Effects and Superelasticity in Ti-30% Ni-20% Cu single crystals", *Proceedings of the International Symposium in the 38th Annual Conference of CIM, "Shape Memory Alloys: Fundamentals, Modeling and Industrial Applications"*, Eds: F. Trochu, V. Brailovski and A. Galibois, METSOC, Canada, 15 pages.
7. Amalraj, J.J., Faulkner, M.G. and Bhattacharyya, A., "Interaction of Heat Sources with Variable Material properties in shape memory alloy actuators", *Proceedings of the 2nd CANSMART workshop on 'Smart Materials and Structures'*, Ed: G. Akhras, 13-14 September 1999, St.Hubert, Quebec, pp.113-122.
8. Bhattacharyya, A., "Electrokinesis of Periodic Laminar flow in Microtubes", to appear in the *Proceedings of the symposium on Smart Electronics and MEMS, 7th Int. Symposium on Smart Structures and Materials*, 5-9 March, 2000, Newport Beach, California.
9. Bhattacharyya, A. and Stoilov, V., "One-dimensional sharp phase front-based continuum models of phase transformations in shape memory alloys", to appear in the *Proceedings of the symposium on Active Materials: Behavior and Mechanics, 7th Int. Symposium on Smart Structures and Materials*, 5-9 March, 2000, Newport Beach, California.
10. Esteves, S., Robinson, A.M. and Bhattacharyya, A., "Static Deflection of Micro-Cantilevers in a Micropump", to appear in the *Proceedings of the symposium on Smart Electronics and MEMS, 7th Int. Symposium on Smart Structures and Materials*, 5-9 March, 2000, Newport Beach, California.
11. Bhattacharyya, A., Stoilov, V. and Yokota, J., 2002, A 3D Sharp phase front-based model and its application to pseudoelasticity in SMA single crystals, *Proceedings of the NATO conference on martensitic transformations*, Metz, France (4/23/2002 - 4/26/2002) (8 pages).
12. Bhattacharyya, A., Yang, J., Masliyah, J. and Kwok, D., 2002, Flow in infinitely extended microchannels with circular cross-section due to pulsatile pressure gradients, Paper No.AIAA-2002-5701, *Nanotech 2002*, Houston, Texas (9/9/2002 – 9/12/2002) (9 pages).

13. Bhattacharyya, A., Stoilov, V. and Yokota, J., A sharp phase front-based model and its application to pseudoelasticity by reorientation in SMA thin films, Proceedings of the 2nd Canada-US Workshop on Smart Materials and Structures, Montreal, Canada (10/9/2002 - 10/10/2002), pp.95 – 104.
14. Qidwai, M. A., Bhattacharyya, A., Viahhi, I., and Pulnev, S., “Initial investigation in actuator design using high temperature shape memory alloy”, Smart Structures and Materials 2003: Active Materials: Behavior and Mechanics (Ed.: Dimitris C. Lagoudas), SPIE Vol.5053, 81-91.
15. Trigwell, S., Kumara G.K., A.Bhattacharyya, S.Qidwai, “Preliminary investigations of a high temperature Cu-13.3%Al-4%Ni shape memory alloy single crystal”, 2003, Proceedings of the ASME Winter Annual Meeting (7 pages).
15. Kannarpady, G.K., Trigwell, S., Bhattacharyya, A., Viahhi, I., Pulnev, S., 2004, “Stress-strain behavior of Cu-Al-Ni single crystal shape memory alloy at high temperature: Shape Memory Effects”, Smart Structures and Materials 2004: Active Materials: Behavior and Mechanics (Ed.: Dimitris C. Lagoudas), SPIE Vol.5387, 542-548.
16. Imran, M., Bhattacharyya, A., Porter, E., 2004, “Experimental characterization of thin film microthermocouples to determine thermophysical properties of materials”, 37th International Symposium on Microelectronics, Nov 18-20, 2004 (in press).
17. Bhattacharyya, A., Ables, W.L., Kannarpady, G.K., Qidwai, M.A., 2004, Experimental characterization of an airfoil-based actuator using high temperature shape memory alloys, Smart Structures and Materials 2004: Active Materials: Behavior and Mechanics (Ed.: Dimitris C. Lagoudas), SPIE Vol.5387, 118-127.
18. Liu, B., Bourdo, S., Dervishi, E., Berry, B., Kim, H., Bhattacharyya, A., Viswanathan, T., 2004, “Graphite-polymer coatings for electrically induced thermal actuation of shape memory alloys”, Smart Structures and Materials 2004: Industrial and Commercial Applications of Smart Structures Technologies (Ed.: Eric H. Anderson), SPIE Vol.5388, 355-363.
19. Imran, M., Bhattacharyya, A., 2004, “Analytical approach for characterization of sputtered thin film microthermocouples (STFMT)”, Smart Structures and Materials 2004: Smart Electronics, MEMS, BioMEMS, and Nanotechnology (Ed.: Vijay Varadan), SPIE Vol.5389, 411-421.
20. Trigwell, S., Kannarpady, G.K., Bhattacharyya, A., Viahhi, I., Pulnev, S., 2004, “Thermomechanical behavior of Cu-Al-Ni single crystal high temperature shape memory alloy: Reorientation”, Smart Structures and Materials 2004: Active Materials: Behavior and Mechanics (Ed.: Dimitris C. Lagoudas), SPIE Vol.5387, 260-267.
21. Stoilov, V., Bhattacharyya, A., 2004, “Multiscale continuum mechanics model for phase transformations in SMA single crystals”, Smart Structures and Materials 2004: Active Materials: Behavior and Mechanics (Ed.: Dimitris C. Lagoudas), SPIE Vol.5387, 249-259.
22. Kannarpady, G.K., Bhattacharyya, A., 2004, “High temperature Cu-Al-Ni shape memory alloys”, Proceedings of the International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM), Dec 28 – 30, 2004, 6 pages (accepted).
23. Mazumder, P., Bhattacharyya, A., 2004, “Finite element modeling of a shape memory alloy-layered micro-cantilever”, 37th International Symposium on Microelectronics, Nov 18-20, 2004 (in press).

