

Sudharshan Phani, Pardhasaradhi

Scientist E, Centre for Engineered Coatings & Advanced Nanomechanical Characterization
Centre, International Advanced Research Centre for Powder Metallurgy & New Materials
(ARCI), Balapur P.O., Hyderabad, Telangana, India, 500005
Ph: +91-40-24452418; Email: spphani@arci.res.in; spphani@yahoo.com

Education

PhD, Materials Science and Engineering, University of Tennessee, Knoxville, USA	2008-2012
B.Tech, Mechanical Engineering, Indian Institute of Technology, Madras, India	1999-2003

Professional experience

Scientist E, ARCI, Hyderabad, India	2016 - present
Staff Scientist, Nanomechanics Inc., Oak Ridge, USA	2013 - 2016
Graduate research assistant, EFRC, ORNL, Oak Ridge, USA	2011 - 2012
Graduate research assistant, Univ. of Tennessee, Knoxville, USA	2008 - 2012
Visiting scientist, Laboratoire SIMaP – GPM2, INPG, Grenoble, France	2007 - 2007
Scientist B, ARCI, Hyderabad, India	2004 - 2008

Awards and honors

- Recognized as **Early Career Scholars in Materials Science 2020**, by Materials Research Society.
- Developed high speed mapping tool **NanoBlitz3D+** and launched globally in San Antonio, TX
- **3 invited feature papers** in Journal of Materials Research 2018 featuring the first report on nanomechanical characterization of pure Lithium films
- The work on pure Lithium films has been recognized by **Department of Energy (DOE), USA** and widely acknowledged / published by several science reporting agencies
- Recipient of **Stainless steel indenter award 2014**, for excellence in R&D at Nanomechanics Inc
- Won **Best poster award** at Gordon Research Conference on Thin films and mechanical properties, 2014
- Recipient of **Stainless steel indenter award 2013**, for excellence in R&D at Nanomechanics Inc
- Selected for inclusion in 2009 edition of **Who's Who in the World®** by Marquis, USA
- Recipient of **Joint Institute for Advanced Materials (JIAM) fellowship**
- Recipient of **National Merit Scholarship** for excellence in twelfth grade, 1999
- Won Special award in **Regional Mathematical Olympiad (RMO), 1997**

Peer-reviewed publications (last 5 years)

1. P. Sudharshan Phani, W.C. Oliver and G.M. Pharr, Influences of elasticity on the measurement of power law creep parameters by nanoindentation, Journal of Mechanics and Physics of Solids, (2021), 104527

2. P. Sudharshan Phani, W.C. Oliver and G.M. Pharr, On the effective load during nanoindentation creep testing with continuous stiffness measurement (CSM), *Journal of Materials Research*, (2021), Accepted
3. Naveen Chavan, P. Sudharshan Phani, M. Ramakrishna, L. Venkatesh, Prita Pant and G. Sundararajan, Role of stacking fault energy (SFE) on the high strain rate deformation of cold sprayed Cu and Cu–Al alloy coatings, *Materials Science and Engineering-A* (2021), 814, 141242
4. Deekshith G.Kalali, Sairam Antharam, Mohsin Hasan, P.Sai Karthik, P. Sudharshan Phani, K. Bhanu Sankara Rao, Koteswararao V.Rajulapati, On the origins of ultra-high hardness and strain gradient plasticity in multi-phase nanocrystalline MoNbTaTiW based refractory high-entropy alloy, *Materials Science and Engineering-A* (2021), 812, 141098
5. Fereshteh Mallakpour, Erik G. Herbert, P. Sudharshan Phani, Stephen A. Hackney, Length Scale Dependent Stress Relief Mechanisms in Indium at High Homologous Temperatures, *Journal of Materials Research*, (2021), **Invited Paper**
6. P. Sudharshan Phani, W.C. Oliver and G.M. Pharr, Measurement of hardness and elastic modulus by load and depth sensing indentation: Improvements to the technique based on continuous stiffness measurement, *Journal of Materials Research*, (2021), **Invited Paper**
7. EM Rossi, P Sudharshan Phani, R Guillemet, Julie Cholet, Doriane Jussey, WC Oliver, M Sebastiani, A novel nanoindentation protocol to characterize surface free energy of superhydrophobic nanopatterned materials, *Journal of Materials Research*, (2021), **Invited Paper**
8. S Janakiram, PS Phani, G Ummethala, SK Malladi, J Gautam, LAI Kestens, New insights on recovery and early recrystallization of ferrite-pearlite banded cold rolled high strength steels by high speed nanoindentation mapping, *Scripta Materialia*, (2021), 194, 113676
9. G Kommineni, Z Alam, P.Sudharshan Phani, R Sarkar, VVS Prasad, BR Golla,, Influence of Ti and Zr alloying elements on microstructure and micromechanical properties of near-eutectic Nb-18.7Si alloy, *Materials Characterization*, (2021), 110723
10. P. Sudharshan Phani, W.C. Oliver and G.M. Pharr, An experimental assessment of methods for mitigating plasticity error during nanoindentation with continuous stiffness measurement, *Materials & Design*, 194 (2020), 108924
11. P. Sudharshan Phani, W.C. Oliver and G.M. Pharr, Understanding and modeling plasticity error during nanoindentation with continuous stiffness measurement, *Materials & Design*, 194 (2020), 108923
12. Shaik Mubina, P Sudharshan Phani, Asit Kumar Khanra and B.P. Saha, A nanoindentation based study to evaluate the effect of carbon nanofibers on the mechanical properties of SiC composites, *Composite Interfaces* (2020)
13. LA. Boatner, B. C. Chakoumakos, P. Sudharshan Phani, S. N. Dryepontdt, A Shaw, J Qu, AEM Rossy, MA McGuire, JA Kolopus, E Lara-Curzio, Cryo-quenched Fe–Ni–Cr alloy decorative steel single crystals II: Alloy phases, structure, hardness, tensile, tribological, magnetic and electronic properties, *Journal of Alloys and Compounds*, 835, (2020), 155169
14. P. Sudharshan Phani and W.C. Oliver, Critical examination of experimental data on strain bursts (pop-in) during spherical indentation, *Journal of Materials Research*, 35, (2020), 1028, **Invited Feature Paper**
15. Naveen Chavan, M.V. Kumar, P. Sudharshan Phani, P. Pant and G. Sundararajan, Influence of Nozzle Throat Cross Section on Microstructure and Properties of Cold Sprayed Coatings, *Journal of Thermal Spray Technology*, 28, (2019), 1718

