

Curriculum Vitae: Pradeep Sharma

EDUCATION:

1990–1994

Bachelor of Science in Mechanical Engineering, August 1995
M.S. University of Baroda, India

2000

M.S. in Mechanical Engineering, University of Maryland at College Park.

1995–2000

Ph.D. in Mechanical Engineering, August 2000
University of Maryland, College Park

PROFESSIONAL ACCREDITATION:

Chartered Physicist (Ch.Phy.)---Institute of Physics, London, UK, 2003
Professional Engineer (P.E.)---registered in the State of Texas. Since 2016.

PROFESSIONAL EXPERIENCES:

2012 - present, M.D. Anderson Professor and Department Chair, Department of Mechanical Engineering, University of Houston, TX
2008-2011, Bill Cook Endowed Associate Professor, Department of Mechanical Engineering, University of Houston, TX
2005-2008, Bill Cook Endowed Assistant Professor, Department of Mechanical Engineering, University of Houston, TX
Jan 2004-present, Assistant Professor, Department of Mechanical Engineering, University of Houston, TX
September 2000– October 2003, Research Scientist, General Electric Corp. R & D, Schenectady, NY

AWARDS AND HONORS:

- (1) ONR Young Investigator Award, 2005
- (2) Bill D. Cook Faculty Endowed Chair, 2005
- (3) Texas Space Grants Consortium New Investigators Program Award, 2005
- (4) University of Houston, Excellence in Research and Scholarship Award, Assistant Professor Level, 2006
- (5) University of Houston, Cullen College of Engineering Junior Faculty Award, 2007
- (6) Guest Editor: *Mathematics and Mechanics of Solids*, 2007 (special issue on size-effects in mechanics)
- (7) Founding Editor: iMechanica Journal Club, 2007
- (8) Selected as one of the Top Referees (2009); *Proceedings of the Royal Society*
- (9) Thomas J.R. Hughes ASME Young Investigator Award¹, 2009; **Citation:** “*For outstanding contributions to understanding size-effects of coupled mechanical and physical phenomena in materials*”.
- (10) Faculty of the Year award by local ASME student chapter—2010

¹ Awarded annually by the ASME to a mechanician under 40.

- (11) University of Houston, Excellence in Research and Scholarship Award, Associate Professor Level, 2011
- (12) Distinguished M.D Anderson Professorship, 2012
- (13) Fulbright Award, 2013
- (14) ASME Melville Medal, 2015
- (15) ASME Fellow, 2013
- (16) University of Houston Teaching Award, 2013
- (17) President, Society of Engineering Science, 2015
- (18) James R. Rice Medal from the Society of Engineering Science, 2019
- (19) Charles Russ Richards Medal from the ASME, 2019
- (20) Associate Editor: *Journal of the Mechanics and Physics of Solids*
- (21) (past) Associate Editor: *Journal of Theoretical and Computational Nanoscience*
- (22) (past) Associate Editor: *Journal of Applied Mechanics*
- (23) Editorial Board Member: International Journal of Applied Mechanics, Mathematics and Mechanics of Solids

RESEARCH PROJECTS/GRANTS

An asterisk indicates that I was the team leader (for the entire project or the UH component) and in the rest, I was a participant. In some cases, the actual awarded amount may be somewhat less than proposed originally.

Agency Name	Project Title	Start Year	End Year	Total Funding
University of Texas-Texas Space Grant Consortium	*Size-Dependent Multi-Physics Phenomenon of Heterogeneous Materials Containing Nano-Inclusions--Task Order E	2004	2007	\$ 10,000
University of Houston - New Faculty Research Program	*Novel Size-effects in the Coupled Opto-electronic and Deformation Behavior of Quantum Dots and Wires	2005	2005	\$ 6,000
U.S. Navy Office of Naval Research	*Novel Size-Effects in the Coupled Mechanical Deformation and Optoelectronic Behavior of Quantum Dots and Wires	2005	2009	\$ 262,471
University of Houston-Small Grants Program	*Spontaneous Electric Fields in Strained Non-Piezoelectric Quantum Dots and Nano-Beams with Consequent Applications for Next Generation Sensors	2006	2006	\$ 3,000
University of Houston-Grant to Enhance and Advance Research (GEAR)	*Spontaneous Electric Fields in Strained Non-Piezoelectric Quantum Dots and Nano-Beams with Consequent Applications for Next Generation Sensors	2006	2007	\$ 29,845