24. Kannarpady, G.K., Bhattacharyya, A., 2004, "Effect of mechanical and thermal cycling on shape memory properties of high temperature Cu-Al-Ni single crystals", Proceedings of IMECE2004 2004 ASME International Mechanical Engineering Congress and RD&D Expo November 13-19, 2004, Anaheim, California, USA (5 pages).
25. Liu, B., Bhattacharyya, A., 2006, The Effect of Lattice Mismatch on the Piezoresponse of Barium Titanate (BaTiO₃) Thin Films on Magnesium Oxide (MgO) Substrates, 39th International Symposium on Microelectronics, Oct 8-12, 2006 (6 pages).
26. Liu, B., Bhattacharyya, A., 2007, "Effect of substrate and lattice mismatch on the response of piezoelectric thin films", Proceedings of the Symposium J: Materials for Advanced Sensors and Detectors, International Conference on Materials for Advanced Technologies, July 1-6, 2007, Singapore (12 pages).
27. Liu, B., Bhattacharyya, A., 2007, "The interactions of geometric periodicity and lattice mismatch on the electromechanical response of piezoelectric thin films", 40th International Symposium on Microelectronics, Nov 11-15, 2007 (7 pages).
28. Kannarpady, G.K., Wolverton, M., Russalian, V. R., Bhattacharyya, A., Pulnev, S., "Pseudo-creep in Cu-Al-Ni single crystal shape memory alloys", in Behavior and Mechanics of Multifunctional Materials and Composites 2009, Zoubeida Ounaies; Jiangyu Li, Editors, Proceedings of SPIE Vol. 7289 (SPIE, Bellingham, WA 2009), 72890K.
29. Russalian, V.R., Bhattacharyya, A., "Evolution of phase transformation and reorientation during stress arrest in shape memory alloys", in Behavior and Mechanics of Multifunctional Materials and Composites 2012, Nakhiah C. Goulbourne; Zoubeida Ounaies, Editors, Proceedings of SPIE Vol. 8342 (SPIE, Bellingham, WA 2012), 83421P.
30. Ozturk, M.M., Bhattacharyya, A., Thermal Response of an Isolated Rectangular, Layered Nickel-Titanium Shape Memory Alloy Thin Film with variable Material Properties, Proceedings of the International Multiconference of Engineers and Computer Scientists 2013, Vol.II, pp.798-801 (ISBN: 978-988-19252-6-8)
31. Ozturk, M.M., Hawkrige, M., Bhattacharyya, A., Watanabe, F., 2013, Temperature dependent X-ray diffraction to characterize in-situ phase transformation of Nickel-Titanium Shape Memory Thin Films on Silicon Substrates, 2013 ASME ECTC, 4-6 April, Tulsa, OK (5 pages).
32. Bhattacharyya, A., Ozturk, M.M., "Thermal response of infinitely extended layered nickel-titanium shape memory alloy thin film with variable material properties", in Behavior and Mechanics of Multifunctional Materials and Composites 2013, Nakhiah C. Goulbourne, Editors, Proceedings of SPIE Vol. 8689 (SPIE, Bellingham, WA 2013), 868911.

INVITED LECTURES

1. Bhattacharyya, A., "Thermoelectric shape memory alloy actuators & the issue of thermomechanical coupling", **Invited lecture**, Structures Division, Dept. of Engineering, Cambridge University, U.K., June 27, 1997.
2. Bhattacharyya, A., "Thermal Phase Transformations in Shape Memory Alloy Wires with Variable Material Properties", Invited lecture, University of Alberta Advanced Engineered Materials Center Seminar, University of Alberta, October 19, 1998.
3. Bhattacharyya, A., Stoilov, A., Iliev, O. and Chumlyakov, Yu.I., 1999, "On the isothermal work hardening of shape memory alloys and its influence on SMA actuator performance", Invited paper at the 8th International Conference on Mechanical Behavior of Materials(ICM8), May 16-21 1999, Victoria, British Columbia, Canada.

4. Bhattacharyya, A., 2002, "Smart Materials and MEMS: Experiments and Modeling", Department of Mechanical Engineering, Univ. of Arkansas at Fayetteville (**Invited presentation**, 01/25/2002).
5. Bhattacharyya, A., Stoilov, V. and Yokota, J., 2002, "A sharp phase front model for shape memory alloys, NATO conference on martensitic transformations", Metz, France (**Invited presentation**, 4/23/2002 - 4/26/2002).
6. G.K. Kannarpady & A. Bhattacharyya, "High temperature Cu-Al-Ni shape memory alloys", 3rd international Conference on Theoretical Applied Computational and Experimental Mechanics, ICTACEM-04, Indian Institute of Technology, Kharagpur, India (**Keynote lecture**, 12/28/2004 – 12/30/2004).
7. A. Bhattacharyya, "Morphing Aircraft, micromirrors and shape memory alloys", Department of Electrical Engineering, Indian Institute of Technology, Mumbai, India (**Invited lecture**, 1/3/2005).
8. A. Bhattacharyya, "High temperature Copper-13.3Aluminium-4.0Nickel (wt.%) single crystal shape memory alloys", Advanced Research Center for Powder Metallurgy and New Materials, Hyderabad, India (**Invited lecture**, 1/7/2005).
9. A. Bhattacharyya, "Morphing Aircraft, micromirrors and shape memory alloys", Department of Mechanical Engineering, Indian Institute of Technology, Chennai, India (**Invited lecture**, 1/10/2005).
10. A. Bhattacharyya, "Morphing Aircraft, micromirrors and shape memory alloys", Department of Materials Science, Mangalore University, Mangalore University, India (**Invited silver jubilee lecture** , 1/11/2005).
11. A. Bhattacharyya, "Morphing Aircraft, micromirrors and shape memory alloys", National Aeronautical Laboratory, Bangalore, India (**Invited lecture**, 1/12/2005).
12. A. Bhattacharyya, "Cyclically stable, high temperature shape memory alloys - will it remain a dream ?", Department of Mechanical Engineering, Vanderbilt University, Tennessee (Invited lecture, to be held 4/1//2005).
13. "Morphing aircraft, Micromirrors and Shape memory alloys", Department of Mechanical Engineering, University of Hong Kong, Hong Kong (Invited lecture, 6/20/2006).
14. "Morphing aircraft, Micromirrors and Shape memory alloys", Department of Civil Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan (Invited lecture, 6/17/2006).
15. "High temperature shape memory alloys" (Invited talk), DARPA Symbiotic Materials and Structural Systems Workshop, 25 – 26 August 2005, Alexandria, VA (**by invitation only**).

