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PROFESSIONAL PREPARATION

Post-Doc	Mechanical Engineering	Johns Hopkins University (USA)	2005-2008
Ph.D.	Civil Engineering	Indian Institute of Technology Bombay (India)	1998-2002
M.E.	Structural Engineering	University of Pune (India)	1995-1996
B.E.	Civil Engineering	University of Pune (India)	1992-1995

PROFESSIONAL EXPERIENCE

Bill D. Cook Assistant Professor	Mechanical Engineering, University of Houston	Feb. 2018-
Visiting Associate Professor	Mechanical Engineering, Johns Hopkins University (USA)	June 2016
Associate Professor	Mechanical Engineering, National University of Singapore	Jan.15-Jan.18
Assistant Professor	Mechanical Engineering, National University of Singapore	June 08-Dec.14
Faculty Associate	Engineering Science Programme, National University of Singapore	June 08-present
Post-Doctoral Fellow	Mechanical Engineering Johns Hopkins University (USA)	May 05- May 08
Mechanical Engineer	GE-India Technology Centre (India)	July 03- May 05
Structural Design Associate	Composites Design and Technology (India)	Jan. 03-June 03
Visiting Scientist	Universität Stuttgart (Germany)	May 02-Nov. 02
Research Assistant	Indian Institute of Technology-Bombay (India)	Dec. 98-Aug. 02
Project Engineer	Engineering Mechanics Research (India) Pvt. Ltd.	Dec. 97- Dec. 98
Structural Design Engineer	Delcons Structural Consultants (India)	Aug. 96-Dec. 97

AWARDS AND HONORS

Bill D. Cook Faculty Fellowship	University of Houston	2018-23
Faculty of Engineering Teaching Excellence Award (Honors List)	National University of Singapore	2014-15
Engineering Science Programme Teaching Commendation	National University of Singapore	2014-15
Faculty of Engineering Teaching Commendation	National University of Singapore	2013-14
Six Sigma Green Belt Certification	GE-India Technology Centre (India)	2004
Fellowship Under Fast Track Proposals for Young Scientists	Department of Science and Technology (India)	2003
Deutsches Zentrum für Luft und Raumfahrt (DLR) Fellowship	Universität Stuttgart (Germany)	2002

PUBLICATIONS AND PRESENTATIONS

Papers published/ accepted in refereed journals (H-index: 22 [Google Scholar](#))

(Orange: NUS graduate student; Blue: NUS post-doctoral fellow; #: corresponding author)

1. **Joshi, K**, Joshi, SP# (2017) Interacting effects of strengthening and twin boundary migration in nanotwinned materials. *Journal of the Mechanics and Physics of Solids*, 101, 180-196.
2. **Selvarajou, B**, Joshi, SP# and Benzerga, AA (2017) Three dimensional simulations of texture and triaxiality effects on the plasticity of magnesium alloys. *Acta Materialia*, 127, 54-72.
3. **Selvarajou, B**, Joshi, SP# and Benzerga, AA (2017) Effects of Texture and Triaxiality on the Plasticity of Magnesium Alloys. *Magnesium Technology 2017*, 563-569.
4. **Selvarajou, B**, Kondori, B, Benzerga, AA, and Joshi, SP# (2016) On plastic flow in notched hexagonal close packed single crystals. *Journal of the Mechanics and Physics of Solids*, 94, 273-297.
5. **Rawat, S** and Joshi, SP# (2016) Effect of multiaxial loading on evolution of $\{10\bar{1}2\}$ twinning in magnesium single crystals. *Materials Science and Engineering-A*, 659, 256-269.
6. **Zhang, J**, Wei, Q and Joshi, SP# (2016) Effects of reinforcement morphology on the mechanical behavior of magnesium metal matrix composites based on crystal plasticity modeling. *Mechanics of Materials*, 95, 1-14.
7. **Adibi, S**, Branicio, P# and Joshi, SP# (2015) Suppression of shear banding and transition to necking and homogeneous flow in nanoglass nanopillars. *Scientific Reports*, 5, 15611 (1-9).
8. **Adibi, S**, Branicio, P#, Lontas, R, Chen, D, Greer, JR, Srolovitz, DJ and Joshi, SP# (2015) Surface roughness imparts tensile ductility to nanoscale metallic glasses. *Extreme Mechanics Letters*, 5, 88-95.
9. **Selvarajou, B**, Shin, JH, Ha, TK, Choi, IS#, Joshi, SP# and Han, HN (2014) Orientation-dependent indentation response of magnesium single crystals: modeling and experiments. *Acta Materialia*, 81, 358-376.
10. **Aghababaei, R** and Joshi, SP# (2014) Micromechanics of homogeneous and heterogeneous tensile twinning in magnesium gleaned from molecular dynamics investigations. *Acta Materialia*, 69(5), 326-342.
11. **Zhang, J**, Ramesh, KT and Joshi, SP# (2014) Stochastic size-dependent slip versus twinning in hexagonal close packed single crystals. *Modelling and Simulation in Materials Science and Engineering*, 22 075003 (1-24).
12. **Adibi, S**, Branicio, P#, Zhang, Y-W. and Joshi SP# (2014) Composition and grain size effects on the structural and mechanical properties of CuZr nanoglasses. *Journal of Applied Physics*, 116, 043522-1-10.
13. **Mirakhani, H** and Joshi, SP# (2014) Mechanism-based crystal plasticity modeling of twin boundary migration in face-centered-cubic metals. *Journal of the Mechanics and Physics of Solids*, 68(7), 107-133.
14. **Abhilash, AS**, **Zhang, L**, Stiefel, J, Purohit, PK# and Joshi, SP# (2014) Predictive maps for stochastic non-affine stiffening and damage in fibrous networks. *Physical Review-E*, 89, 022607, 1-9.
15. **Ho, SL#**, Joshi, SP and Tay, AAO (2014) Heating-rate dependent delamination of metal-polymer interfaces: experiments and modeling. *International Journal of Fracture*, 187(2), 227-238.
16. **Adibi, S#**, Sha, Z-D #, Branicio, P, Joshi, SP, Liu, Z.S., Zhang, Y-W. (2013) A transition from localized shear banding to homogeneous superplastic flow in nanoglass. *Applied Physics Letters*, 103(21), 211905.
17. **Hariharan, S**, Ramar, V, Joshi, SP, and Balaya, P# (2013) Developing a light weight lithium-ion battery - an effective material and electrode design for high performance conversion anodes. *RSC Advances*, 3, 6386-6394.
18. **Aghababaei, R** and Joshi, SP# (2013) Micromechanics of crystallographic size-effects in metal matrix composites induced by thermo-mechanical loading. *International Journal of Plasticity*, 42, 65-82.