Texas Higher Education Coordinating Board - ARP	*Nanocomposite-Based Piezoelectric Actuators and Sensors Without Use of Piezoelectric Materials	2006	2009	\$100,000
University of Houston-Small Grants Program	*Reverse Strain-Band Structure Coupling in Quantum Dots	2007	2007	\$ 3,000
National Science Foundation	*NIRT: Active Electromechanical Nanostructures Without the Use of Piezoelectric Constituents	2007	2013	\$1,445,078
San Jacinto Community College District	Development of Novel Aerospace Engineering Education Opportunities Using Emerging Technologies	2007	2009	\$ 330,726
University of Houston-Grant to Enhance and Advance Research (GEAR)	*Guided Self-assembly Based Fabrication of Nanostructures, Their Properties and Emergent Applications in Energy and Sensing	2007	2008	\$ 49,970
National Science Foundation	*Supplement: NIRT: Active Electromechanical Nanostructures Without the Use of Piezoelectric Constituents	2008	2011	\$ 62,583
National Science Foundation	*Size-dependent -super-piezoelectricity- in nanostructures	2008	2013	\$ 419,095
National Science Foundation	NUE: Development of the NanoEngineering Minor Option (NEMO) Program at the College of Engineering at the University of Houston	2008	2012	\$199,988
National Science Foundation	*GK-12 Program at the University of Houston: Innovations in Nanotechnology and Nanosciences- Using a Knowledge, Applications, Research, and Technology (KART) Approach	2008	2016	\$2,999,995
U.S. Air Force Office of Scientific Research	Atomistically Informed Materials Design of Ultrahigh Temperature Ceramics for Improved Mechanical Behavior in Oxidizing Environments	2008	2013	\$1,586,667
Texas Engineering Experiment Station	*International Institute on Multifunctional Materials for Energy Conversion (IIMEC)	2008	2015	\$ 501,310
FMC Technologies	Research on High Pressure/High Temperature Seals	2008	2009	\$ 39,800
FMC Technologies	Research of High Pressure High Temperature Seals	2009	2010	\$ 44,840

National Science Foundation	*Supplement: GK-12 Program at the University of Houston: Innovations in Nanotechnology and Nanosciences Using a Knowledge, Applications, Research, and Technology (KART) Approach	2009	2016	\$ 89,271
National Science Foundation	*The Origins of the -Dead-layer- in High Energy Storage Density Nanocapacitors	2010	2015	\$ 396,709
Texas Engineering Experiment Station	*International Institute on Multifunctional Materials for Energy Conversion (IIMEC)	2010	2014	\$ 33,927
National Science Foundation	*REU Supplement: Size-dependent -super-piezoelectricity- in nanostructures	2010	2011	\$ 12,000
National Science Foundation	*REU Supplement: The Origins of the Dead-Layer in High Energy Storage Density Nanocapacitors	2010	2011	\$ 6,000
FMC Technologies	Research of High Pressure High Temperature Seals	2010	2011	\$ 46,683
National Science Foundation	*REU Supplement: NIRT: Active Electromechanical Nanostructures without the Use of Piezoelectric Constituents	2011	2011	\$ 5,975
National Science Foundation	*EAGER/Collaborative Research: Coaxing Graphene to be Piezoelectric	2011	2013	\$ 26,000
National Science Foundation	*Fundamental Research in Quantum Field Induced Strain in Nanostructures	2012	2015	\$ 211,948
Texas Engineering Experiment Station	*Supplement: International Institute on Multifunctional Materials for Energy Conversion (IIMEC)	2013	2014	\$ 50,000
Qatar National Research Fund	*Flexoelectricity, soft nanomaterials and next-generation energy-harvesting	2013	2016	\$ 213,223
National Science Foundation	*Collaborative Research: Generating Electricity from Deformation: Multiscale Modeling and Characterization of Flexoelectricity from Atoms to Devices	2015	2018	\$154,355
National Science Foundation	MRI: Acquisition of a High Performance Computing System for Science and Engineering Research and Education at the	2015	2018	\$ 950,000

