Xin Yi

Department of Mechanics and Engineering Science,
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Beijing 100871, China

Education

Brown University
Ph.D., Mechanical Engineering (Advisor: Prof. Huajian Gao) 2008–2014

Peking University
M.S., Mechanical Engineering 2005–2008
B.Eng., Mechanical Engineering 2001–2005

Employment

Peking University, Assistant Professor, College of Engineering 11/2016–present
Dartmouth College, Postdoctoral Associate 07/2016–11/2016
(working with Prof. Zi Chen)
Brown University, Postdoctoral Associate 2014–06/2016
(working with Prof. Huajian Gao)

Research Interests

Mechanics of endocytosis and phagocytosis
Cell interaction with nanomaterials
Micromechanics of composites
Bioinspired 3D printing

Honor

Young Scholars of the Thousand Talents Plan (2016)

Professional Activities

Reviewer for *ACS Nano*, *Acta Mechanica Sinica*, *Advanced Science*, *Biomaterials Science*, *Carbon*, *Chinese Journal of Theoretical and Applied Mechanics*, *Journal of Applied Physics*, *Journal of Engineering Mathematics*, *Journal of the Mechanics of Physics and Solids*, *Langmuir*, *Nanoscale*, *Physics Letters A*, *Physical Review Letters*, *Scientific Reports*, *Small*, and *Soft Matter*.

Journal Publications

28 G. J. Zou, **X. Yi**, W. P. Zhu, and H. J. Gao, Packing of flexible 2D materials in vesicles. *Journal of Physics D: Applied Physics* (2018).

27 B. Marzban, **X. Yi**, and H. Y. Yuan, A minimal mechanics model for mechanosensing of substrate rigidity gradient in durotaxis. *Biomechanics and Modeling in Mechanobiology* (2018).

26 G. J. Zou, **X. Yi**, W. P. Zhu, and H. J. Gao, Packing of flexible nanofibers in vesicles.

Extreme Mechanics Letters 19, 20–26 (2018).

25 F. L. Tian, T. T. Yue, W. Dong, **X. Yi**, and X. R. Zhang, Size-dependent formation of membrane nanotubes: continuum modeling and molecular dynamics simulations. *Physical Chemistry Chemical Physics* 20(5), 3474–3483 (2018).

24 **X. Yi** and H. J. Gao, Budding of an adhesive elastic particle out of a lipid vesicle. *ACS Biomaterials Science & Engineering* 3(11), 2954–2961 (2017).

23 **X. Yi** and H. J. Gao, Kinetics of receptor-mediated endocytosis of elastic nanoparticles. *Nanoscale* 9(1), 454–463 (2017).

22 **X. Yi** and H. J. Gao, Incorporation of soft particles into lipid vesicles: Effects of particle size and elasticity. *Langmuir* 32(49), 13252–13260 (2016).

21 W. P. Zhu*, A. von dem Bussche*, **X. Yi***, Y. Qiu, Z. Y. Wang, P. Weston, R. H. Hurt, A. B. Kane, and H. J. Gao, Nanomechanical mechanism for lipid bilayer damage induced by carbon nanotubes confined in intracellular vesicles. *Proceedings of the National Academy of Sciences of the U. S. A.* 113(44), 12374–12379 (2016). (*equal contribution)

20 Z. Y. Wang, W. P. Zhu, Y. Qiu, **X. Yi**, A. von dem Bussche, A. Kane, H. J. Gao, K. Koski, and R. Hurt, Biological and environmental interactions of emerging two-dimensional nanomaterials. *Chemical Society Reviews* 45(6), 1750–1780 (2016).

19 **X. Yi** and H. J. Gao, Cell interaction with graphene microsheets: Near-orthogonal cutting versus parallel attachment. *Nanoscale* 7(12), 5457–5467 (2015).

18 **X. Yi** and H. J. Gao, Cell membrane wrapping of a spherical thin elastic shell. *Soft Matter* 11(6), 1107–1115 (2015).