19. Ho, SL[#], Joshi, SP and Tay, AAO (2013) Experiments and three dimensional modeling of delamination in encapsulated silicon devices. *IEEE Transactions of Components, Packaging and Manufacturing Technology*, 3(11), 1859-1867.
20. Ho, SL[#], Joshi, SP and Tay, AAO (2012) Cohesive zone modeling of 3D delamination in encapsulated silicon devices. *IEEE 62nd Electronic Components and Technology Conference (ECTC), May 29, 2012-June 1, 2012*, 1493-1498. [dx.doi.org/10.1109/ECTC.2012.6249033](https://doi.org/10.1109/ECTC.2012.6249033).
21. Aghababaei, R and Joshi, SP[#] (2012) A crystal plasticity analysis of length-scale dependent internal stresses with image effects. *Journal of the Mechanics and Physics of Solids*, 60, 2019-2043.
22. Zhang, J and Joshi, SP[#] (2012) Phenomenological crystal plasticity modeling and detailed micromechanical investigations of pure magnesium. *Journal of the Mechanics and Physics of Solids*, 60, 945-972. **Among top 25 most cited articles in JMPS since year 2011.**
23. Habibi, MK, Gupta, M and Joshi, SP[#] (2012) Size-effects in textural strengthening of hierarchical magnesium nano-composites. *Materials Science and Engineering-A*, 556, 855-863.
24. Li, B, Joshi, SP[#], Almagri, O, Ma, Q, Ramesh, KT and Mukai, T (2012) Rate-dependent hardening due to twinning in an ultrafine-grained magnesium alloy. *Acta Materialia*, 60, 1818-1826.
25. Abhilash, AS, Purohit, PK and Joshi, SP[#] (2012) Stochastic rate-dependent elasticity and failure of soft fibrous networks. *Soft Matter*, 8, 7004-7016.
26. Abhilash, AS, Joshi, SP[#], Mukherjee, A and Mishnaevsky, L, Jr (2011) Micromechanics of diffusion induced damage evolution in reinforced polymers. *Composites Science and Technology*, 71, 333-342.
27. Mirkhani, H and Joshi, SP[#] (2011) Crystal plasticity of nanotwinned microstructures: a discrete twin approach for copper. *Acta Materialia*, 59, 5603-5617.
28. Aghababaei, R and Joshi, SP[#] (2011) Grain size–inclusion size interaction in metal matrix composites using mechanism-based gradient crystal plasticity. *International Journal of Solids and Structures*, 48, 2585-2594.
29. Aghababaei, R, Joshi, SP[#] and Reddy, JN (2011) Nonlocal continuum crystal plasticity with internal residual stresses. *Journal of the Mechanics and Physics of Solids*, 59, 713–731.
30. Habibi, MK, Joshi, SP and Gupta, M[#] (2011) Development of hierarchical magnesium composites using hybrid microwave sintering. *Journal of Microwave Power and Electromagnetic Energy*, 45, 112-120.
31. Habibi, MK, Joshi, SP and Gupta, M[#] (2010) Hierarchical magnesium nano-composites for enhanced mechanical response, *Acta Materialia*, 58, 6104-6114.
32. Li, B, Joshi, SP[#], Azevedo, K, Ma, E, Ramesh, KT, Figueiredo, RB, and Langdon, TG (2009) Dynamic testing at high strain rates of an ultrafine-grained magnesium alloy processed by ECAP, *Materials Science and Engineering-A*, 517 (1-2), 24-29.
33. Joshi, SP[#], Eberl, C, Cao, B, Ramesh, KT, and Hemker, KJ (2009) On the occurrence of Portevin-Le Châtelier instabilities in ultrafine-grained Al5083. *Experimental Mechanics*, 49, 207-218.
34. Cao, B[#], Joshi, SP, and Ramesh, KT (2009) Strengthening mechanisms in cryomilled UFG Al 5083 at quasistatic and dynamic rates of loading. *Scripta Materialia*, 60, 619-622.
35. Suh, YS, Joshi, SP[#], and Ramesh, KT (2009) An enhanced continuum model for size-dependent strengthening and failure of particle reinforced composites, *Acta Materialia*, 57, 5848-5861.
36. Joshi, SP and Ramesh, KT[#] (2008) Stability map for nanocrystalline and amorphous materials. *Physical Review Letters*, 101, 025501. **Selected for the Virtual Journal of Nanoscale Science & Technology, July 21, 2008.**
37. Joshi, SP[#] and Ramesh, KT (2008) Grain size dependent shear instabilities in body-centered and face-centered-cubic materials. *Materials Science and Engineering-A*, 493, 65-70.