	University of Houston			
U.S. Department of Energy	High Performance High-Field Superconducting Wires for Next Generation Accelerators	2016	2019	\$ 891,088
GPA Midstream Companies	A Physics-of-Failure Approach to Life-Prediction, Fatigue Study and Failure Prevention in Brazed-Aluminum Based Heat Exchangers	2017	2019	\$ 200, 000

COURSES TAUGHT AT THE UNIVERSITY OF HOUSTON (2004-present): Many courses taught multiple times

Undergraduate:

- (1) Mechanics I--Statics
- (2) Mechanics II—Dynamics
- (3) Advanced Mechanics of Solids
- (4) Introduction to Nanotechnology
- (5) Introduction to Materials Science
- (6) Thermodynamics

Graduate:

- (1) Methods of Applied Mathematics I
- (2) Methods of Applied Mathematics II
- (3) Nanomechanics of Materials
- (4) Theoretical and Computational Materials Science
- (5) Micromechanics of Materials
- (6) Thermodynamics and Statistical Mechanics of Materials
- (7) The Future Faculty Program
- (8) Modeling Material Behavior

PATENTS

- (1) Monolithic light emitting devices based on wide bandgap semiconductor nanostructures and methods for making same; US Patent Issued on October 17, 2006
- (2) Fabrication of self-assembling nanostructures; US Patent issued on March 27, 2008

BOOK CHAPTERS

(Invited) R. Maranganti, and **P. Sharma**, "A Review of Strain Field Calculations in Embedded Quantum Dots and Wires", Chapter 118, *Handbook of Theoretical and Computational Nanotechnology*, Michael Reith and Wolfram Schommers (eds.), 2006

(Invited) Q. Deng, L. Liu, and P. Sharma, "A Continuum Theory of Flexoelectricity", Chapter 3, *Flexoelectricity in Solids: From Theory to Applications*, A.K. Tagantsev and P.V. Yudin (eds.), 2017

SELECTED REFEREED JOURNAL PUBLICATIONS: out of 110 total; Reprints and preprints of most listed papers are available on the following website:

<http://sharma.me.uh.edu>

ASTERIX * indicates graduate student advised or **co-advised funded.