OTHER SELECTED PRESENTATIONS

1. Bhattacharyya, A. & Lagoudas, D.C., "Thermoelectric shape memory alloy actuators & the issue of thermomechanical coupling", IV European Symposium on Martensitic Transformations, Enschede, The Netherlands, July 1-5, 1997.
2. Bhattacharyya, A. and Lagoudas, D.C., "The effective elastic moduli of fiber reinforced composites with aligned clustered fibers", McNU '97 Joint Meeting of the ASME, ASCE & SES, Northwestern University, Evanston, IL June 29-July 2, 1997.
3. Lagoudas, D.C. and Bhattacharyya, A., "On the correspondence between micromechanical models for shape memory alloys and the Preisach models of hysteresis", 2nd SIAM Conference on Mathematical Aspects of Material Science, Philadelphia, PA, May 12-14, 1997.

4. Lagoudas, D.C. and Bhattacharyya, A., "Modeling of thin layer extensional thermoelectric SMA actuators", Symposium on "Mathematics & Control in Smart Structures", 4th SPIE Annual Symposium on Smart Structures & Materials, San Deigo, USA, March 3-6, 1997.
5. Bhattacharyya, A. and Appiah, E.J., "Analytical Determination of Plastic Deformation During Continued Cyclic Loading of Composite Spheres and Cylinders", 35th Annual Technical Meeting of Society of Engineering Science, Washington State University, Pullman, WA, September 27-30, 1998.
6. Bhattacharyya, A., Amalraj, J.J. and Faulkner, M.G., "Finite element modeling of Phase Transformation in Shape Memory Alloy Wires with Variable Material Properties", 35th Annual Technical Meeting of Society of Engineering Science, Washington State University, Pullman, WA, September 27-30, 1998.
7. Amalraj, J.J., Bhattacharyya, A. and Faulkner, M.G., "Computational Approaches to the Modeling of Thermal Phase Transformations in SMA wires with variable material properties", 35th Annual Technical Meeting of Society of Engineering Science, Washington State University, Pullman, WA, September 27-30, 1998.
8. Stoilov, V., Iliev, O., Bhattacharyya, A. and Chumlyakov, Yu.I., "The influence of intrinsic work hardening on the performance of shape memory alloy actuators", presented at the *Kurdyumov Memorial International Conference on Martensite* (KUMICOM '99), Moscow, Russia, 23-26 February, 1999.
9. Bhattacharyya, A., Masliyah, J.H. and Yang, J., 2002, A model of oscillatory laminar electrokinetic flow in long, circular microchannels, Arkansas Academy of Science 86th Annual Meeting, Little Rock, AR (4/5/2002-4/6/2002).
10. Bhattacharyya, A., Yang, J., Masliyah, J. and Kwok, D., Flow in infinitely extended circular micro-channels with pulsatile pressure gradients, Symposium on "Innovations and Applications in Biomedical Sensing", NANOTECH 2002, Houston, Texas (9/9/2002 - 9/12/2002).
11. Bhattacharyya, A., Stoilov, V. and Yokota, J., A 3D sharp phase front-based model and its application to shape memory alloy thin films, 2nd Canada-US Workshop on Smart Materials and Structures, Montreal, Canada (10/9/2002 - 10/10/2002).
12. S. Trigwell, A. Bhattacharyya, S. Qidwai, I. Viahhi, & S. Pulnev, "Copper-Aluminum-Nickel high temperature shape memory alloy single crystals", Memphis Area Science and Engineering Conference, Christian Brothers University, Memphis, TN, May 15 2003.
13. Kannarpady, G.K., Bhattacharyya, A., Cyclic isothermal stress-induced transformation in high temperature Cu-13.4%Al-4.0%Ni shape memory alloy single crystal wires, 11th ICOMAT 2005, Shanghai, China (6/14/2005-6/17/2005).
14. Kannarpady, G.K., Brown, D., Bhattacharyya, A., *In-situ* study of stress-induced phase transformation in Cu-13.1Al-4.0 (wt.%) single crystals shape memory alloy using Neutron Diffraction, MECASENS III, Los Alamos, New Mexico (10/17/2005 – 10/19/2005).
15. Liu, B., Bhattacharyya, A., 2007, "Effect of substrate and lattice mismatch on the response of piezoelectric thin films", Symposium J: Materials for Advanced Sensors and Detectors, International Conference on Materials for Advanced Technologies, July 1-6, 2007, Singapore.

FUNDED RESEARCH GRANTS

University of Arkansas at Little Rock

Proposal Title (Funding Agency and A.B.'s status)	Level of Participation	Date Submitted	Agency	Funded Amount for A.Bhattacharyya's part of the project
High temperature shape memory alloy actuators	Co-PI	Mar 2002	Defense Advanced Research Projects Agency (DARPA)	\$ 578155 for 3 years
Electromechanical characterization of nanoferroelectric thin films	Senior Personnel	September 2003	National Science Foundation (NSF) – Exploratory Program to Stimulate Competitive Research (EPSCOR)	\$ 235897 for 3 years
A probe station and driver system for the characterization of MEMS	PI	August 2003	Defense University Research Instrumentation Program (DURIP) - Army Research Office (ARO)	\$ 103010 for 1 year
Shape Memory Alloy-based MEMS with optical applications	PI	Nov 2001	Arkansas Space Grants Consortium	\$ 4900 for 1 year
Fabrication of a robust implantable intravenous drug delivery system	PI	Oct 2001	Office of Research and Sponsored Programs, University of Arkansas at Little Rock	\$ 4000 for 1 year
Hydrogen Storage and Production	Co-PI	June 2006	Department of Energy	\$ 544160 for 3 years

University of Alberta

These grants have been listed to give an indication of A.B.'s funding activity in Canada (all the grants are now closed, except the last one which is going to be moved to University of Arkansas at Little Rock)

NOTE: 1. *The amounts shown are all in Canadian dollars and is the actual amount received by A. Bhattacharyya* , 2. *1 US dollar \approx 1.5 Canadian dollar* .