38. Joshi, SP and Ramesh, KT[#] (2008) Rotational diffusion and grain size dependent shear instability in nanostructured materials. *Acta Materialia*, 56, 282-291.
39. Zhang, H[#], Ye, J, Joshi, SP, Schoenung, JM, Chin, ESC, and Ramesh, KT (2008) Rate-dependent behavior of hierarchical Al matrix composites. *Scripta Materialia*, 59, 1139-1142.
40. Zhang, H, Ye, J, Joshi, SP, Schoenung, JM, Chin, ESC, Gazonas, GA and Ramesh, KT[#] (2007) Superlight-weight nanoengineered aluminum for strength under impact. *Advanced Engineering Materials*, 9, 355-359.
41. Joshi, SP[#] and Ramesh, KT (2007) An enriched continuum model for the design of a hierarchical composite. *Scripta Materialia*, 57, 877-880.
42. Mukherjee, A[#], Joshi, SP and Saha Chaudhuri, A (2007) Transducer shape optimization for instability control of smart piezolaminated columns. *Inverse Problems in Science and Engineering*, 15, 151-162.
43. Joshi, SP[#], Ramesh, KT, Han, BQ and Lavernia, EJ (2006) Modeling the constitutive response of bi-modal metals. *Metallurgical and Materials Transactions A*, 37, 2397-2404.
44. Joshi, SP[#], Mukherjee, A. and Schmauder, S (2003) Numerical characterization of functionally graded active materials under electrical and thermal fields. *Smart Materials and Structures*. 12, 571-579.
45. Joshi, SP[#], Mukherjee, A. and Schmauder, S (2003) Exact solutions for characterization of electro-elastically graded materials. *Computational Materials Science*, 28(3-4), 548-555.
46. Mukherjee, A[#] and Joshi, SP (2003) A gradientless technique for optimal distribution of piezoelectric material for structural control. *International Journal for Numerical Methods in Engineering*, 57, 1737-1753.
47. Mukherjee, A[#] and Joshi, SP (2002) Piezoelectric sensor and actuator spatial design for shape control of piezolaminated plates. *AIAA Journal*, 40, 1204-1210.
48. Mukherjee, A[#] and Joshi, SP (2002) Energy efficient actuators in vibration control of plated structures. *Journal of Sound and Vibration*, 258, 179-190.
49. Mukherjee, A[#], Joshi, SP and Ganguli, A (2002) Active vibration control of piezolaminated stiffened plates. *Composite Structures*, 55, 435-443.
50. Mukherjee, A[#] and Joshi, SP (2001) Design of actuator profiles for minimum power consumption. *Smart Materials and Structures*, 10, 305-313.
51. Joshi, SP, Mukherjee, A[#], Kheur, M and Mehta, A (2001) Mechanical performance of endodontically treated teeth. *Finite Elements in Analysis and Design*, 37, 587-601.

Manuscripts in review

1. Lian, J, Joshi, SP and Chan, Y[#] (2017) Ligand mediated control over the mechanical properties of ultrathin semiconductor nanosheets. *To be resubmitted*.

Invited seminars at Universities/ Research Institutions

1. *Slip, Twins and Voids: The Micromechanics of Anisotropic Ductile Damage*. Mechanical Engineering Seminar, University of Houston, 23/02/17.
2. *Unraveling Texture, Triaxiality and Anisotropy Effects in Polycrystalline Magnesium Alloys*. HEMI Seminar, Hopkins Extreme Materials Institute, The Johns Hopkins University, 27/06/16.
3. *Unraveling Texture, Triaxiality and Anisotropy Nexus in Polycrystalline Magnesium Alloys*. CiMMS Seminar, Texas A & M University, 17/06/16.
4. *Slip, Twins and Voids: Predictive Modeling for Designing Improved Magnesium Microstructures*. Department of Mechanical Engineering, University of Michigan, 24/07/2015.