17 **X. Yi** and H. J. Gao, Phase diagrams and morphological evolution in wrapping of rod-shaped elastic nanoparticles by cell membrane: A two-dimensional study. *Physical Review E* 89(6), 062712 (2014).

16 **X. Yi**, X. H. Shi, and H. J. Gao, A universal law for cell uptake of one-dimensional nanomaterials. *Nano Letters* 14(2), 1049–1055 (2014).

15 **X. Yi**, X. H. Shi, and H. J. Gao, Cellular uptake of elastic nanoparticles. *Physical Review Letters* 107(9), 098101 (2011).

14 B. X. Jing, J. Zhao, Y. Wang, **X. Yi**, and H. L. Duan, Water-swelling-induced morphological instability of a supported polymethyl methacrylate thin film. *Langmuir* 26(11), 7651–7655 (2010).

13 H. L. Duan, Y. H. Xue, and **X. Yi**, Vibration of cantilevers with rough surfaces. *Acta Mechanica Solida Sinica* 22(6), 550–554 (2009).

12 **X. Yi** and H. L. Duan, Surface stress induced by interactions of adsorbates and its effect on deformation and frequency of microcantilever sensors. *Journal of the Mechanics and Physics of Solids* 57(8), 1254–1266 (2009).

11 **X. Yi**, H. L. Duan, Y. Chen, and J. X. Wang, Prediction of complex dielectric constants of polymer-clay nanocomposites. *Physics Letters A* 372(1), 68–71 (2007).

10 **X. Yi**, H. L. Duan, B. L. Karihaloo, and J. X. Wang, Eshelby formalism for multi-shell nano-inhomogeneities. *Archives of Mechanics* 59(3), 259–281 (2007).

9 H. L. Duan, **X. Yi**, Z. P. Huang, and J. X. Wang, A unified scheme for prediction of effective moduli of multiphase composites with interface effects. Part I: Theoretical framework. *Mechanics of Materials* 39(1), 81–93 (2007).

8 H. L. Duan, **X. Yi**, Z. P. Huang, and J. X. Wang, A unified scheme for prediction of

effective moduli of multiphase composites with interface effects: Part II—Application and scaling laws. *Mechanics of Materials* 39(1), 94–103 (2007).

7 H. L. Duan, **X. Yi**, Z. P. Huang, and J. X. Wang, Eshelby equivalent inclusion method for composites with interface effects. *Key Engineering Materials* 312, 161–166 (2006).

6 H. L. Duan, Y. Jiao, **X. Yi**, Z. P. Huang, and J. X. Wang, Solutions of inhomogeneity problems with graded shells and application to core-shell nanoparticles and composites. *Journal of the Mechanics and Physics of Solids* 54(7), 1401–1425 (2006).

5 H. L. Duan, B. L. Karihaloo, **X. Yi**, and J. X. Wang, Conductivities of heterogeneous media with graded anisotropic constituents. *Journal of Applied Physics* 100(3), 034906 (2006).

4 H. L. Duan, B. L. Karihaloo, J. X. Wang, and **X. Yi**, Compatible composition profiles and critical sizes of alloyed quantum dots. *Physical Review B* 74(19), 195328 (2006).

3 J. X. Wang, H. L. Duan, and **X. Yi**, Bounds on effective conductivities of heterogeneous media with graded constituents. *Physical Review B* 73(10), 104208 (2006).

2 H. L. Duan, B. L. Karihaloo, J. X. Wang, and **X. Yi**, Effective conductivities of heterogeneous media containing multiple inclusions with various spatial distributions. *Physical Review B* 73(17), 174203 (2006).

1 H. L. Duan, B. L. Karihaloo, J. X. Wang, and **X. Yi**, Strain distributions in nano-onions with uniform and non-uniform compositions. *Nanotechnology* 17(14), 3380–3387 (2006).