Funding Agency	Total amount received by A.B.	Total duration of funding	Title of project	Any co-PIs ?
Natural Sciences and Engineering Research Council of Canada(NSERC)	\$ 140000	4 years (Apr 2001 – Mar 2005)	SMA-based MEMS	None
	\$ 74960	4 years (Apr 1997- Mar 2001)	Long term thermomechanical response of shape memory alloys: experiments and constitutive modeling	None
1. Misericordia Hospital, Edmonton 2. Rotary Club, Edmonton 3. Advanced Engineered Materials Center, University of Alberta	\$ 18300	2 years (June 1997 – May 1999)	Development of an intelligent eye prosthesis	Dr.M.G.Faulkner, Mech. Engg., Univ. of Alberta

Advanced Engineered Materials Center, University of Alberta	\$9000	1 year (Dec 1998 – Nov 1999)	Long term influence of alcohol based fuels on flexural properties of glass-fiber reinforced composites	Dr. T.W.Forest, Mech. Engg., Univ. of Alberta
North Atlantic Treaty Organization (NATO), Brussels (Travel Grant To Russia)	\$3758	2 years (July 1997 – June 1999)	Shape Memory effect in TiNiCuFe single crystals: Experiments and Theory	Dr.Yu.I.Chumlyakov, Tomsk State University, Tomsk, Russia
North Atlantic Treaty Organization (NATO), Brussels (Travel Grant To Russia)	\$3580	2 years (Mar 2000 – Feb 2003)	CuAlNi Single Crystals for smart structures: Thermal and electrical properties	Dr.G.A.Bashchenko I.P.Bardin State Scientific Center for Ferrous Metallurgy, Moscow, Russia

POSTDOCTORAL FELLOWS

1. Dr.Steve Trigwell, 1/03 – 6/04.
2. Dr.Ganesh Kumara, 7/03 – 2007. (he was a Research Assistant Professor in my group).

GRADUATE STUDENTS

Current students (University of Arkansas at Little Rock)

Name	Degree/expected year of graduation	Tentative thesis title	Papers until now (Journal/Proceedings) Expected	Collaborators/ Co-supervisors?
V. Russalian	Ph.D./2014 (defended in November)	Pseudo-creep in shape memory alloys	1/3 (2 more journal papers in preparation)	
M. M. Ozturk	Ph.D./2014 (defended in November)	Heat Transfer in Shape memory thin films	1/3 (three more journal papers in preparation)	

Students graduated (University of Arkansas at Little Rock)

Name	Degree/expected year of graduation	Tentative thesis title	Papers (Journal/Proceedings)	Collaborators/ Co-supervisors ?
W. Ables	M.S./2004	The study of high temperature shape memory alloys using an airfoil- based flap actuator	1 / 1	Drs.V.DeGiorgi & M.Qidwai, NRL Drs.I. Viahhi & S. Pulnev, SPSTU
M. Imran Ghauri	Ph.D./2005	A MEMS approach to the electrothermal characterization of CuAlNi SMA single crystals	4 / 4	Drs.V.DeGiorgi & M.Qidwai, NRL Drs.I. Viahhi & S. Pulnev, SPSTU

P.Majumder	Ph.D./2007	Thermomechanical modeling of shape memory alloys with material anisotropy and temperature-dependent material properties	4 / 1	None
Julian Post	Ph.D./2007	Short term reliability of a thin film resistance temperature detector	3/ 1	--
Bo Liu	Ph.D./2008	Characterization of ferroelectrics	4/4	
Michael Wolverton	Ph.D./2011	Investigation of selected complexes and alloys for use in hydrogen storage and related applications	2/0	
Vigel Russalian	Ph.D./2014	Pseudo-creep in shape memory alloys	1/3 (2 more journal papers in preparation)	
Mete Ozturk	Ph.D./2014	Heat Transfer in Shape memory thin films	1/3 (three more journal papers in preparation)	

Students graduated (University of Alberta, Canada)

Name	Degree/Year of Graduation	Title of thesis	Papers (Journal/Proceedings)	Collaborators/ Co-supervisors
E. Appiah	M.S./1998	Exact solution of cyclic elastoplastic response of composite spheres and cylinders	2 / 0	None
J. Amalraj	M.S./1999	Effect of variable material properties on purely thermal phase transformations in shape memory alloy wires – modeling and experiments	3 / 1	Dr.M.G.Faulkner, Mech E, U of Alberta
A. Goh	M.S./2000	Influence of alcohol fuel additives on strain measurements in glass fiber-reinforced micro-specimens.	1 / 0	1.Dr. T.W.Forest., Mech. Engg., 2.Dr.M. McDermott, Chemistry 3.Mr.G. Steadman R.P. Composites,Edmonton
S. Esteves	M.S./2000	CMOS-micromachined devices for application in fluids	0 / 1	Dr. A.M. Robinson, Electrical Engineering
V. Stoilov	Ph.D./2002	Computational Modeling of phase front evolution in shape memory alloy thin films	3 / 5	He defended successfully on September 30, 2002 under the formal supervision of Dr.Jeff Yokota

Y. Jun	Ph.D./2006	Flow in microchannels	2/0	He switched to Prof. Dan Kwok after I moved to the U.S. from Canada
--------	------------	-----------------------	-----	---

PLACEMENT OF FORMER GRADUATE STUDENTS

All of Dr. Bhattacharyya's former graduate students are gainfully employed. Especially notable are the placement of Drs. Stoilov and Jun² as tenure track Assistant Professors in the University of Windsor and University of Western Ontario, Canada respectively.