5. *Micromechanics of Extension Twinning in Magnesium*. Department of Materials Science and Engineering, Texas A & M University, 07/04/2015.
6. *Multi-scale Mechanics of Lightweight Materials*. Department of Mechanical Engineering, University of Texas at San Antonio, 26/02/2014.
7. *Micromechanics of Magnesium Gleaned from Multi-scale Experiments and Modeling*. Department of Mechanical Engineering, Georgia Institute of Technology, 26/07/2013.
8. *Mechanism-based Modeling of Microstructural Evolution in Nanotwinned Metals*. US Naval Research Laboratory, Washington D.C., 18/07/2013.
9. *Evolution Instincts: Twinning Micromechanics Gleaned from Molecular Dynamics*. Hopkins Extreme Materials Institute, The Johns Hopkins University, 19/07/2013.
10. *Evolution Instincts: Telltale of Twinning in Magnesium*. Institute of High Performance Computing, Singapore, 11/07/2013.
11. *Micromechanics of Nanotwinned Metals: A Discrete Twin Crystal Plasticity Model*. Department of Materials Science & Engineering, Seoul National University, 26/02/2013.
12. *A Hierarchical Approach Toward Strong and Ductile Magnesium Microstructures*. Korea Institute of Science and Technology (KIST), 25/02/2013.
13. *Crystal Plasticity of Nanotwinned Microstructures*. Hopkins Extreme Materials Institute, The Johns Hopkins University, 28/09/2012.
14. *Fortifying Magnesium for Structural Applications*. Mechanical Engineering and Applied Mechanics Colloquium, Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania, 25/09/2012.
15. *To Yield or Not to Yield: Microstructural Mechanics of the Ultra-Soft and the Ultra-Strong*. Bhattacharya and Ravichandran Research Group/ Greer Research Group, California Institute of Technology, 06/06/2012.
16. *Continuum Crystal Plasticity with Nonlocal Internal Stresses*. Department of Mechanical Engineering and Engineering Science, University of North Carolina, Charlotte, 19/04/2011.
17. *Viscoelasticity and Continuum Mechanics*. The Sixth GEM⁴ Summer School, National University of Singapore, 25/07/2010.
18. *Nonlocal Continuum Crystal Plasticity with Internal Residual Stresses*. Center for Advanced Metallic and Ceramic Systems, The Johns Hopkins University, 25/06/2010.
19. *Computational Modeling of Length-scale Effects in Heterogeneous Materials*. École Polytechnique Fédérale de Lausanne (EPFL), 07/05/2010.
20. *Geometric Softening Induced Shear Instability in Nanostructured Materials*. Institut für Materialprüfung, Werkstoffkunde und Festigkeitslehre (IMWF), University of Stuttgart, 05/05/2010.
21. *Nonlocal Continuum Crystal Plasticity with Internal Residual Stresses*, Institut für Materialforschung II, Karlsruher Institut für Technologie (KIT), 04/05/2010.
22. *An Enriched Continuum Model for Shear Instabilities in Nanostructured Materials*. Department of Mechanical Engineering, IIT Bombay, India, 29/09/2007.
23. *Mechanics of Nanostructured Materials*. Thapar University, India, 27/09/2007.

Conference oral presentations (#indicates presenter)

1. Joshi, SP (2017) *Micromechanics of Void Growth in HCP Single Crystals*. XIV International Conference on Computational Plasticity - COMPLAS 2017. Fundamentals and Applications (September 5-7, 2017), Barcelona, Spain. **(Invited)**.

2. Joshi, SP[#], **Selvarajou, B** and Benzerga, AA (2016) *Unraveling Texture, Triaxiality and Anisotropy Effects in Polycrystalline Magnesium Alloys*. 24th International Congress of Theoretical and Applied Mechanics, ICTAM 2016 (August 21-26, 2016), Montreal, Canada. **(Invited)**.
3. Joshi, SP[#], **Selvarajou, B** and Benzerga, AA (2016) *Unraveling Texture, Triaxiality and Anisotropy Effects in Polycrystalline Magnesium Alloys*. Mach Conference (April 6-8, 2016), Annapolis, MD, USA.
4. Joshi, SP[#], **Selvarajou, B** and Benzerga, AA (2015) *Triaxiality Effects in Magnesium: Modeling and Experiments*. In symposium on Full-Field Methods for Multiscale Mechanics of Materials. 2015 IMECE - ASME Winter Annual Meeting (November 13-19, 2015), Houston, TX, USA.
5. Joshi, SP[#] (2015) *Extracting Coarse-Grained Dynamics of Extension Twinning in Magnesium using Molecular Dynamics Simulations*. In Minisymposium on Recent Progress in Multi-scale Modeling at the Intersection of Ab-initio Methods, Mechanics and Mathematics. 13th US National Congress on Computational Mechanics (July 26-30, 2015), San Diego, USA. **(Invited)**.
6. Joshi, SP[#] and **Selvarajou, B** (2015) *A Crystal Plasticity Investigation of Magnesium Alloys under Controlled Stress Triaxiality*. 2015 Mach Conference (April 8-10, 2015), Annapolis, MD, USA.
7. Joshi, SP[#] and **Rawat, S** (2015) *Extracting Coarse-grained Dynamics of Extension Twinning in Magnesium using Molecular Dynamics Simulations*. 2015 Mach Conference (April 8-10, 2015), Annapolis, MD, USA.
8. Joshi, SP[#] (2014) *Multiscale Mechanics of Tensile Twinning in Magnesium*. In Fracture and Failure in Bio-Nano- and Energy Systems Symposium, 17th US National Congress on Theoretical and Applied Mechanics (USNCTAM 2014) (June 15-21, 2014), Michigan State University, East Lansing, Michigan, USA.
9. Joshi, SP[#] and **Selvarajou, B** (2014) *On the Nature of Deformation Evolution in Magnesium Single Crystals Subjected to Localized Contact*. In Symposium Honoring Professor Lallit Anand on the Occasion of his 65th Birthday. 17th US National Congress on Theoretical and Applied Mechanics (USNCTAM 2014) (June 15-21, 2014), Michigan State University, East Lansing, Michigan, USA.
10. Joshi, SP[#] (2014) *Micromechanics of Pure Magnesium from Atomistic and Continuum Crystal Plasticity Simulations*. in Multiscale Perspectives on Plasticity in HCP Metals Symposium, Annual TMS Meeting (Feb. 16-20, 2014), San Diego, California, USA. **(Invited)**
11. Joshi, SP[#], **Selvarajou, B** and Aghababaei, R (2013) *Indentation simulation of single crystal magnesium using crystal plasticity and molecular dynamics*. 50th Annual SES Meeting and Annual ASME-AMD Summer Meeting (July 28-31, 2013), Brown University, Providence, RI, USA.
12. **Adibi, S[#]**, Branicio, P and Joshi, SP (2013) *Molecular dynamics simulations of metallic nanoglasses*. 50th Annual SES Meeting and Annual ASME-AMD Summer Meeting (July 28-31, 2013), Brown University, Providence, RI, USA. **Ms. Adibi was awarded student travel support by ASME.**
13. Joshi, SP[#] and **Aghababaei, R** (2013) *Micromechanics of pure magnesium from atomistic investigations*. 12th US National Congress on Computational Mechanics (USNCCM12) (July 22-25, 2013), Raleigh-Durham, NC, USA.
14. **Adibi, S[#]**, Branicio, P and Joshi, SP (2013) *Size and strain rate effects on the mechanical response of nanopillar metallic glasses: a molecular dynamics study*. 12th US National Congress on Computational Mechanics (USNCCM12) (July 22-25, 2013), Raleigh-Durham, NC, USA.
15. **Adibi, S[#]**, Branicio, P and Joshi, SP (2013) *POSTER: Molecular dynamics simulations of metallic nanoglasses*. 7th International Conference on Materials for Advanced Technologies (ICMAT2013) (June 30-July 5, 2013), Singapore. **Ms. Adibi won the best student poster award.**
16. **Adibi, S[#]**, Branicio, P and Joshi, SP (2013) *POSTER: Size and strain rate effects on the mechanical response of nanopillar metallic glasses: a molecular dynamics study*. 7th International Conference on Materials for Advanced Technologies (ICMAT2013) (June 30-July 5, 2013), Singapore.
17. **Aghababaei, R** and Joshi, SP[#] (2013) *Micromechanics of pure magnesium from atomistic investigations*. 2013 Mach Conference (April 10-12, 2013), Annapolis, MD, USA.