16. B. Vignesh, W.C. Oliver, G. Siva Kumar and P. Sudharshan Phani, Critical assessment of high speed nanoindentation mapping technique and data deconvolution on thermal barrier coatings, *Materials and Design*, 181 (2019), 108084
17. P. Sudharshan Phani and W.C. Oliver, A critical assessment of the effect of indentation spacing on the measurement of hardness and modulus using instrumented indentation testing, *Materials and Design*, 164 (2019), 107563
18. Bolla Reddy Bodapati, P Sudharshan Phani, PP Bhattacharjee and G Sundararajan, On the Constraint Factor and Tabor Coefficient Pertinent to Spherical Indentation, *Transactions of the Indian Institute of Metals*, 71 (2018), 2893-2901
19. Bolla Reddy Bodapati, P Sudharshan Phani, PP Bhattacharjee and G Sundararajan, Uniaxial compression behaviour of porous copper: Experiments and modelling, *Materials Today communications*, 16 (2018), 320-329
20. J.J. Roa, P. Sudharshan Phani, W.C. Oliver and L. LLanes, Mapping of mechanical properties at microstructural length scale in WC-Co cemented carbides: Assessment of hardness and elastic modulus by means of high speed massive nanoindentation and statistical analysis, *International journal of refractory metals and hard materials*, 75 (2018), 211-217.
21. E. G. Herbert, S.A. Hackney, N.J. Dudney and P. Sudharshan Phani, Nanoindentation of high-purity vapor deposited lithium films: A mechanistic rationalization of the transition from diffusion to dislocation-mediated flow, *Journal of Materials Research*, 33 (2018), 1361-1368 (**Invited Feature paper**)
22. E. G. Herbert, S.A. Hackney, N.J. Dudney and P. Sudharshan Phani, Nanoindentation of high-purity vapor deposited lithium films: A mechanistic rationalization of diffusion-mediated flow, *Journal of Materials Research*, 33 (2018), 1347-1360 (**Invited Feature paper**)
23. E. G. Herbert, S.A. Hackney, N.J. Dudney and P. Sudharshan Phani, Nanoindentation of high-purity vapor deposited lithium films: The elastic modulus, *Journal of Materials Research*, 33 (2018), 1335-1346 (**Invited Feature paper**)
24. P.S. Babu, P.C. Rao, A. Jyothirmayi, P. Sudharshan Phani, L.R. Krishna and D.S. Rao, Evaluation of microstructure, property and performance of detonation sprayed WC-(W,Cr)2C-Ni coatings, *Journal of Surface and Coatings Technology*, 335 (2018), 345-354
25. P. Sudharshan Phani, W. C. Oliver and G. M. Pharr, On the measurement of power law creep parameters from instrumented indentation, *Journal of Materials*, 69 (2017) 2229-2236
26. P Sudharshan Phani and Warren Oliver, Ultra high strain rate nanoindentation testing, *Materials* 10 (2017) 663-674 (Invited feature article)
27. LA Boatner, JA Kolopus, Nicolay V Lavrik, P Sudharshan Phani, Cryo-quenched Fe-Ni-Cr alloy single crystals: A new decorative steel, *Journal of Alloys and Compounds*, 691, (2017), 666
28. G Sparks, P Sudharshan Phani, U Hangen, R Maass, Spatiotemporal slip dynamics during deformation of gold micro-crystals, *Acta Materialia*, 122, (2017), 109
29. P. Sudharshan Phani and W.C. Oliver, A direct comparison of high temperature nanoindentation creep and uniaxial creep measurements for commercial purity aluminum, *Acta Materialia*, 111, (2016), 31