1. B. Wang, S. Yang, **P. Sharma**, “Flexoelectricity as a universal mechanism for energy harvesting from crumpling of thin sheets”, *Physical Review B*, **100**, 035438(1-11), 2019
2. Q. Deng, F. Ahmadpoor, W. E. Brownell, **P. Sharma**, “The collusion of flexoelectricity and Hopf bifurcation in the hearing mechanism”, *Journal of the Mechanics and Physics of Solids*, **130**, 245-261, 2019
3. S. Krichen, L. Liu, **P. Sharma**, “Liquid inclusions in soft materials: capillary effect, mechanical stiffening and enhanced electromechanical response”, *Journal of the Mechanics and Physics of Solids*, **127**, 332-357, 2019
4. K. Mozaffari, S. Yang, **P. Sharma**, “Surface Energy and Nanoscale Mechanics”, *Handbook of Materials Modeling*, Andreoni W., Yip S. (eds.), 1-26, 2019
5. F. Darbianiyan, K. Dayal, L. Liu, **P. Sharma**, “Designing soft pyroelectric and electrocaloric materials using electrets”, *Soft Matter*, **15**, 262 – 277, 2019
6. A.H. Rahmati, S. Yang, S. Bauer, **P. Sharma**, “Nonlinear bending deformation of soft electrets and prospects for engineering flexoelectricity and transverse (d31) piezoelectricity”, *Soft Matter*, **15**, 127 – 148, 2019
7. R. Zhao, Y. Kim, S. A. Chester, **P. Sharma**, X. Zhao, “Mechanics of Hard-Magnetic Soft Materials”, *Journal of the Mechanics and Physics of Solids*, **124**, 244-263, 2019
8. L. Liu, **P. Sharma**. “Emergent electromechanical coupling of electrets and some exact relations—the effective properties of soft materials with embedded external charges and dipoles.”, *Journal of the Mechanics and Physics of Solids*, **112**, 1-24, 2018
9. Z. Alameh, S. Yang, Q. Deng, **P. Sharma**. “Emergent magnetoelectricity in soft materials, instability, and wireless energy harvesting”, *Soft Matter*, **14**, 5856 – 5868, 2018
10. X. Yan, A. Gouissem, P. Guduru, **P. Sharma**. “Elucidating the atomistic mechanisms underpinning plasticity in Li-Si nano-structures”, *Physical Review Materials*, 055401(1-9), 2017
11. M. Zelisko, F. Ahmadpoor, H. Gao, P. Sharma. “Determining the Gaussian modulus and edge properties of 2D materials from graphene to lipid bilayers”, *Physical Review Letters*, **119**, 068002(1-6), 2017
12. S. Krichen, L. Liu, P. Sharma. “Biological cell as a soft magnetoelectric material: Elucidating the physical mechanisms underpinning the detection of magnetic fields by animals”, *Physical Review E*, 042404(1-11), 2017
13. S. Yang, X. Zhao, **P. Sharma**. “Avoiding the pull-in instability of a dielectric elastomer film and the potential for increased actuation and energy harvesting”, *Soft Matter*, **13**, 4552 – 4558, 2017
14. F. Ahmadpoor, P. Wang, R. Huang, **P. Sharma**. “Thermal fluctuations and effective bending stiffness of elastic thin sheets and graphene: A nonlinear analysis”, *Journal of the Mechanics and Physics of Solids*, **107**, 294–319, 2017
15. S. Yang, X. Zhao, P. Sharma, “Revisiting the instability and bifurcation behavior of soft dielectrics”, *Journal of Applied Mechanics*, **84**, 2017