18. Joshi, SP[#] (2013) *Micromechanics of nanotwinned metals: A discrete twin crystal plasticity model*. 2013 Mach Conference (April 10-12, 2013), Annapolis, MD, USA.
19. Aghababaei, R[#] and Joshi, SP (2012) *A Crystal Plasticity Analysis of Micro Beam Bending Problem: From Discrete Dislocation Plasticity to Continuum Crystal Plasticity*. In Symposium G: Multiscale Modeling of Crystal Plasticity: From Discrete Models to Generalized Continua. 6th International Conference on Multiscale Materials Modeling (MMM 2012, October 15-19, 2012), Biopolis, Singapore.
20. Mirkhani, H and Joshi, SP[#] (2012) *Mechanism-based Crystal Plasticity Modeling of Twin Boundary Migration in FCC materials*. In Symposium G: Multiscale Modeling of Crystal Plasticity: From Discrete Models to Generalized Continua. 6th International Conference on Multiscale Materials Modeling (MMM 2012, October 15-19, 2012), Biopolis, Singapore.
21. Zhang, J[#] and Joshi, SP (2012) *Stochastic Crystal Plasticity and Size Effects in Single-crystal Magnesium*. In Symposium G: Multiscale Modeling of Crystal Plasticity: From Discrete Models to Generalized Continua. 6th International Conference on Multiscale Materials Modeling (MMM 2012, October 15-19, 2012), Biopolis, Singapore.
22. Byer, C, Zhang, J[#], Ramesh, KT and Joshi, SP (2012) *Stochastic Crystal Plasticity and Size Effects in Single-crystal Magnesium*. 22nd International Workshop on Computational Mechanics of Materials (IWCMM XXII, September 24-26, 2012), Baltimore, MD, USA.
23. Abhilash, AS, Purohit, PK and Joshi, SP[#] (2012) *A Predictive Model for Non-affine Elasticity and Damage in Fibrous Networks*. 22nd International Workshop on Computational Mechanics of Materials (IWCMM XXII, September 24-26, 2012), Baltimore, MD, USA.
24. Byer, C[#], Zhang, J, Ramesh, KT and Joshi, SP (2012) *Experiments and Modeling of Microcompression of Single-crystal Magnesium*. SEM XII International Congress & Exposition on Experimental and Applied Mechanics (June 11-14, 2012); Costa Mesa, CA, USA.
25. Joshi, SP[#], Abhilash, AS and Purohit, PK (2012) *Stochastic Failure Mechanics of Soft, Fibrous Networks*. Fourth International Conference on Structural Stability and Dynamics (January 4-6, 2012); Malaviya National Institute of Technology, Jaipur, Rajasthan, India. **(Keynote)**.
26. Mirkhani, H[#] and Joshi, SP (2011) *A Size-dependent Crystal Plasticity Model for Nanotwinned Copper*. Third International Symposium on Computational Mechanics (ISCM III) and the Second Symposium on Computational Structural Engineering (CSE II) (December 5-7, 2011); National Taiwan University, Taipei, Taiwan.
27. Zhang, J[#] and Joshi, SP (2011) *Bottom-up Crystal Plasticity Investigation of Magnesium Matrix Composites*. Third International Symposium on Computational Mechanics (ISCM III) and the Second Symposium on Computational Structural Engineering (December 5-7, 2011); National Taiwan University, Taipei, Taiwan.
28. Abhilash, AS[#], Purohit, PK and Joshi, SP (2011) *Modeling the Rate-Dependent Stochastic Response of Discrete Filament Networks*. Third International Symposium on Computational Mechanics (ISCM III) and the Second Symposium on Computational Structural Engineering (CSE II) (December 5-7, 2011); National Taiwan University, Taipei, Taiwan.
29. Joshi, SP[#] and Mirkhani, H (2011) *Crystal Plasticity of Nanotwinned Microstructures*. Session: Recent Advances in the Quasicontinuum Method and other Atomistic/Continuum Coupling Techniques, and Studies of Microstructural Defects in Materials. 11th US National Congress on Computational Mechanics (USNCCM 11, July 25-28, 2011), Minneapolis, MN, USA.
30. Joshi, SP[#] and Ramesh, KT (2010) *Grain Rotation Induced Evolution of Multiple Shear Bands in Nanostructured Materials*. Session: Size Scale Effects in Micro/Nano Structured Materials and Composites (Organizer: Prof. Rashid Abu Al-Rub), 2010 ASME International Mechanical Engineering Congress and Exposition. (Nov 12-18, 2010); Vancouver, British Columbia, Canada. **(Invited)**
31. Mirkhani, H[#] and Joshi, SP (2010) *Modeling the Strengthening-Softening Response of Nanotwinned Crystals*. Session: Size Scale Effects in Micro/Nano Structured Materials and Composites (Organizer: Prof. Rashid Abu Al-Rub), 2010 ASME International Mechanical Engineering Congress and Exposition. (Nov 12-18, 2010); Vancouver, British Columbia, Canada. **(Invited)**