UNDERGRADUATE AND HIGH SCHOOL STUDENTS

(University of Arkansas at Little Rock)

Name	Work Term	Research topic	Occupation
Jared Greenwalt	05/2002 – 08/2002	Design of MEMS using L-Edit	Senior Year student, Electronics Technology, UALR
Enka Dervishi	05/2002 – 8/2004	(i) Impact of surface treatment on microchannel fluid flow, (ii) thermal and electrical characterization of SMAs	Junior year student, Electronics Technology, UALR (joined graduate studies at UALR in 2004)
Lamonte Cole	6/2003 – 12/2004	(i) website maintenance, (ii) thermomechanical characterization of high temperature SMAs	
Pawel Kowalke	10/2004 – 5/2006	(i) thermomechanical characterization of high temperature SMAs	Junior year student, Electronics Technology, UALR
Han Kim	09/2002 – 12/2002	Design and fabrication of SMA-actuated airfoil	Junior at Pulaski Academy, Little Rock (joined Harvard in 2004)
Matt Hudson	5/2005 - now	Characterization of shape memory alloys	Systems Engineering undergraduate at University of Arkansas at Little Rock
Bharath Mohan	5/2005 – 8/2005	Characterization of graphite and carbon nanotube composites	Junior in Delbarton High School, New Jersey

(University of Alberta, Canada)

Name	Work Term	Research topic	Occupation
Kevin Andrusky	05/2002 – 08/2002	Design of software for smart materials and MEMS	Senior Year student, Department of Computer Science, University of Alberta, Canada
Sheldon Samborsky	05/2002 – 08/2002	Design of software for smart materials and MEMS	Senior Year student, Department of Mechanical Engineering, University of Alberta, Canada

² Please note that Dr. Jun started his Ph.D. work in microfluidics with Dr. Bhattacharyya and published two papers in the highly reputable international Journal of Colloid and Interfacial Science. He switched to the group of Dr. Dan Kwok at University of Alberta during Dr. Bhattacharyya's move back to the U.S. from Canada in 2002.

Aleysa Bajoria	05/2002 – 08/2002	Design of a robust co-sputtering system for SMA thin film fabrication	Second Year student, Department of Electrical Engineering, University of Alberta, Canada
James Brown	05/2002 – 08/2002	Design of a robust co-sputtering system for SMA thin film fabrication	First Year student, Department of Mechanical Engineering, University of Alberta, Canada
Lyle Sweeney	09/2001 – 08/2002	(i) characterization of free convection in thermal actuation of SMA wires (ii) Design of a robust co-sputtering system for SMA thin film fabrication	Third Year student, Department of Mechanical Engineering, University of Alberta, Canada
Marta Gewal	06/2002 – 08/2002	Design of experiments using SMAs	High school junior, Edmonton, Canada
Chelsea Riger	06/2002 – 08/2002	Design of experiments using SMAs	High school junior, Edmonton, Canada

INSTRUCTION

COURSES (University of Arkansas at Little Rock)

1. Principles of Smart Materials (*Graduate Course*)

This course was first offered as a special problems course in Fall, 2002. The course deals with the thermodynamical modeling of shape memory alloys (SMA). Project work is an important part of the course, and students are required, based on a literature search, to come up with a project that they could work on during the semester. Formal requirements of the project involve submissions of a project title, preproposal, proposal, project report and project presentation.

2. Continuum Mechanics (*Graduate Course*)

This course was first offered in Spring, 2003. It takes a tensorial approach to continuum mechanics. Balance laws of linear momentum, angular momentum, mass and energy are covered. Constitutive modeling of both solids and fluids are covered. This course is aimed at students with an engineering background. This course will be offered every alternate Spring, starting from 2006.

3. Introductory Continuum Mechanics (*Graduate Course*)

This course was first offered in the Fall, 2003. It takes a pillbox approach to continuum mechanics and focuses primarily on one-dimensional (1D) continuum modeling. Otherwise, the topics covered are very similar to "Continuum Mechanics" listed above. This course is primarily aimed at graduate students with some undergraduate background in Physics and differential equations.

4. Introductory Continuum Mechanics (*Graduate Course*)

This course was first offered in Spring, 2008. This course is meant for a broad audience ranging from the physical sciences to most areas of engineering. Tensors – second order, third order and fourth order – are encountered in a wide variety of science and engineering problems that include elasticity, heat and mass transfer, dynamics, diffusion, optics and electromagnetics etc. As part of the course, the all-important concept of symmetry and its impact on tensors of different orders will be covered. An application-oriented approach will be taken in the course so that at its conclusion, the student will have the necessary skills to apply the concepts to solution of science and engineering research problems.

4. Engineering Materials (*Undergraduate Course*)

Including the Fall 2014 semester, I would have taught this course twice. This course introduces the concepts of stress and strain, offers an overview of the engineering properties of materials and their failure mechanisms.

COURSES TAUGHT (University of Alberta)

1. Principles of Smart Materials (*Graduate Course*)

This course was offered by me at the 500 level at University of Alberta for the first time in January-April 1998 aimed at an audience of senior undergraduate students and graduate students. In the first year that it was offered, the course dealt with the thermodynamical modeling of shape memory alloys (SMA). Project work was an important part of the course, and students were required, based on a literature search, to come up with a project that they could work on during the semester. Formal requirements of the project involved submissions of a project title, preproposal, proposal, project report and project presentation. During the second offering of the course in 1999, it was expanded to include viscoelasticity and shape memory polymers. Courses at the 500 level are usually not offered every consecutive year. The "Principles of Smart Materials" course is not being offered currently, but a reintroduction is being contemplated for the year 2002.

2. Continuum Mechanics (*Graduate Course*)

This course is mandatory for all students in the Ph.D. program of Mechanical Engineering. Since I started teaching the course in 1997, I have modified the course to now include equal emphasis on Solid Mechanics and Fluid Mechanics. This modification came about in response to comments from students, those in fluid mechanics in particular, who had taken the course.

3. Advanced Strength of Materials (*4th Yr. Undergraduate Course*)

This core course is in the nature of a "Theory of elasticity" course for senior undergraduate students. While being an excellent course, it has come across to the students in the past as being "too" theoretical. Without changing the technical content of the course, I have introduced video demonstrations of experiments that showcase predictions of the theory discussed in the course. Some examples of experiments are demonstrations of (i) torsion of bars of non circular cross-sections, (ii) soap film analogy, (iii) stress concentrations, (iv) bending of flat plates.

4. Senior Design Project (*4th Yr. Undergraduate Course*)

This is a year long design project where each faculty member involved in the course are expected to follow the progress of 4 teams of students throughout the academic year as they work on design problems suggested by the local industry.

COURSES TAUGHT (Texas A&M University, Rutgers University)

I taught the following courses during my doctoral studies at Rutgers University and postdoctoral studies at Texas A&M University. At Rutgers, I was usually a TA for Dynamics or Fortran during the regular semester, whereas I taught those courses during the summer term. Especially, I gave lectures in Statics for about 2 years **during the regular semester** at Rutgers University. At Texas A&M University, I was a lecturer in Statics for one term.