16. X. Yan*, **P. Sharma**, "Time Scaling in Atomistics and the Rate-dependent Mechanical Behavior of Nanostructures", *Nano Letters*, **16**, 3487–3492, 2016
17. S. Krichen*, **P. Sharma**, "Flexoelectricity: a Perspective on an Unusual Electromechanical Coupling", *Journal of Applied Mechanics*, **83**, 030801(1-5), 2016
18. F. Ahmadpoor*, **P. Sharma**, "Thermal Fluctuations of Vesicles and Nonlinear Curvature Elasticity-implications for Size-dependent Renormalized Bending Rigidity and Vesicle Size Distribution", *Soft Matter*, **12**, 2523-2536, 2016
19. X. Li, L. P. Liu, **P. Sharma**, "A New Type of Maxwell Stress in Soft Materials Due to Quantum Mechanical-elasticity Coupling", *Journal of the Mechanics of Physics of Solids*, **87**, 115-129, 2016
20. H. Agrawal*, M. Zelisko*, L. Liu, **P. Sharma**, "Rigid Proteins and Softening of Biological Membranes—with Application to HIV-Induced Cell Membrane Softening", *Scientific Reports*, **6**, 25412(1-12), 2016
21. F. Ahmadpoor*, **P. Sharma**, "Flexoelectricity in Two-dimensional Crystalline and Biological Membranes", *Nanoscale*, **7**, 16555-16570, 2015
22. X. Li, L. P. Liu, **P. Sharma**, "Geometrically Nonlinear Deformation and the Emergent Behavior of Polarons in Soft Matter", *Soft Matter*, **11**, 8042-8047, 2015
23. Y. Liu, H. Cai, M. Zelisko, Y. Wang, J. Sun, F. Yan, F. Ma, P. Wang, Q. N. Chen, H. Zheng, X. Meng, **P. Sharma**, Y. Zhang, J. Li, "Ferroelectric switching of elastin", *Proceedings of the National Academy of Sciences*, **111 (27)**, E2780-E2786, 2014
24. M. Zelisko, Y. Hanlumuayang, S. Yang, Y. Liu, C. Lei, J. Li, P. M. Ajayan, **P. Sharma**, "Anomalous piezoelectricity in two-dimensional graphene nitride nanosheets", *Nature Communications*, **5:4284**, 2014
25. Q. Deng, L. P. Liu, **P. Sharma**, "Electrets in soft materials: Nonlinearity, size effects, and giant electromechanical coupling", *Physical Review E*, **90**, 012603, 2014
26. Y. Hanlumuayang, X. Li, **P. Sharma**, "Mechanical strain can switch the sign of quantum capacitance from positive to negative", *Physical Chemistry Chemical Physics*, **16(42)**, 22962-22967, 2014
27. Q. Deng, L.P. Liu, **P. Sharma**, "Flexoelectricity in soft materials and biological membranes", *Invited Paper for Sixtieth anniversary issue in honor of Professor Rodney Hill, Journal of the Mechanics of Physics of Solids*, **62**, 209-227, 2014
28. Boron Nitride – Graphene Nanocapacitor and the Origins of Anomalous Size-dependent Increase of Capacitance, G. Shi, Y. Hanlumuayang, Z. Liu, Y. Gong, W. Gao, J. Lou, R. Vajtai, **P. Sharma**, P.M. Ajayan, *Nano Letters*, **14**, 1739-1744, 2014
29. P. Mohammadi, L.P. Liu, **P. Sharma**, "A theory of flexoelectric membranes and effective properties of heterogeneous membranes", *Journal of Applied Mechanics*, **81**, 011007-2, 2014
30. Q. Deng, M. Kammoun, A. Erturk, **P. Sharma**, "Nanoscale flexoelectric energy harvesting", *International Journal of Solids and Structures*, **51**, 3218-3225, 2014
31. Y. Hanlumuayang, L.P. Liu, **P. Sharma**, "Revisiting the entropic force between fluctuating biological membranes", *Journal of the Mechanics of Physics of Solids*, **63**, 179-186, 2014
32. R. Mbarki, N. Baccam, Kaushik Dayal, **P. Sharma**, "Piezoelectricity above the Curie temperature? Combining exoelectricity and functional grading to enable high-temperature electromechanical coupling", *Applied Physics Letters*, **104**, 122904, 2014
33. **P. Sharma**, "Entropic force between membranes reexamined", *Proceedings of the National Academy of Sciences*, 110(6), 1976-1977, 2013
34. L.P. Liu, **P. Sharma**, "Giant and universal magneto-electric coupling in soft materials and the concomitant ramifications for materials science and biology", *Physical Review E*, **88**, 040601(R), 2013

