

SHENGQIANG CAI

EMPLOYMENT

Assistant Professor MAE, University of California, San Diego (11/2012-present)

EDUCATION

Harvard University (9/2007-7/2011)
PhD, Mechanical Engineering
Advisor: Zhigang Suo

University of Science and Technology of China (9/2004-7/2007)
Master of Engineering, Solid Mechanics
Advisor: Yuanming Xia

University of Science and Technology of China (9/2000-7/2004)
Bachelor of Science, Theoretical and Applied Mechanics

RESEARCH EXPERIENCES

Massachusetts Institute of Technology (9/2011-11/2012)
Post Doctorate Fellows, Department of Mechanical Engineering

Harvard University (9/2007-7/2011)
Research Assistant, School of Engineering and Applied Sciences

University of Science and Technology of China (9/2004-7/2007)
Research Assistant, Dept. of Modern Mechanics, USTC

RESEARCH INTERESTS

Mechanics of soft materials and structures
Energy harvesting, storage and conversion
Micro-fabrication techniques of polymeric structures and soft/stiff hybrid structures
Deformable acoustic and electromagnetic metamaterials

AWARDS AND HONORS

2012	Chinese Government Award for Outstanding Self-Financed Students Abroad
2012	Shapiro Fellowship, MIT
2008	Robert L. Wallace Prize Fellowship, Harvard
2006	Guanghua Scholarships for Graduates, USTC
2005	“Three Good” Student in Anhui Province, Anhui Province
2005	Outstanding graduate student of University of Science and Technology of China.
2004	Base Camp of Mechanics Scholarship, Chinese Academy of Sciences
2004	Excellent Undergraduate Research Program Thesis Reward, USTC
2003	Samsung Scholarship, USTC
2002	Outstanding Student Scholarship (Grade 1), USTC
2001	Outstanding Student Scholarship (Grade 2), USTC

PEER REVIEWED JOURNAL PUBLICATIONS

1. Li, K. , Ge, D.L. and **Cai, S.Q.**, Gravity-induced wrinkling of thin films on soft substrates. EPL, 100, 54004 (2012)
2. Lou, Y.C., Robisson, A., **Cai, S.Q.**, Suo, Z.G. Swellable Elastomers under Constraint. Journal of Applied Physics , 112,034906 (2012)
3. Chen, D., **Cai, S.Q.**, Suo, Z.G Hayward, R.C.,. Surface energy as a barrier to creasing of elastomer films: An elastic analogy to classical nucleation. Physical Review Letters 109,038001(2012)
4. Zalachas, N., **Cai, S.Q.**, Suo, Z.G., Lapusta, Y., Crease in a ring of a pH-sensitive hydrogel swelling under constraint. Submitted for publication.
5. Weiss, F., **Cai, S.Q.**, Hu, Y.H., Min Kyoo Kang, Rui Huang, Suo, Z.G., Creases and wrinkles on the surface of a swollen gel. Submitted for publication
6. **Cai, S.Q.**, Suo, Z.G., Equations of state for ideal elastomeric gels. EPL 97, 34009(2012)
7. Foo, C.C., **Cai, S.Q.**, Koh, S.J.A., Bauer, S, Suo, Z.G., Model of dissipative dielectric elastomers. Journal of Applied Physics 111,034102(2012)
8. Wang, H.M., **Cai, S.Q.**, Carpi, F., Suo, Z.G., Computational Model of Hydrostatically Coupled Dielectric Elastomer Actuators. Journal of Applied Mechanics 79,031008 (2012).
9. **Cai, S.Q.**, Chen, D., Suo, Z.G., Hayward, R.C, Creasing instability of elastomer films. Soft Matter, DOI 10.1039/c2sm06844c (2011).

10. Jin L.H., **Cai, S.Q.**, Suo, Z.G., Creases in soft tissues generated by growth. EPL 95, 64002 (2011).
11. **Cai, S.Q.**, Suo, Z.G., Mechanics and chemical thermodynamics of phase transition in temperature-sensitive hydrogels. Journal of the Mechanics and Physics of Solids 59, 2259-2278 (2011)
12. **Cai, S.Q.**, Breid, D., Crosby, A.J., Suo, Z.G., Hutchinson, J.W., Periodic patterns and energy states of buckled films on compliant substrates. Journal of the Mechanics and Physics of Solids 59, 1094-1114(2011)
13. Zhao, K.J, Pharr, M., **Cai, S.Q.**, Vlassak, J.J., and Suo, Z.G., Large plastic deformation in high-capacity lithium-ion batteries caused by charge and discharge. Journal of the American Ceramic Society 94, S226-S235 (2011).
14. Zhu, J., Li, T.F., **Cai, S.Q.**, Suo, Z.G., Snap-through expansion of a gas bubble in an elastomer. Journal of Adhesion 87, 466-481 (2011).
15. **Cai, S.Q.**, Hu, Y.H., Zhao X.H., Suo, Z.G., Poroelasticity of a covalently crosslinked alginate hydrogel under compression. Journal of Applied Physics 108, 113514 (2010)
16. Yoon, J., **Cai, S.Q.**, Suo, Z.G., Hayward, R.C., Poroelastic swelling kinetics of thin hydrogel layers: Comparison of theory and experiment. Soft Matter. 6, 6004-6012 (2010).
17. **Cai, S.Q.**, Bertoldi, K., Wang, H.M., Suo, Z.G., Osmotic collapse of a void in an elastomer: breathing, buckling and creasing. Soft Matter, 5770-5777, (2010)
18. Zhu, J., **Cai, S.Q.**, Suo, Z.G., Resonant behavior of a membrane of a dielectric elastomer. International Journal of Solids and Structures 47, 3254, (2010).
19. Marcombe, R., **Cai, S.Q.**, Hong, W., Zhao X.H., Lapusta, Y., Suo, Z.G., A theory of constrained swelling of a pH-sensitive hydrogel. Soft Matter 6, 784, (2010).
20. **Cai, S.Q.**, Lou, Y.C., Ganguly, P., Robisson, A., Suo, Z.G., Force generated by a swelling elastomer subject to constraint. Journal of Applied Physics 107, 103535, (2010).
21. Zhu, J., **Cai, S.Q.**, Suo, Z.G., Nonlinear oscillation of a dielectric elastomer balloon. Polymer International 59, 378, (2010).
22. **Cai, S.Q.**, Wang, Y., Xia, Y.M., Evolution equations of deformation twins in metals-evolution of deformation twins in pure titanium, Physica B: Condensed Matter 403, 1660,(2008)