CONTRIBUTIONS AS ASSOCIATE DEAN

Listed below is a list of his contributions made in collaboration with a variety of stakeholders. In addition, he is very actively engaged in troubleshooting on a variety of issues on behalf of the college.

ACCREDITATION AND ASSESSMENT

1. **Program Evaluator for ABET:** Dr. Bhattacharyya is an active program evaluator for ABET. He also coordinates ABET-related activities at the College level as well as external review of graduate programs. Most recently, at the college level, he managed the ABET review process of three undergraduate programs – Computer Science, Information Science, and Civil and Construction Engineering and the external review process for the MS program in Computer Science.

UNDERGRADUATE PROGRAMS

2. **“User Experience Design and Mobile/Web Development” Certificate:** Dr. Bhattacharyya has been closely involved with the development of an interdisciplinary, undergraduate “User Experience Design and Mobile/Web Development” Certificate. This Certificate has been approved by the Arkansas Higher Education Coordinating Board in their meeting of July 25, 2014.
3. **Bachelor of Professional Studies (BPS) degree completion programs:** Dr. Bhattacharyya was on the task force appointed by the Provost to develop degree completion programs such as the Bachelor of Professional Studies (BPS) and the Bachelor of Applied Science (BAS). In particular, he has closely worked with the Department of Computer Science in their effort to develop a BPS in Information Assurance. This BPS has been approved by the Arkansas Higher Education Coordinating Board in their meeting of July 25, 2014.

GRADUATE PROGRAMS

4. **Organizational structure for Doctoral Program in Integrated Computing:** An interdisciplinary doctoral program in Integrated Computing was officially launched in Fall 2010 by spinning off the Applied Computing and Information Quality tracks from the Applied Science doctoral program. At the request of the Dean, Dr. Bhattacharyya guided the graduate coordinator of the new program and its steering committee through the entire process of setting up the organizational structure.
5. **Establishment of a new Doctoral Program in Engineering Science and Systems:** In his capacity as Associate Dean, Dr. Bhattacharyya led the effort along with the Chair of the Systems Engineering Department to establish a new Doctoral program in Engineering Science and Systems by spinning off the Engineering Science and Systems track from the Applied Science doctoral program. This process took about a year and culminated in getting approval from the Arkansas Department of Higher Education.
6. **Disbursement of Graduate Assistantships:** EIT funds several assistantships for graduate students. The disbursement was historically managed by a different administrative unit. The management of the funds was taken over by EIT in the same year as Dr. Bhattacharyya started his tenure as Associate Dean. He came up with an organized structure to disburse the funds. This structure is supported by “Guidelines for the Allocation of Graduate Assistantships” (available on request). Dr. Bhattacharyya led the effort to develop these guidelines in consultation with faculty involved in the doctoral programs. This was the first time in the history of the college that written guidelines for disbursement were drafted.
7. **Member, Interim Management of the inter-institutional Bioinformatics graduate program:** The University of Arkansas at Little Rock (UALR) manages a graduate program in Bioinformatics in collaboration with the University of Arkansas for Medical Sciences (UAMS). The program was managed by an Interim Management team while a year-long search during 2012-2013 concluded with the recruitment of a program director. Dr. Bhattacharyya was a key member of that team.

8. **Bioinformatics retreat:** The Joint UALR-UAMS Bioinformatics graduate program has been in place for about 10 years now, supported by faculty from both campuses. A long overdue first Bioinformatics retreat was organized by Dr. Bhattacharyya and the report from the retreat has pointed the way forward for evolution of the program (available on request).
9. **Memorandum of Understanding (MOU) between UALR and UAMS:** The UALR-UAMS joint Bioinformatics graduate program has been in operation for about 10 years now. The joint venture has been a success but has operated thus far without a MOU. Dr. Bhattacharyya led the effort to establish a MOU between the two schools (available on request).
10. **Early entry Bachelors-cum-Masters programs:** Early entry programs are an excellent approach to offer graduate degrees to meritorious undergraduate students at reduced cost while increasing enrolment at the graduate level. While these programs are quite popular the world over, these are not as common in Arkansas. Dr. Bhattacharyya mooted the idea of establishing these 5-year programs in EIT. The concept was approved by Faculty Senate in Spring 2014.
11. **Hybrid (classroom-cum-remote) delivery of Information Quality track of the doctoral program in Integrated Computing:** The hybrid format of the M.S. program in Information Quality (IQ) where lectures are delivered simultaneously in the classroom and broadcast to remote locations in real time (with an archival facility for lectures) has helped draw in a wide range of professionals as well as students in remote locations to the program. The same concept is proposed to be extended to the IQ track of the doctoral degree in Integrated Computing blended with a short-term residency requirement. Dr. Bhattacharyya has worked with the Information Science Department (Dr. Talburt and Dr. Pierce) to develop a white paper on the proposal about four years back. He hopes that a formal proposal will be initiated soon.
12. **Recruitment of self-funded students and agreements with international universities:** EIT has hosted international students whose studies are funded by their national governments, e.g. Iraq, Oman, Turkey, Brazil. Dr. Bhattacharyya traveled to Oman in June, 2013 to visit a private and a public university as well as the Omani research foundations to pursue academic and research partnerships between UALR and the Omani entities.

THE RESEARCH AND INNOVATION ENTERPRISE

13. **Chair, Ad-hoc EIT Research Council:** The previous Dean (Dr. Sandgren) charged Dr. Bhattacharyya over the 2011-2012 academic year to chair an ad-hoc Research Council for the college with a charge to review the entire research enterprise of the college and make recommendations. Dr. Bhattacharyya led the 6-member Council over the 2011-2012 academic year and submitted a comprehensive report at the end of that year (available on request).
14. **The SUPER program:** The Summer Undergraduate research program for Entrepreneurship and Research (SUPER) was initiated by the College of Engineering and Information Technology by Dr. Bhattacharyya. Its third offering in the summer of 2014 involved a two and a half month paid research internship program for domestic undergraduate students who were given extensive exposure to research, development of applications for graduate fellowships for submission to federal funding agencies and entrepreneurship activities (available on request).
15. **Member, Intellectual Property Committee:** There is a budding intellectual property and commercialization enterprise in the university, overseen by a Director and advised by a committee. Dr. Bhattacharyya is a member of the committee.
16. **Campus PI, NSF-EPSCoR:** The National Science Foundation through its Experimental Program to stimulate competitive research (EPSCoR) has funded a \$24 million project to researchers in multiple research institutions of the State of Arkansas, dubbed the Arkansas ASSET initiative. Three different Centers are funded through

ASSET – Plant Powered Production (P3) Center, Arkansas GREEN Solar Cells Research Center and Vertically-Integrated Center for Transformative Energy Research (VICTER). A campus Center PI leads the researchers on each campus belonging to a Center, and all three Center PIs report to the Campus PI. Dr. Bhattacharyya has assumed leadership of the position of Campus PI since Fall, 2014. The ASSET initiative ends in October 31, 2015.