32. **Abhilash, AS[#]** and Joshi, SP (2010) *Micromechanics of Diffusion Induced Damage Evolution in Reinforced Polymers*. 4th International Conference on Advanced Computational Engineering and Experimenting, ACE-X 2010 Paris, France, (July 08-09, 2010).
33. **Aghababaei, R**, Joshi, SP[#] and **Zhang, J** (2010) *Length-Scale Dependent Response of Hierarchical Composites using Enriched Polycrystal Plasticity*. 16th US National Congress on Theoretical and Applied Mechanics (June 27-July 2, 2010), Penn State University, Pennsylvania, USA.
34. **Aghababaei, R[#]** and Joshi, SP (2010) *A Nonlocal Continuum Theory Accounting for Size-Dependent Bauschinger Effect*. 16th US National Congress on Theoretical and Applied Mechanics, USNCTAM (June 27-July 2, 2010), Penn State University, Pennsylvania, USA. **Mr. Aghababaei was awarded student travel support to attend the congress.**
35. Joshi, SP[#] and Ramesh, KT (2010) *Stability Map for Nanostructured and Amorphous Materials*. 16th US National Congress on Theoretical and Applied Mechanics (June 27-July 2, 2010), Penn State University, Pennsylvania, USA.
36. Suh, YS[#], Kim, YB, Joshi, SP and Ramesh, KT. (2010) *Size-dependent Ductile Failure Analysis of Particle-reinforced Composites via Finite Element Modeling of Dislocation Punched Zone*. TMS Annual Meeting and Exposition, (Feb 14-18, 2010), Seattle, Washington, USA.
37. Joshi, SP[#], Suh, YS and Ramesh, KT (2009) *Length-scale Dependent Failure in Hierarchical Composites*. Nanocomposite Materials Symposium, TMS Annual Meeting (Feb 15-19, 2009), Moscone West Convention Center, San Francisco, USA. **(Invited)**
38. Joshi, SP, Huskins, EH[#] and Ramesh, KT. (2007) *Rate-Dependent Mechanical Response of Hierarchical Composites: Experiments and Modeling*. Session: Dynamic Response of Materials (Organizer: Prof. P.H.Geubelle), 2007 ASME Congress. (Nov 10-16, 2007); Seattle, Washington, USA.
39. Joshi, SP and Ramesh, KT[#]. (2007) *A Mechanistic Model for Shear Bands in Nanostructured Materials*. Structural Materials Division Symposium: Mechanical Behavior of Nanostructured Materials, in Honor of Carl Koch, 2007 TMS Annual Meeting, (Feb 25–1 March 2007), Florida, USA. **(Invited)**
40. Joshi, SP[#] and Ramesh, KT. (2006) *A Mechanistic Model for Plastic Instabilities in Nanostructured Materials*. Session: Modeling and Experiments in Nanomechanics and Nanomaterials (Organizer: Dr. Y. Mikata), 2006 ASME Congress. (November 5-10, 2006); Chicago, USA.
41. Zhang, H, Joshi, SP[#], Ramesh, KT, Ye, J, Schoenung, J and Chin, ESC. (2006) *Remarkable Dynamic Mechanical Properties of a Tri-modal Al-5083/B₄C Composite*. Amiya Mukherjee Symposium, TMS Annual Meeting, (March 12-16, 2006); San Antonio, TX, USA.
42. Joshi, SP[#], Ramesh, KT, Han, BQ and Lavernia, EJ. (2006) *Modeling the Constitutive Response of Bimodal Metals*. W.W. Gerberich Symposium, TMS Annual Meeting, (March 12-16, 2006), San Antonio, TX, USA.
43. Joshi, SP, Mukherjee, A[#], Prakash, O and Schmauder, S. (2004) *Active Structural Control of Compositionally Graded Piezoelectric Plates*. Minisymposium on Thermo-Electro-Mechanical Materials and Systems, Sixth World Congress on Computational Mechanics (WCCM). (September 5-10, 2004), Beijing, China.
44. Dias, A[#], Joshi, SP, Jain, S., Acharya, S. and Earath, S. (2004) *Thermo-Visco-Elastic Mechanics of Polymeric Micro-replication Process*. XIV International Workshop on Computational Mechanics of Materials (IWCMM14). (September 23-25, 2004), Goa, India.

PATENTS

1. Apparatus and Method for Producing Embossed Film (US 2008/000131 A1). *Assignee: General Electric Company*. Inventors: Jain, SS, Acharya, N, Joshi, SP, Dias, A, Vaish, N.
2. Digital X-Ray Detectors (US 2008/0078939 A1). *Assignee: General Electric Company*. Inventors: Hennessey, WH, Amm, B, Castleberry, D, Talya, SS, Gaikwad, VV, Joshi, SP, Vafi, H and Utschig, MJ.
3. System and Method for Forming Textured Polymeric Films (US 2007/0001333 A1). *Assignee: General Electric Company*. Inventors: Dias, A, Harikumar, HK, Acharya, N, Jain, SS, Patil, MM, Joshi, SP, Tatterson, RL.