35. L.P. Liu and **P. Sharma**, "Flexoelectricity and thermal fluctuations of lipid bilayer membranes: Renormalization of flexoelectric, dielectric, and elastic properties", *Physical Review E*, 87, 032715, 2013
36. Z. Liu, Y. Zhan, S. Moldovan, M. Gharbi*, L. Song, G. Shi, L. Ma, W. Gao, S. Zhao, J. Huang, R. Vajtai, F. Banhart, **P. Sharma**, J. Lou, P.M. Ajayan, "Anomalous High Capacitance in a Coaxial Nanowire Capacitor", *Nature Communications*, 3:879, 2012
37. S. Chandratre*, **P. Sharma**, "Coaxing Graphene to be Piezoelectric", *Applied Physics Letters*, 100, 023114-1-023114-3, 2012
38. P. Chhapadia*, P. Mohammadi*, **P. Sharma**, "Curvature-dependent Surface Energy and Implications for Nanostructures", *Journal of the Mechanics and Physics of Solids*, 59, 2103-2115, 2011
39. P. Mohammadi, L.P. Liu, **P. Sharma**, R.V. Kukta, " Surface energy, elasticity and the homogenization of rough surfaces", *Journal of the Mechanics of Physics of Solids*, 61, 325-340, 2013
40. S. Dai**, M. Gharbi*, **P. Sharma**, H.S. Park, "Surface Piezoelectricity, Size-effects in Nanostructures and Emergent Piezoelectricity in Non-piezoelectric Materials", *Journal of Applied Physics*, 110, 104305, 2011
41. C. Mi, D. A. Buttry, **P. Sharma**, D.A. Kouris, "Atomistic insights into dislocation-based mechanisms of void growth and coalescence", *Journal of the Mechanics and Physics of Solids*, Volume 59, Issue 9, 1858, 2011
42. R. Maranganti* and **P. Sharma**, "Revisiting Quantum Notions of Stress " , *Proceedings of Royal Society A*, 466,1097-1116, 2010
43. M. Gharbi*, Z.H. Sun, K. White, S. El-Borgi, and **P. Sharma**, "Flexoelectric properties of ferroelectrics and the nanoindentation size-effect " , *International Journal of Solids and Structures*, 48 (2011) 249-256
44. N.D.Sharma*, C.M.Landis and **P. Sharma**, "Piezoelectric Thin-Film Super Lattices Without Using Piezoelectric Materials " , *Journal of Applied Physics* , 108,024304, 2010
45. M. Gharbi*, Z.H. Sun** , **P. Sharma** , K. White, " The Origins of Electromechanical Indentation Size Effect in Ferroelectrics", *Applied Physics Letters*, 95, 142901 ,2009
46. M.S. Majdoub*, R. Maranganti*, **P. Sharma**, "Understanding the origins of the intrinsic dead layer effect in nanocapacitors", *Physical Review B*, 79, 115412, 2009
47. R. Maranganti* and **P. Sharma**, "Atomistic Determination of Flexoelectric Properties of Crystalline Dielectrics", *Physical Review. B* 80 , 054109, 2009
48. **(Invited)** A. K. Tagantsev, V. Meunier, and **P. Sharma**, "Novel Electromechanical Phenomena at the Nanoscale: Phenomenological Theory and Atomistic Modeling", *MRS bulletin*, volume 34 , 2009
49. F. Shi*, **P. Sharma** and G.H. Gunaratne, "How To Create Perfectly Ordered Quantum Dots via Self-Assembly, *Chaos*, 19 , 033141 ,2009
50. X. Zhang*, M. Gharbi*, **P. Sharma**, and H. T. Johnson, "Quantum Field Induced Strains in Nanostructures and Prospects for Optical Actuation", *International Journal of Solids and Structures*, 46,3810–3824, 2009
51. M.S. Majdoub*, **P. Sharma** and T. Cagin, "Enhanced Size-Dependent Piezoelectricity And Elasticity in Nanostructures Due to The Flexoelectric Effect", *Physical Review B*, 77, 125424-1 – 125424-9, 2008
52. M.S. Majdoub*, **P. Sharma** and T. Cagin, "Dramatic Enhancement in Energy Harvesting For a Narrow Range of Dimensions in Piezoelectric Nanostructures", *Physical Review B*, 78, 121407 (R), 2008
53. S. Sahoo, R. Maranganti*, S. Lastella, G. Mallick, S. Karna, **P. Sharma** and P.M. Ajayan, "Reversible Separation of Single-Walled Carbon Nanotubes in Bundles", *Applied Physics Letters*, 93, 083120, 2008

