



Exponent[®]
Engineering & Scientific Consulting

Shruti Rastogi, Ph.D.

Senior Associate | Mechanical Engineering
Menlo Park
+1-650-688-7039 | srastogi@exponent.com

Professional Profile

Dr. Rastogi specializes in mechanics of materials, experimental testing of materials and products, and finite element analysis (FEA). She has extensive experience in mechanical testing, nanoindentation testing, thin-film deposition techniques, material characterization techniques (Scanning Electron Microscope (SEM), Transmission Electron Microscope (TEM), Focused Ion Beam (FIB)), and finite element modeling.

Dr. Rastogi applies her expertise to design and execute mechanical tests to assist clients with failure analyses of composite and polymer materials and batteries.

Prior to joining Exponent, Dr. Rastogi was a Graduate Research Assistant at Columbia University. She engineered graphene-based composite materials with high strength-to-weight ratios. She developed an industrially scalable copper/graphene nanolaminate design with enhanced load-bearing capacity, improved strength, and reduced coefficient of friction utilizing graphene's unparalleled mechanical strength. Dr. Rastogi evaluated the composite's mechanical properties using nanoindentation testing. She then used finite element modeling to gain insight into the strengthening mechanisms of copper/graphene composites.

In addition to her dissertation work, Dr. Rastogi served as a teaching assistant at Columbia University for the "Mechanics of Materials" and "Fluid Mechanics" courses.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, Columbia University, 2021

M.S., Mechanical Engineering, Columbia University, 2016

B.Tech., Mechanical Engineering, National Institute of Technology Karnataka, 2014

Prior Experience

Graduate Research Assistant, Columbia University, Department of Mechanical Engineering, 2018-2021.

Graduate Teaching Assistant, Columbia University, 2015 – 2017.

Professional Affiliations

Society for Experimental Mechanics (SEM)

Material Research Society (MRS)

Languages

Hindi

Patents

S. Rastogi, J. Kysar. Layered metal-graphene-metal laminate structure, US Patent App. 15/980,398, 2018

Publications

Aksit A, Rastogi S, Nadal ML, Parker AM, Lalwani AK, West AC, Kysar JW. Drug delivery device for the inner ear: ultra-sharp fully metallic microneedles. *Drug Deliv Transl Res.* 2021 Feb;11(1):214-226. doi: 10.1007/s13346-020-00782-9. PMID: 32488817.

Thomas Rousseau, Yooseob Song, Wenbin Wang, Shruti Rastogi, George Z. Voyiadjis, Jeffrey W. Kysar. Order in polycrystalline plasticity deformation fields: Short-range intermittency and long-range persistency, *International Journal of Plasticity*, Volume 128,2020,102674,ISSN 0749-6419.doi.org/10.1016/j.ijplas.2020.102674.

C. DiMarco, R. Li, S. Rastogi, JWK, J. Hone. Graphene Mechanical Properties. *2D Materials Properties and Devices*, 1, 52-70.

Presentations

Shruti Rastogi, Christian F. Niordson, Emilio Martínez-Pañeda, Jeffrey W. Kysar. Enhanced Strength of Cu-Gr-Cu nanolaminate. Oral Presentation. 2021 IUTAM Symposium on Generalized continua emerging from microstructures, Paris, 2021.

Shruti Rastogi, Richard Li, Jeffrey W.Kysar. Investigating Frictional Properties of Copper-Graphene-Copper Laminates. Oral Presentation, MRS Fall Meeting, Boston, MA, 02115, 2019.

Shruti Rastogi, Richard Li, Jeffrey W.Kysar. Investigating the Frictional Behavior of Copper-Graphene-Copper Laminates. Poster Presentation, MRS Fall Meeting, Boston, MA, 02115, 2018.

Shruti Rastogi, Richard Li, Jeffrey W.Kysar. Improved Wear Performance of Copper-Graphene-Copper Laminates. Oral Presentation, SEM Annual Conference & Exposition on Experimental & Applied Mechanics, Indianapolis, IN, 46204, 2017.