SUPERVISION OF GRADUATE STUDENTS, POST-DOCTORAL SCHOLARS AND UNDERGRADUATE INTERNS

Current doctoral graduate students (NUS):

Student	Topic	Supervisory Role	Since
Padmeya Indurkar	Dynamic Failure of HCP Metals	Co-supervisor	Aug. 16
Jakub Mikula	Phase-field Modeling of Microstructural Evolution	Co-supervisor (w/ Dr.S.S.Quek, IHPC)	Aug. 15
Kartikey Joshi	Crystal Plasticity of Nanotwinned Materials	Sole	Aug. 13

Doctoral students graduated (NUS):

Name	Dissertation Title	Supervisory Role	Defense Date	Current Affiliation
Ramin Aghababaei	Modeling Slip Gradients and Internal Stresses in Crystalline Microstructures with Distributed Defects	Primary	May 04, 2012	Assistant Prof. Aarhus Univ.
Siow Ling Ho	Delamination in Microelectronics Packages with Consideration of Three-dimensional and Rate Effects	Co-supervisor (w/ Dr. A. Tay, NUS)	May 29, 2012	IME, Singapore
Abhilash A.S.	Discrete Micromechanics of Random Fibrous Architectures	Primary	Nov. 30, 2012	Deloitte Consulting (India)
Srirama Hariharan	Nanostructured Electrode Materials for Lithium-ion Batteries	Co-supervisor (w/ Dr. B. Palani, NUS)	April 25, 2013	Johnson Matthey, Germany.
Hamidreza Mirkhani	Crystal Plasticity Modeling and Simulations of Nanotwinned Metals	Primary	May 16, 2013	Senior Engineer DNV-GL, S'pore
Sara Adibi	On the Mechanical Properties of Novel Metallic Glass Architectures: a Molecular Dynamics Investigation	Co-supervisor (w/ Dr. P. Brancio, IHPC)	Nov. 24, 2014	Post-doc (TAMU, USA)
Balaji Selvarajou	Slip, Twins and Voids: Triaxiality Effects in Magnesium	Sole	April 12, 2017	Scientist (IHPC, Singapore)

Post-doctoral fellows advised:

- Jing Zhang (2009-2014); Ramin Aghababaei (2012-2013); Sunil Rawat (2013-2015); Ravi Sastri Ayyagiri (2016); Indrasen Singh (2016-2017); Shyamal Roy (2017); Balaji Selvarajou (2017)

Overseas visiting students (undergraduate/ graduate):

- May-July' 17: Newton Xu (U. Toronto) *Modular structural design for impact energy dissipation*; Kevin Zhang *Molecular dynamics modeling and simulation of magnesium*
- May-July' 16: Kaiyang Chen (U. Toronto) *Molecular dynamics modeling and simulation of magnesium*; Daksh Arora (IIT Delhi) *3D investigation of polycrystalline materials*; Yuchen Wu (U. Toronto) *Computational modeling and analysis of nano- and micro-lattice structures*
- May-July'15: Christopher Chu (U. Toronto) *Design of lattice structures for energy dissipation*; Jimmy Lee (U.Toronto) *Dynamics of twinning in magnesium single crystals*.
- May-July'14: Yifan Gao (U. Toronto). *Atomistic modeling and simulation of advanced, lightweight structural materials*; Zhi Jiang Ye (U. Toronto). *Computational modeling and analysis of nano and micro lattice structures*; Varun Ravikumar (SNU, India). *Modeling defects in magnesium using LAMMPS*.
- Jan-Feb' 13: Neha Dixit (JHU). *Molecular simulations of magnesium under shock loading*.
- Jan-Feb'12: Cynthia Byer (JHU). *Size-effects in magnesium single crystals*.

- May-July'12: Terence Li (U. Toronto). *Design strategies for nano-Si in Li-ion battery anodes.*
- Oct'09-Jan'10: Aditi Gulati (U. Auckland). *Mechanics of actin networks using discrete element method.*

Undergraduate research supervision:

(FYP:Final Year Project; UROP:Undergraduate Research Opportunity Programme)

- AY2017-18: Amitesh Sivaraman Jayaraman (**UROP**), Ngiam Heng Kee (**UROP**)
- AY2016-17: Darwin Hadinata (**FYP**), Au Khai Xiang (**FYP-Best Project Award**)
- AY2014-15: Leong Huiyu (**Independent Study**), Xu Ruochen (**Summer Intern**)
- AY2012-13: Liang Zhang (**FYP - Best Project Award**), Siang Poh Chua (**FYP**), Taufiq Muhammad (**FYP**)
- AY2010-11: Jeffery Yu (**FYP**), Shihua Zhang (**FYP**), Sun Lin (**UROP**), Chi Huan Nguyen (**UROP**)
- AY2009-10: Meryl Song (**FYP**), Chun Yun Kee (**FYP**), Piyush Mehta (**UROP**)

TEACHING

- **Undergraduate:**

(L: Lectures; T: Tutorials)

- **ESP2106** Principles of Continua (L, T - AY 08/09-AY 16/17)
- **ESP3206/ESP4206** Continuum Mechanics (L, T - AY 08/09-AY 16/17)
- **EG1109** Statics and Mechanics of Materials (T - AY 13/14)
- **ME530.418** Aerospace Structures and Materials (Fall'07, at JHU)
- **ME530.215** Mechanics Based Design (Spring'07, with Prof. K.T. Ramesh at JHU))

