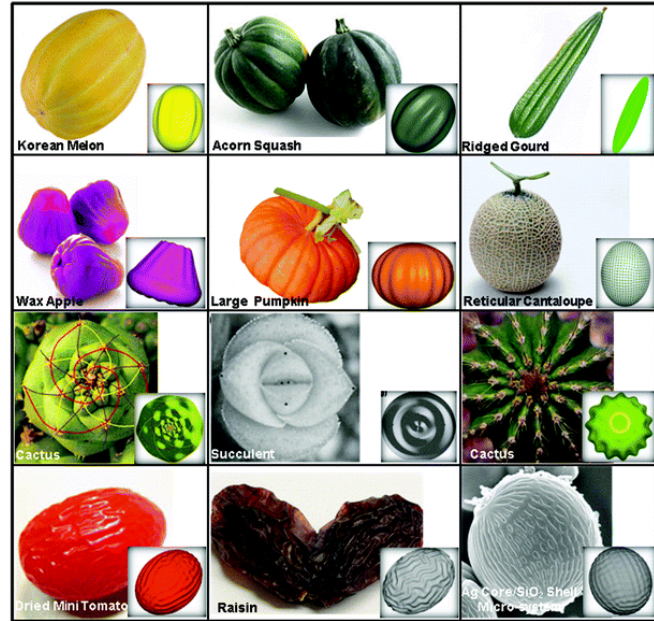




Professor Xi Chen



From: Xi Chen and Jie Yin, “Buckling patterns of thin films on curved compliant substrates with applications to morphogenesis and three-dimensional micro-fabrication” (Review article, part of the collection: “The Physics of Buckling”), *Soft Matter*, 2010, Vol. 6, pp. 5667-5680,

See:

<http://www.cs.columbia.edu/~xichen/Homepage/Welcome.html>

<http://www.columbia.edu/~xc2107/>

Dr. Xi Chen received his B.S. in Engineering Mechanics from Xi'an Jiaotong University in 1994, M.S. in Solid Mechanics from Tsinghua University in 1997, and Ph.D. in Solid Mechanics from Harvard University in 2001 (under the supervision of Prof. John W. Hutchinson). He was a postdoctoral fellow at Harvard University from 2001-2003. He joined Columbia University in Fall 2003 as an Assistant Professor and was promoted to an Associate Professor in winter 2006. He uses multiscale theoretical, experimental, and numerical approaches to investigate various research frontiers in materials addressing challenges in energy and environment, nanomechanics, and mechanobiology. Specifically in the field of buckling, he is a pioneer to study the spontaneous buckling patterns of thin films on curved substrates, and correlated various buckling morphologies to intriguing patterns observed in various natural and biological systems; he further proposed several three-dimensional mechanical self-assembly techniques based on the spontaneous buckles on curved substrates. He has published over 180 journal papers with a h-index over 28. He received the NSF CAREER Award in 2007, the Presidential Early Career Award for Scientists and Engineers (PECASE) in 2008 (nominated by NSF), Outstanding Oversea Young Investigator Award from Chinese Natural Science Foundation in 2009, ASME Sia Nemat-Nasser Early Career Award in 2010, SES Young Investigator Medal in 2011, and ASME Thomas J. R. Hughes Young Investigator Award in 2012. He is also a Changjiang Chair Professor of China, and a World Class University Professor of Korea.

