



Professor Lihua Jin

From: Jiangshui Huang, Jiawei Yang, Lihua Jin, David R. Clarke and Zhigang Suo, "Pattern formation in plastic liquid films on elastomers by ratcheting", *Soft Matter*, Vol. 12, No. 16, pp 3820-3827, 2016

See:

<https://samueli.ucla.edu/people/lihua-jin/>

<https://scholar.google.com/citations?user=oW77hxEAAAJ&hl=en>

https://www.researchgate.net/profile/Lihua_Jin9
<https://samueli.ucla.edu/lihua-jin-soft-materials-2017/>

Mechanics of Soft Materials Lab, Mechanical and Aerospace Engineering
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Biography:

Jin earned her bachelor's and master's degrees from Fudan University, one of China's most prestigious institutions. With a natural affinity for math that began in childhood, Jin studied mechanical engineering as a graduate student, although, her passion for the field was sparked during her undergraduate sophomore year when she researched shape memory alloys and liquid crystal elastomers. These smart and solid materials can retain their original shape after being bent by responding to stimuli like water, heat or light.

By the time Jin was a senior, she knew that she wanted to pursue a doctorate in the United States. So, after completing her master's degree, she attended Harvard University where she earned her Ph.D. in mechanical engineering and continued her research as a postdoc at Stanford University. Jin has conducted extensive research into hydrogels, which are highly aquatic materials similar to Jell-O. She said, theoretically, hydrogels could be used in medicine: a doctor, for instance, could implant a hydrogel into a patient that could slowly release doses of medication. She won the American Society of Mechanical Engineers — Applied Mechanics Division's 2016 Haythornthwaite Young Investigator Award for her work involving photo-responsive hydrogels, which respond to light by swelling or deswelling.

Research Interests:

Mechanics of soft materials: instability, fracture, and stimuli-responsive materials. Continuum mechanics and applications in technologies: additive manufacturing, soft robotics, and stretchable electronics. Nanomechanics and multiscale modeling.

Education:

PhD Harvard University 2014

Selected Publications:

Jin, L., Cai, S. & Suo, Z. Creases in soft tissues generated by growth. *EPL*. 95, 64002 (2011).
B. Jiang, F. Zhu, X. Jin, L. Cao, and K.H. Yang, Computational modeling of the crushing behavior of SKYDEX® material using homogenized material laws, *Compos. Struct.* 106 (2013), pp. 306–316.
Jin, L., 2014, “Mechanical Instabilities of Soft Materials: Creases, Wrinkles, Folds, and Ridges,” Doctoral dissertation, Harvard University, Cambridge, MA
Dayong Chen, Lihua Jin, Zhigang Suo and Ryan C. Hayward, “Controlled formation and disappearance of creases”, *Materials Horizons*, Vol. 1, No. 2, pp 207-213, 2014
Jin, L., Chen, D., Hayward, R. C., and Suo, Z., 2014, “Creases on the Interface Between Two Soft Materials,” *Soft Matter*, 10(2), pp. 303–311, 2014
Anesia Auguste, Lihua Jin, Zhigang Suo and Ryan C. Hayward, “The role of substrate pre-stretch in post-wrinkling bifurcations”, *Soft Matter*, Vol. 10, No. 34, 6520-6529, 2014
Takei, A., Jin, L., Hutchinson, J. W. & Fujita, H. [2014] Ridge localizations and networks in thin films compressed by the incremental release of a large equi-biaxial pre-stretch in the substrate, *Adv. Mater.*, 26, 4061–4067.
Lihua Jin, Anesia Auguste, Ryan C. Hayward and Zhigang Suo, “Bifurcation diagrams for the formation of wrinkles or creases in soft bilayers”, *Journal of Applied Mechanics*, Vol. 82, 061008, June 2015
Lihua Jin, Atsushi Takei and John W. Hutchinson, “Mechanics of wrinkle/ridge transitions in thin film/substrate systems”, *Journal of the Mechanics and Physics of Solids*, Vol. 81, pp 22-40, August 2015
Jiangshui Huang, Jiawei Yang, Lihua Jin, David R. Clarke and Zhigang Suo, “Pattern formation in plastic liquid films on elastomers by ratcheting”, *Soft Matter*, Vol. 12, No. 16, pp 3820-3827, 2016
Anesia August, Lihua Jin, Zhigang Suo and Ryan C. Hayward, “Post-wrinkle bifurcations in elastic bilayers with modest contrast in modulus”, *Extreme Mechanics Letters*, Vol. 11, pp 30-36, February 2017

Matt P. Milner, Lihua Jin and Shelby B. Hutchens, "Creasing in evaporation-driven cavity collapse, *Soft Matter*, Vol. 13, 6894, 2017

Anesia Auguste, Jiawei Yang, Lihua Jin, Dayong Chen, Zhigang Suo and Ryan C. Hayward, "Formation of high aspect ratio wrinkles and ridges on elastic bylayers with small thickness contrast", *Soft Matter*, Vol. 14, No. 42, pp 8545-8551, 2018

Yuzhen Chen and Lihua Jin, "Snapping-back buckling of wide hyperelastic columns", *Extreme Mechanics Letters*, Vol. 34, Article 100600, January 2020