- **Graduate:**

- **ME5103** Plates and Shells (L - AY15/16)
- **ME6101** Research Topics in Applied Mechanics (L - AY 12/13, AY 14/15, AY16/17)
- **ME6107** Plasticity and Inelastic Deformations (L - AY13/14)
- **ME530.602** Mechanics of Solids (Spring'07, with Prof. Sean Sun (JHU))

PROFESSIONAL SERVICE

Scientific community:

- *Editorial Board Member:* Materials Science and Engineering: A (Elsevier)
- *Reviewer:*
 - Journal of the Mechanics and Physics of Solids; Mechanics of Materials; International Journal of Solids and Structures; International Journal of Plasticity; International Journal of Fracture; Engineering Fracture Mechanics; Experimental Mechanics; Computational Materials Science; Smart Materials and Structures
 - Nature Communications; Nano Letters; Acta Materialia; Acta Biomaterialia; Small; Carbon; Materials Science and Engineering-A; Scripta Materialia; Composites Science and Technology; Materials Characterization; Metallurgical and Materials Transactions-A; International Journal of Impact Engineering; International Journal of Mechanical Sciences; International Journal of Applied Mechanics;
- *External PhD dissertation referee:*
 - 2015: PhD thesis examiner of Mr. Seyed Mortazavi Ghazvini (Monash University)
 - 2016: PhD thesis examiner of Mr. Yuefeng Yin (Monash University)

■ *Conference Organization:*

- Co-chairman, 23rd **International Workshop on Computational Mechanics of Materials (IWCMM23), October 2-4, 2013, Singapore** (www.iwcmm23.org). The workshop was attended by more than one hundred researchers from nearly fifteen countries.

■ *Mini-symposium Organization (since 2012):*

- **14th International Conference on Fracture, Rhodes, Greece (June 18-23, 2017): Mechanics, Physics and Mechanisms of Ductile Failure**(with K. Ravi Chandar and R. Narasimhan)
- **2016 IMECE, Phoenix, Arizona, USA (Nov. 11-17, 2016): Experiments and Modeling of Ductile Failure** (with J. Wilkerson and A.A. Benzerga)
- **2016 Mach Conference, Annapolis, MD, USA (April 6-8, 2016): Slip, Twins and Voids: Micromechanics of Material Failure** (with A.A. Benzerga)
- **2015 Mach Conference, Annapolis, MD, USA (April 8-10, 2015): To Yield or Not To Yield: Multiscale Perspectives in Plasticity and Failure of Materials** (with V. Gavini)
- **17th US National Congress on Theoretical and Applied Mechanics, Michigan State University, East Lansing, USA (June 15-20, 2014): Elasticity, Plasticity and Multiphysics of Hierarchical Materials: Mechanisms to Mechanics** (with D. Kochmann and T. Rupert)
- **SES 50th Annual Technical Meeting and ASME-AMD Annual Summer Meeting Brown University, USA (July 28-31, 2013): Materials for Extreme Environments: Multi-Scale Experiments and Simulations** (with J. El-Awady and M. Taheri)
- **12th U.S. National Congress on Computational Mechanics (USNCCM12) Raleigh, North Carolina, USA (July 22-25, 2013):**
 - *Multiscale Mechanics Modeling of Phase Transitions* (with P.K. Purohit, W. Klug and A. Yavari)
 - *Multiscale Modeling and Simulations of Materials Phenomena* (with S. Qidwai and S. Kalidindi)
- **22nd International Workshop on Computational Mechanics of Materials (IWCMM XXII) Baltimore, USA (September 24-26, 2012): Plasticity: Bridging the Scales from Micro to Macro** (with A. Acharya and J. El-Awady)

- Member: Society of Engineering Science (SES), Society for Experimental Mechanics (SEM), American Society for Mechanical Engineers (ASME), The Minerals, Metals and Materials Society (TMS).
- Judge: Student presentation competition at SES 50th Annual Technical Meeting and ASME-AMD Annual Summer Meeting, Brown University, USA (July 28-31, 2013).

NUS:

- Member: Academic Affairs Committee (ME), Joint Academic Committee (Engineering Science Programme), Graduate Studies Committee (ME), Curriculum Committee (Engineering Science Programme), PhD Interview Committee (Faculty-wide).
- Co-organizer and coordinator: *Computational Modeling and Optimization* Special Interest Group in Faculty of Engineering (2016); ME Brown-bag Faculty Seminar Series (2012-2014).
- Committee member: NUS-ME PhD Thesis Defense, Graduate Qualifying Exams, UG-Final Year Projects.

Society:

- 2010: Judge at the Singapore International Mathematics Challenge (SIMC) 2010 organized by Ministry of Education and NUS High School.
- 2012: One of the four members of Challenge Setting and Evaluation Committee for SIMC 2012 organized by Ministry of Education and NUS High School.

- 2013: Judge at the Singapore Science & Engineering Fair (SSEF), a national competition organized by the Ministry of Education, the Agency for Science, Technology & Research (A*STAR) and the Science Center Singapore (SCS).
- 2015: Judge at the A*STAR Talent Search (ATS) 2015, a national research based competition administered by the Agency for Science, Technology & Research (A*STAR) and the Science Center Singapore (SCS). Website: <http://www.science.edu.sg/events/pages/astartalentsearch.aspx>
- 2016: Mentor for Innovation Programme (IvP), an initiative by Ministry of Education, Singapore. Website: <https://www.moe.gov.sg/education/programmes/gifted-education-programme>.