Xi Chen, Associate Professor

Department of Earth and Environmental Engineering

Columbia University, New York, NY 10027

212-854-3787

xichen@columbia.edu

<http://www.columbia.edu/~xc2107>

EDUCATION:

Xi'an Jiaotong University	Engineering Mechanics	B.E. (1994)
Tsinghua University	Engineering Mechanics	M.E. (1997)
Harvard University	Engineering Sciences	S.M. (1998)
Harvard University	Solid Mechanics	Ph.D. (2001)
Harvard University	Solid Mechanics	Postdoc (2001-2003)

PROFESSIONAL EXPERIENCE:

Associate Professor, Dept. of Earth and Environmental Eng., Columbia University, 2009-present

Associate Professor, Dept. of Civil Eng. and Eng. Mech., Columbia University, 2006-2009

Assistant Professor, Dept. of Civil Eng. and Eng. Mech., Columbia University, 2003-2006

Postdoctoral Fellow, Harvard University, 2001-2003

AWARDS AND HONORS:

- Thomas J.R. Young Investigator Award, Applied Mechanics Division, ASME, 2012. “For special achievement for young investigators in applied mechanics under the age of 40”.
- Member, Faculty of 1000, Macromolecular Chemistry Section, 2012. “One of the experts who is highly respected in their chosen fields and nominated to the Faculty of 1000 (F1000) by their peers”.
- JSPS Fellowship, Japan Society for the Promotion of Science, Japan, 2012.
- Young Investigator Medal, Society of Engineering Science (SES), 2011. “For young researcher (within 10 years of Ph.D.) whose work has already had an impact in his/her field within Engineering Science”.
- Best Outstanding Achievement Award, Hanyang University, Korea, 2011.
- Sia-Nemat Nasser (SNN) Early Career Award, Materials Division, ASME, 2010. “For research excellence in the areas of experimental, computational, and theoretical mechanics and materials by young investigators who are within 10 years after their Ph.D.”
- Chang Jiang Scholar Award, Chinese Ministry of Education, China, 2010.
- Outstanding Oversea Young Investigator Award, National Science Foundation of China, 2009.
- World Class University Scholar Award, National Research Foundation of Korea, 2009.
- Presidential Early Career Award for Scientists and Engineers (PECASE), nominated by NSF, received from President George W. Bush in Whitehouse in December 2008 (for fiscal year 2007). Quote “In recognition for his outstanding research involving mismatch damages in thin-films and nano-scale self-assembly; and for his elaborate education and outreach activities, including summer programs for under-represented high school students.”
- NSF CAREER Award, 2007 (for fiscal year 2006).

TEN REPRESENTATIVE PUBLICATIONS IN BUCKLING (*as corresponding author, ^student or postdoc; selected from over 180 peer-reviewed journal papers, h-index 28):