54. F. Shi*, **P. Sharma**, D.J. Kouri, F. Hussain and G.H. Gunaratne, "Nanostructures with Long-Range Order in Monolayer Self-Assembly ", *Physical Review E*, 78, 025203, 2008
55. R. Maranganti* and **P. Sharma**, "Length Scales at Which Classical Elasticity Breaks Down for Various Materials", *Physical Review Letters*, **98**, 195504-1– 195504-4, 2007
56. X.Zhang*, **P.Sharma** and H.T.Johnson, "Quantum Confinement Induced Strain in Quantum Dots", *Physical Review B*, **75**, 155319-1– 155319-8, 2007
57. N.D. Sharma*, R. Maranganti* and **P. Sharma**, "On the Possibility of Piezoelectric Nanocomposites without using Piezoelectric Materials", *Journal of the Mechanics and Physics of Solids*, **55**, 2328–2350, 2007
58. R. Maranganti* and **P. Sharma**, "A Novel Atomistic Approach to Determine Strain Gradient Elasticity Constants: Tabulation and Comparison for Various Metals, Semiconductors, Silica, Polymers and the (Ir) relevance for Nanotechnologies", *Journal of the Mechanics and Physics of Solids*, Vol. 55, issue 9, p. 1823-1852, 2007
59. S. Hu**, G. Nathan**, F. Hussain, D.J. Kouri, **P. Sharma**, and G.H. Gunaratne, "On Stability of Self-Assembled Nanoscale Patterns", *Journal of the Mechanics and Physics of Solids*, **55**, 1357– 1384, 2007
60. **(Invited Review Article)** R.Maranganti*, **P.Sharma**, and L.Wheeler, "Quantum Notion of Stress", *Journal of Aerospace Engineering*, **20**, 22– 37, 2007
61. **P. Sharma**, and L.T. Wheeler, "Size-dependent Elastic State of Ellipsoidal Nano-inclusions Incorporating Surface/Interface Tension", *Journal of Applied Mechanics*, **74**, 447– 454, 2007
62. X. Peng**, S. Ganti, **P. Sharma**, A. Alizadeh, S. Nayak, S. Kumar, "Strain Engineered Photoluminescence of Silicon Nanoclusters", *Physical Review B* **74**, 035339-1– 035339-5, 2006
63. R. Maranganti*, N.D. Sharma* and **P. Sharma**, "Electromechanical Coupling in Non-piezoelectric Materials due to Nonlocal Size Effects at the Nanoscale: Fundamental Solutions (Green's Functions) and Embedded Inclusions", *Physical Review B* **74**, 014110-1– 014110-14, 2006
64. X. Zhang*, J.Kun**, **P. Sharma** and B. Yakobson, "An Atomistic and Non-classical Continuum Field Theoretic Perspective of Elastic Interactions between Defects (Force Dipoles) of Various Symmetries and Application to Graphene", *Journal of the Mechanics and Physics of Solids*, **54**, 2304-2329, 2006
65. **P. Sharma** and X. Zhang*, "Gauge Field Theoretic Solution of a Uniformly Moving Screw Dislocation and Admissibility of Supersonic Speeds", *Physics Letters A* **349**, 170–176, 2006
66. X. Zhang* and **P. Sharma**, "On the Scaling of Strain in Arbitrary Shaped, Anisotropic Embedded Quantum Dots due to (Nonlocal) Dispersive Effects ", *Physical Review B*, **72**, 195345, 2005
67. X. Peng**, S. Ganti, **P.Sharma**, A. Alizadeh, S. Nayak, S. Kumar, "Novel Scaling Laws for Band Gaps of Quantum Dots", *Journal of Computational and Theoretical Nanotechnology*, **2**, 3, 2005
68. A. Mathur**, **P. Sharma**, R. Cammarata, "Negative Surface Energy: A Cautionary Note", *Nature Materials*, **4**, 186, 2005
69. Z. Li**, P. Dharap**, **P. Sharma**, S. Nagarajaiah and B. Yakobson, "A Physically Inspired Continuum Field Interpretation of (Stone-Wales) Defect Formation in Single Walled Carbon Nanotubes", *Journal of Applied Physics*, **97**, 074303, 2005
70. F. Shahedipour-Sandvik, J. Grandusky, A. Alizadeh, C. Keimel, S. P. Ganti, S. T. Taylor, S. F. LeBoeuf and **P. Sharma**, "Strain Dependent Facet Stabilization in