17. **S&T Research Clusters at the University of Arkansas at Little Rock:** Dr. Bhattacharyya led the effort to develop a preliminary report on research clusters in the Science and Technology disciplines at the University of Arkansas at Little Rock (available on request).
18. **Grantsmanship and Export Control:** The Interim Vice-Provost for Research had requested Dr. Bhattacharyya to be the campus representative at a Grants Research Conference and at an Export Controls Conference. Following attendance at the conferences, Dr. Bhattacharyya has shared ideas with the Office of Research and Sponsored Programs (ORSP) on strategies to enhance grantsmanship across the campus as well as the development of a robust export control environment.
19. **The UALR Student Innovation and Entrepreneurship Club:** Dr. Bhattacharyya mooted the idea for a Student Innovation and Entrepreneurship Club at the University and, along with the Director of UALR TechLaunch (Jeff Stinson) and Dr. Joe Bell, Professor of Entrepreneurship, has been mentoring students in their effort to establish the club.
20. **Campus representative on Statewide Bioinformatics Alliance:** There is a significant groundswell of Bioinformatics research within the State of Arkansas spread across several institutions including the FDA National Center for Toxicological Research. A state-wide group has been constituted with the objective to explore pathways to set up a Bioinformatics Consortium within the State that will motivate synergies in the Bioinformatics education and research enterprise within the State. Dr. Bhattacharyya is representing his campus on that group.
21. **Member, Science Advisory Committee (SAC), Arkansas Science and Technology Authority (ASTA):** ASTA is the department of the state government overseeing the state research and development enterprise in the state. In this effort, it is assisted by the SAC which has members who are representatives of research intensive universities in the state. Dr. Bhattacharyya is the representative of his university. His 3-year term concluded in August 2013.
22. **Development of Arkansas's R&D Plan:** Dr. Bhattacharyya led a subcommittee within SAC (see (21) above on details about SAC) to develop an R&D Plan for the State of Arkansas. The plan was proposed to ASTA, which, in turn, recommended the plan for adoption to the Board of ASTA. The board approved the plan in January, 2014 (available on request).

OTHER CONTRIBUTIONS

23. **Memorandum of Understanding (MOU) between EIT and the erstwhile College of Science (CoS):** The erstwhile Department of Applied Science, the host of the interdisciplinary Applied Science program, was moved from the administrative oversight of EIT to the erstwhile CoS commencing Fall 2011. Some of the departmental faculty, who are engineers, stayed back in the Systems Engineering department of EIT. This had significant implications in splitting up of resources between both colleges. A MOU between EIT and CoS was approved by the Chancellor prior to the administrative restructuring. Dr. Bhattacharyya was the author of the MOU.
24. **Reorganization of Academic Affairs in the university:** Academic affairs at the university underwent a major reorganization with the number of colleges being reduced from seven to five. In order to manage this extensive reorganization process, several committees and task forces were constituted. Dr. Bhattacharyya was on the Operations Transitions Committee (OTC) and is now on the Faculty Load Taskforce. The OTC had oversight on

all processes that were likely to be affected due to reorganization of academic units. The Taskforce is charged with reviewing a faculty load policy that has been in place for many years and now requires to be updated in view of the evolving mission of the university.

SERVICE

Administration and Related Activities

1. **Chair**, Phase Three Task Force, 2015

Dr. Bhattacharyya led a seven-member task force appointed by the Provost to conduct a review of three non-academic units within the university that, among other things, focused on their uniqueness, centrality of mission to the university and productivity. The work of the task force was accomplished within a very aggressive timeline from December 16, 2014 through February 2, 2015.

2. **Chair**, Committee on New and Re-Oriented Graduate Programs, 2005, Donaghey College of Information Science and Systems Engineering, 2004.

The committee on New and Re-oriented Graduate Programs, chaired by myself, was mandated by the Dean of the college to examine the feasibility of initiating new graduate programs in a College that had been set up about six years ago. Two certificate programs in Construction Management and Systems Engineering were proposed along with three M.S. programs in Information Science, Engineering Management and Sensor Technology. These were meant to complement the existing interdisciplinary Applied Science Masters' and Doctoral Program as well the Graduate Program in Bioinformatics. The committee also looked into funding mechanisms for the new programs as well as other initiatives that would boost research dollars to fund assistantships for students coming into the suggested new programs.

3. **Member**, Task Force on "Undergraduate Program in Mechanical Systems", 2004.

The Department of Systems Engineering in the Donaghey College of Information Science and Systems Engineering was founded about six years ago. The department plans to expand its current offering of a Bachelors' degree in the area of Telecommunication Systems to two other options: Electrical Systems and Mechanical Systems. I was a member of the task force that formulated the details of the undergraduate Mechanical Systems option, and submitted a report to the Dean. The implementation of the Mechanical Systems option is currently underway.

4. **Liaison**, Engineering Science and Systems, Department of Applied Science, 2004 – present.

Each emphasis area in the Applied Science doctoral program (see description of program on Page 3) has a faculty liaison. The role of the liaison, among other responsibilities, is to advise the graduate coordinator on student admissions appropriate to the particular emphasis area, advise students on course registrations, candidacy exams, selection of thesis advisor.

5. **Member**, Doctoral Affairs Committee, Applied Science Doctoral Program, 2003 – 2006.