1. Hang Xiao[^] and Xi Chen*, Modeling and simulation of curled dry leaves. *Soft Matter*, 2011, 7: 10794 - 10802. This paper is No.1 most read papers on *Soft Matter* in October 2011
2. Xi Chen* and Jie Yin[^], Buckling Patterns of Thin Films on Curved Compliant Substrates with Applications to Morphogenesis and Three-Dimensional Micro-Fabrication. *Soft Matter*, invited review paper, 2010, 6: 5667 - 5680. This paper is one of the top 10 most accessed/read papers on *Soft Matter* in 2010.
3. Jie Yin[^], Greg Gerling, and Xi Chen*, Mechanical Modeling of Wrinkled Fingertip Immersed in Water. *Acta Biomaterialia*, 2010, 6: 1487-1496.
4. Jie Yin[^] and Xi Chen*, Elastic buckling of gradient thin films on compliant substrates. *Philosophical Magazine Letters*, 2010, 90: 423-433.
5. Jie Yin[^], Eyal Bar-Kochba, and Xi Chen*, Mechanical Self-Assembly Fabrication of Gears. *Soft Matter*, 2009, 5: 3469 - 3474. The work was reported by Royal Society of Chemistry (07/20/2009) as a featured highlight on [Chemical technology news](#). Quote in the news “It's a new way of thinking about how we use materials to build gears”. This work was also highlighted by the popular website of [NewScientist](#), with quote “this is the first demonstration of building gears with this type of self-assembly”, by [Popsci](#), by [Today's Machining World](#), by [Technogijos](#). The work was also highlighted on the website of *Soft Matter*, and it was “one of the most highly read articles published in *Soft Matter* during 2009”.
6. Jie Yin[^], Xi Chen* and Izhak Sheinman, Anisotropic Buckling Patterns in Spheroidal Film/Substrate Systems and their Implications in Some Natural and Biological Systems, *Journal of the Mechanics and Physics of Solids*, 2009, 57: 1470-1484.
7. Jie Yin[^], Chaorong Li, Zexian Cao, Izhak Sheinman and Xi Chen*, Stress-Driven Buckling Patterns in Spheroidal Core/Shell Structures, *Proceedings of National Academy of Sciences USA*, 2008, 105: 19132-19135. The work is reported by Nature as a [featured story](#). The work was also reported as a headline news of Chinese Academy of Sciences on 12/04/2008, as well as a headline news of the website of Chinese Science News. The work was also highlighted by National Science Foundation, and LiveScience, A Research in Action.
8. Guoxin Cao[^], Xi Chen*, Chaorong Li, Ailing Ji and Zexian Cao, Self-Assembled Triangular and Labyrinth Buckling Patterns of Thin Films on Spherical Substrates. *Physical Review Letters*, 2008, 100: 036102. This paper is also included in the *Virtual Journal of Nanoscale Science & Technology*, 2008, Vol. 15. This work is reported as the headline news on the webpage of Chinese Academy of Sciences in January 2008.
9. Guoxin Cao[^] and Xi Chen*, Buckling of single-walled carbon nanotubes upon bending: Molecular dynamics simulations and finite element method, *Physical Review B*, 2006, 73: 155435. This paper is also included in the *Virtual Journal of Nanoscale Science & Technology*, 2006, Vol. 13.
10. Xi Chen* and John W. Hutchinson, Herringbone buckling patterns of compressed thin films on compliant substrates, *Journal of Applied Mechanics* 2004, 71: 597-603.

SELECTED SYNERGISTIC ACTIVITIES:

- Developed new hierarchical atomistic/continuum models and multi-scale interdisciplinary approaches for nanoporous materials for energy conversion, nanofluidics, mechanical behaviors of membrane proteins, mechanics vs. morphogenesis, micro- and nanoindentation,

nanomechanics, and smart materials. Developed novel experimental and fabrication techniques including nanoindentation of small material structures and mechanical self-assembly.

- Founding Director, Columbia Nanomechanics Research Center (CNRC). In collaboration with Jeffrey Kysar (Mech. Eng.), organized a team consisting 14 Columbia faculty members from 10 departments to conduct research and education in the broad area of nanomechanics.
- Executive Committee, ASME NanoEngineering Council, 2010-present.
- Co-Chair, ASME NEES Steering Committee, 2011-present. (to become Chair in 2013)
- Member, ASME NEMB Steering Committee, 2010-present.
- Co-Chair, Technical Committee, *Nanomaterials for Energy*, Materials Division, ASME, 2010-present. (to become Chair in 2012)
- Chair, Technical Committee, *Multifunctional Materials*, Materials Division, ASME, 2008-2010. Member 2005-present.
- Editor, *iMechanica Journal Club* (the largest professional website for mechanics and mechanicians), 2010-2012.
- Associate Editor, *Mechanics Research Communications*, 2007-present.
- Associate Editor, *Journal of Nanomechanics and Micromechanics*, 2010-present.
- Associate Editor, *Journal of Surfaces and Interfaces in Materials*, 2011-present.
- Reviewer for over 100 journals including Science, Nature Nanotech., PNAS, Phys. Rev. Lett., Nano Lett., JACS, ACS Nano, J. Chem. Phys., Biophysics J., Soft Matter, J. Mech. Phys. Solids, J. Mater. Res., Mater. Sci. Eng., Acta Mater., Appl. Phys. Lett., etc.
- Published over 180 peer-reviewed journal papers (with a h-index of 28 as of 01/01/2012), and gave presentations for more than 120 times in international conferences and leading US institutes. Among his publications, there are a number of invited research and review papers, as well as cover articles.