

Mrityunjay Kothari

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Education

- Ph.D. Solid Mechanics, Brown University, May 2019
Dissertation: “A Study of Curvature Localization in Multilayer Graphene”
Committee: Kyung-Suk Kim (chair), Huajian Gao, David Henann, Derek Stein
- Sc.M. Solid Mechanics, Brown University, May 2016
- B.Tech. Mechanical Engineering, Indian Institute of Technology Kanpur, May 2013

Academic Experience

- 2019- Postdoctoral Associate, Civil and Environmental Engineering, MIT
Advisor: Tal Cohen
- 2019 Postdoctoral Associate, School of Engineering, Brown University
Advisor: Vikas Srivastava

Publications

Kothari M, Cohen T. Effect of elasticity on phase separation in heterogeneous systems. *Journal of the Mechanics and Physics of Solids*. 2020; 145:104153.

Kothari M, Lemon Z, Roth C, Cohen T. Controlled propagation and jamming of a delamination front. *Soft Matter*. 2020; 16(43):9838-9843. (Appeared as the Front Cover for Soft Matter)

Kothari M, Niu S, Srivastava V. A thermo-mechanically coupled finite strain model for phase-transitioning austenitic steels in ambient to cryogenic temperature range. *Journal of the Mechanics and Physics of Solids*. 2019; 133:103729.

Kothari M, Cha MH, Lefevre V, Kim KS. Critical curvature localization in graphene. II. Non-local flexoelectricity–dielectricity coupling. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*. 2019; 475(2221):20180671.

Kothari M, Cha MH, Kim KS. Critical curvature localization in graphene. I. Quantum-flexoelectricity effect. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*. 2018; 474(2214):20180054.

Li R, Kothari M, Landauer AK, Cha MH, Kwon H, Kim KS. A new subcritical nanostructure of graphene —Crinkle-Ruga structure and its novel properties. *MRS Advances*. 2018; 3(45-46):2763-9.

Fellowships and Awards

- 2019 Outstanding Thesis Award, Brown University
Awarded to the best doctoral thesis
- 2018 International Travel Award, Graduate School, Brown University
- 2017 Conference Travel Award, Graduate School, Brown University
- 2017 Conference Travel Award, Graduate Student Council, Brown University
- 2013-14 Tisch Fellowship, Brown University
One of three university-wide fellowships for the best incoming graduate students
- 2012 & 2011 Summer Undergraduate Research Grant for Excellence, IIT Kanpur
- 2011 & 2010 Certificate of Merit for Academic Excellence, IIT Kanpur
Awarded to the top 5% academic performers in a class of nearly 700

Invited Talks

(1 = presenter)

- 2018 Kothari M¹. Curvature localization in graphene. Prof. Tal Cohen's group meeting at MIT, Cambridge, MA
- 2018 Kothari M¹. Curvature localization in graphene. Department of Applied Mechanics. Indian Institute of Technology Delhi

Conferences and Presentations

(1 = presenter, * = scheduled)

- 2020 Kothari M¹, Cohen T. Effect of Elasticity on Phase Separation in Heterogeneous Systems. ASME IMECE2020, Virtual Conference
- 2020 Kothari M¹, Cohen T. Dynamics of Phase Separation with Non-linear Elastic Effects. Society of Engineering Science Virtual Technical Meeting
- 2020 Kothari M¹, Cohen T. Effect of Elasticity on Phase Separation in Heterogeneous Systems. Pierce Lab Research Seminar Series, MIT, Cambridge, MA
- 2019 Kim KS¹, Li R, Kothari M, Cha MH, Chen O, Lefevre V. Ruga Mechanics of Graphene Crinkles for Molecule/Nanoparticle Self-Assembly. Prager Medal Symposium, Society of Engineering Science, St. Louis, MO
- 2019 Kothari M, Cha MH, Kim KS¹, Lefevre V. Asymptotic Models of Curvature Localization in Multi-Layer Graphene. 56th Annual Meeting of the Society of Engineering Science, St. Louis, MO
- 2019 Kim KS¹, Kothari M, Jin H, Zhao R. Singularity-Growth-Instability and Symmetry-Breaking Characteristics of Crease (Keynote). 56th Annual Meeting of the Society of Engineering Science, St. Louis, MO
- 2018 Kothari M¹, Kim KS. Curvature localization in graphene. 9th annual NEW.Mech, Brown University, Providence, RI
- 2018 Kothari M¹, Cha MH, Kim KS. Curvature localization in graphene. 18th U.S. National Congress for Theoretical and Applied Mechanics, Chicago, IL

- 2017 [Kothari M¹](#), Kim KS. Discovery of Graphene Crinkle as a Molecular Zipper. Poster Presentation, Institute for Molecular and Nanoscale Innovation, 10th Anniversary Celebration, Providence, RI
- 2017 [Kothari M¹](#), Cha MH, Kim KS. Mechanics of curvature localization in graphene. Society of Engineering Science 54th Annual Technical Meeting, Boston, MA
- 2017 [Kothari M¹](#), Cha MH, Kim KS. Critical behavior of curvature localization in graphene. American Physical Society, March Meeting, New Orleans, LA

Media Coverage

“Controlled propagation and jamming of a delamination front”: [Soft Matter Front Cover](#)

“Graphene crinkles can be used as ‘molecular zippers’”: [Brown University](#), [phys.org](#)

“Squeezing Graphene Stacks Results in Unique Electrical Properties”: [Azonano](#), [Materialstoday](#), [Brown University](#)