The Applied Science Doctoral program is highly interdisciplinary. The program is administered by the Department of Applied Science and spans across several departments in two colleges (Donaghey College of Information Science and Systems Engineering, College of Science and Mathematics). The program has six emphasis areas: Applied Biosciences, Applied Chemistry, Applied Computing, Applied Physics, Computational Science, Engineering Science and Systems. The policies of the program are formulated by the Doctoral Affairs Committee that draws its membership from faculty of both colleges. I was elected to a three-year term beginning Fall, 2003.

6. **Principal Investigator**, National Science Foundation (NSF) Integrative Graduate Education and Research Traineeship (IGERT) pre-proposal effort, 2004.

As the PI, I led a team of fifteen faculty across four departments to develop and submit a NSF IGERT pre-proposal on "Three-dimensional Visual Immersive Environments for experiments in Science and Engineering". The pre-proposal was a product of bi-weekly meetings of the fifteen faculty team over a period of about two months. Following the pre-proposal submission in the Spring of 2004, I took the initiative to put together a 3-month summer effort of

eight projects carried out by graduate students from Computer Science, Information Science, Engineering and Geophysics with applications in Visualization. The funding for this effort was provided by the Dean's office, Office of Research and Sponsored Programs, and National Institutes of Health-funded Arkansas Biomedical Research Infrastructure Network. The first pre-proposal submission was not successful. We propose to use the reviews as well as the results of the summer research effort for a second submission in 2006.

7. **Principal Investigator**, Defense Advanced Research Projects Agency (DARPA) project on "High temperature shape memory alloys", 2002 – 2005.

Initiated in July 2002, I provide the technical lead as the PI of the DARPA project on high temperature shape memory alloys. The team constitutes three groups: the materials and actuator characterization group in Little Rock, a computational group in the Naval Research Laboratory, Washington D.C. and a materials group in St.Petersburg, Russia. Interaction between the groups is fostered through reciprocal visits between the three groups, with the location of the meetings either in Little Rock or St.Petersburg.

Other Activities

1. Internal to University of Arkansas at Little Rock

1. *Chair*, Faculty Search Committee, Department of Applied Science, 2005 – 2006.
2. *Chair*, Graduate Curriculum Committee, Donaghey College of Engineering and Information Technology, 2005 – 2008.
3. *Member*, Graduate Curriculum Committee, Donaghey College of Engineering and Information Technology, 2008 – 2009.
4. *Member*, College Promotion and Tenure Task Force, Donaghey College of Information Science and Systems Engineering, 2005 – 2006.
5. *Member*, University Planning and Finance Committee, 2005 – 2006.
6. *Member*, Promotions and Tenure Committee, Department of Applied Science.
7. *Member*, Faculty Search Committee, Department of Applied Science, 2004 – 2005.
8. *co-PI*, NSF-REU proposal on "Smart Materials, Structures and Systems", 2002, 2003.
9. *Alternate Graduate Coordinator*, Applied Science Doctoral Program, 2004 – June 2006.
10. *Graduate Coordinator*, Applied Science Doctoral Program, June 2006 – Now.
11. *Chair*, Taskforce on revamping candidacy requirements of Engineering Science and Systems group within the Applied Science Program, 2006. This taskforce has a total of 16 faculty.
12. *Chair*, P&T Committee, Department of Applied Science, 2007-2009.
13. *Member*, Graduate Curriculum sub-committee, University Graduate Council, 2007-2009.
14. *Member*, University Graduate Council, 2007-2009.
15. *Member*, Ad-hoc Departmental Governance Document Committee, 2007.
16. *Member*, Search Committee for the Vice-Provost for Research and Dean of Graduate School, 2008.

2. External to University of Arkansas at Little Rock

SYMPOSIA/CONFERENCES ORGANIZED

1. Program Committee Member, Symposium on Active Materials and Mechanics, SPIE Conference on Smart Structures and Materials, San Diego, California, March 2-6, 2003.
2. *Organizer*, Symposium on "Smart Materials and Adaptive Structures", (co-organizer: X. Wang), 3rd International Conference on Mechanics and Materials in Design, Orlando, Florida, May 16-21, 2000.
3. *Member*, Organizing Committee of Symposium on "Active Materials: Behavior and Mechanics", 7th Annual SPIE Conf. on Smart Structures and Materials, Newport Beach, California, March 5-9, 2000.
4. *Member*, International Scientific Committee, 8th International Conference on Mechanical Behavior of Materials, Victoria, British Columbia, May 26-21, 1999.

5. *Organizer*, Symposium on “Phase Transformations in Active Materials”, (co-organizers: D.C. Lagoudas and M. Taya), Society of Engineering Science 35th Annual Technical Meeting, Pullman, Washington, September 27-30, 1998.
6. *Organizer*, Prager Medal symposium in honor of George Weng on micromechanics, composites and multifunctional materials, (co-organizers: D.C. Lagoudas and J. Li), Society of Engineering Science 50th Annual Technical Meeting jointly with ASME-AMD summer meeting, Brown University, Rhode, Island, July 28 – 31, 2013.

EDITORIAL ACTIVITIES

1. Guest Editor (with Dr.Dimitris Lagoudas), *Smart Materials and Structures*
(Special issue: Shape Memory Alloys, Vol.9, No.5, October 2000)
2. Guest Editor (with Dr.Dimitris Lagoudas), *Smart Materials and Structures*
(Special issue: Shape Memory Alloys, published in February, 2007)
3. Guest Editor (with Drs.Jackie Li and Dimitris Lagoudas), *Acta Mechanica*
(Special issue: in honor of Prof. George J. Weng, the 2013 Prager Medalist, published in April, 2014)
4. Member, Editorial Advisory Board, *Acta Mechanica*
5. Committee Member, International MultiConference of Engineers and Computer Scientists

REVIEW ACTIVITIES

Reviewed papers for: IEEE Transactions on Robotics, Mechatronics, Journal of Intelligent Materials Systems and Structures, Mechanics of Materials, ASME Journal of Applied Mechanics, Computational Materials Science , Materials Science and Engineering A, International Journal of Plasticity , ASME Journal of Engineering Materials and Technology, Smart Materials and Structures, Macromolecules, Steel and Composite Structures, J. of Colloid and Interface Science, Materials Science and Engineering A, Thermochemica Acta., Sensors and Actuators, Diamond and related materials, Analytica Chimica Acta

Reviewed proposal for: Natural Sciences and Engineering Research Council of Canada (NSERC), National Science Foundation (NSF), City University of New York.