Selective-area Heteroepitaxial Growth of GaN Nanostructures", *Applied Physics Letters*, **87**, 233108, 2005

71. X. Zhang* and **P. Sharma**, "Inclusions and Inhomogeneities in Second Gradient Elasticity with Couple Stresses and Related Problems", *International Journal of Solids and Structures*, **42**, 3833, 2005
72. **P. Sharma**, and S. Ganti, "Gauge-field-theory Solution of the Elastic State of a Screw Dislocation in a Dispersive (non-local) Crystalline Solid ", *Proceedings of the Royal Society*, **461**, 1081, 2005
73. **P. Sharma**, A. Dasgupta, and G.Cuddalorepatta**, "The Connection Between Microstructural Damage Modeling and Continuum Damage Modeling for Eutectic Sn-Pb Solder Alloys", accepted, *International Journal of Damage Mechanics*, 14, 343-363, 2005
74. A. Alizadeh, **P. Sharma**, S. Ganti, S. LeBoeuf, L. Tsakalakos, "Templated Wide Bandgap Nanostructures", *Journal of Applied Physics*, **95**, No. 12, 8199, 2004
75. **P. Sharma**, S. Ganti, H. Ardebili, A. Alizadeh, "Scaling of Thermal Stresses in Passivated Nano-interconnects", *Journal of Applied Physics*, **95**, No. 5, p 2763, 2004
76. **P. Sharma** and S. Ganti, "Size-dependent Eshelby's Tensor for Embedded Nano-inclusions Incorporating Surface/Interface Energies", *Journal of Applied Mechanics*, Vol 71, 663, 2004
77. **P. Sharma**, "Inclusions and Defects in Chiral Solids", *International Journal of Solids and Structures*, **41**, 6317, 2004
78. **P. Sharma**, S. Ganti and N. Bhate, "The Effect of Surfaces on the Size-Dependent Elastic State of (Nano) Inhomogeneities", *Applied Physics Letters*, **82**, No 4, 2003
79. **P. Sharma**, and S. Ganti, "On the Grain-size Dependent Elastic Modulus of Nanocrystalline Materials with and without Grain Boundary Sliding", *Journal of Materials Research*, 1823-1826, 18, No.8, 2003
80. **P. Sharma**, and S. Ganti, "The Size-dependent Elastic State of Inclusions in Non-local Elastic Solids", *Philosophical Magazine Letters*, Vol. 83, No. 12, 745, 2003
81. **P. Sharma**, and R. Sharma, "On the Eshelby's Inclusion Problem for Ellipsoids with Non-Uniform Dilatational Gaussian and Exponential Eigenstrains", *Journal of Applied Mechanics*, 70, No 3, 418-425, 2003
82. **P. Sharma**, A. Dasgupta, S. Ganti and J. Loman, "Prediction of Rate-Independent Constitutive Behavior of Pb-Free Solders Based on First Principles", *IEEE Transactions on Components and Packaging*, **26**, 659, 2003
83. **P. Sharma**, and A. Dasgupta, "Scale-Dependent Average Elastic Fields of Spherical and Cylindrical Inhomogeneities in Micropolar Medium and Overall Properties", *Physical Review B* **66**, 2241XX, 2002
84. **P. Sharma**, and S. Ganti, "Interfacial Elasticity Corrections to the Elastic State of Quantum Dots", *Physica Status Solidi (b)* **234**, No.3, R10–R12, 2002
85. **P. Sharma**, H. Ardebili and J. Loman, "A Note on the Thermal Stresses in Passivated Metal Interconnects", *Applied Physics Letters*, Vol. 79, No. 11, p 1706, 2001