

# Qin Xu

---

Postdoctoral Scholar  
Lab of Soft and Living Materials,  
Department of Materials,  
ETH Zurich,  
Vladimir-Prelog-Weg 1-5/10,  
8093 Zurich, Switzerland

Phone: (+41) 44 633 9248  
Email: qin.xu@mat.ethz.ch  
Homepage: <http://xu-qin.com>

## Research Areas:

Mechanics of soft Interfaces, solid capillarity, rheology of complex fluids, Jamming, impact of droplets.

## Academic Appointments

---

**Postdoctoral Scholar, ETH Zurich, Zurich, Switzerland** 2016-present

*Department of Materials*

Advisor: Eric R. Dufresne

Research Interests: Surface tension of soft gels.

**Postdoctoral Associate, Yale University, New Haven, CT, USA** 2015-2016

*Department of Mechanical Engineering and Materials Science*

Advisor: Eric R. Dufresne

Research Interests: Elasto-capillary effect of soft gels.

## Education

---

**Ph.D. in Physics, University of Chicago, Chicago, IL, USA** 2010-2015

Advisor: Heinrich M. Jaeger

Thesis: Shear thickening in dense granular suspensions.

**M.S. in Physics, New York University, New York, NY, USA** 2008-2010

**B.S. in Physics, Fudan University, Shanghai, China** 2004-2008

## Honors and Awards

---

*Arts&Science Graduate Collaboration Grants* 2014

Featured on *Uchicago news*

Arts & Science Initiative, University of Chicago

<i>Prize of Important Optical Achievements in China</i> For the research of the paper, "Gradient-index meta-surfaces as a bridge linking propagating waves and surface waves", published in Nature Materials (Feb. 2012) Optics Frontier, China	2013
<i>Sachs Fellowship</i> Department of Physics, University of Chicago	2011
<i>McCormick Fellowship</i> It is awarded by the Admissions Committee to the highest rated applicants to the Ph.D. program of the Department of Physics Department of Physics, University of Chicago	2010
<i>McCracken Fellowship</i> Department of Physics, New York University	2009
<i>People's Scholarship</i> Department of Physics, Fudan University	2005 - 2007

## Publications

---

1. Robert W. Style and **Qin Xu**, *The role of surface elasticity in soft solids*  
**arXiv:1801.07744**. (2018) Submitted
2. Robert W. Style, Tianqi Sai, Nicolo Fanelli, Katrina Smith-Mannschott, **Qin Xu**,  
Larry A. Willen and Eric R. Dufresne, *Liquid-Liquid phase separation in an elastic ma-  
trix creates uniform droplets of tunable size*  
**Phys. Rev. X**, 8, 011028 (2018).
3. **Qin Xu**, Robert W. Style and Eric. R.Dufresne, *Surface Elastic Constants of a Soft Solid.*  
**Soft Matter** 14, 916-920 (2018).
4. Katharine E. Jensen, Robert Style, **Qin Xu** and Eric R. Dufresne, *Strain-dependent  
solid surface stress and the stiffness of soft contacts*  
**Phys. Rev. X**, 7, 041031 (2017).
5. **Qin Xu**, Katharine E. Jensen, Rostislav Boltyanskiy, Raphael Sarfati, Robert Style,  
and Eric R. Dufresne, *Direct measurements of surface stress of stretched soft solids*  
**Nat. Comm.** 8, 55(2017).  
**\*\* Highlighted in ETH Materials News**

6. **Qin Xu**, Sayantan Majumdar, Eric Brown and Heinrich M. Jaeger, *Shear thickening in highly viscous granular suspensions*  
*Europhys. Lett.* 107, 68004 (2014)
7. Luuk A. Lubbers, **Qin Xu**, Sam Wilken, Wendy W. Zhang and Heinrich M. Jaeger, *Dense Suspension Splat: Monolayer Spreading and Hole Formation after Impact*  
*Phys. Rev. Lett.* 113, 044502 (2014)  
**\*\*Highlighted in APS News.**
8. Qiong He, Shiyi Xiao, Xin Li, Che Qu, **Qin Xu**, Shulin Sun and Lei Zhou, *Controlling electromagnetic waves with meta-surfaces*  
*SPIE Newsroom: Optical Design & Engineering* 10.1117/2.1201402.005337 (2014)
9. **Qin Xu**, Ivo R. Peters, Sam Wilken, Eric Brown, Heinrich M. Jaeger, *Fast Imaging Technique to Study Drop Impact Dynamics of Non-Newtonian Fluids*  
*Journal of Visualized Experiments*, 85, e51249 (2014)
10. Ivo R. Peters, **Qin Xu** and Heinrich M. Jaeger, *Splashing onset in dense suspension droplets*  
*Phys. Rev. Lett.*,111, 028301 (2013)
11. **Qin Xu**, Eric Brown and Heinrich M. Jaeger, *Impact Dynamics of Oxidized Liquid Metal Drops*  
*Phys. Rev. E*, 87, 043012 (2013)
12. Lang Feng, Joy Romulus, Minfeng Li, Ruojie Sha, John Royer, Kun-Ta Wu, **Qin Xu**, Nadrian Seeman, Marcus Weck and Paul Chaikin, *Cinnamate-based DNA photolithography*  
*Nature Materials*, 12, 747–753 (2013)
13. Shulin Sun, Qiong He, Shiyi Xiao, **Qin Xu**, Xin Li, Che Qu, and Lei Zhou, *Research progress on gradient meta-surfaces*  
*Laser & Optoelectronic Progress*, 50, 080009 (2013)
14. **Qin Xu**, Nikolai Oudalov, Qiti Guo, Heinrich M. Jaeger and Eric Brown, *Effect of oxidation on the mechanical properties of liquid gallium and eutectic gallium-indium*  
*Physics of Fluids*, 24, 063101 (2012)
15. Shulin Sun, Qiong He, Shiyi Xiao, **Qin Xu**, Xin Li and Lei Zhou, *Gradient-index meta-surfaces as a bridge linking propagating waves and surface waves*  
*Nature Materials*, 11, 426–431 (2012)  
**\*\*Awarded for the Prize of Important Optical Achievements in China (2013)**
16. **Qin Xu**, Lang Feng, Ruojie Sha, Nadrian C. Seeman and Paul M. Chaikin, *Subdiffusion of a Sticky Particle on a Surface*  
*Phys. Rev. Lett.*,106, 228102 (2011)

---

## In the News

---

Direct Measurement of Strain-dependent Solid Surface Stress  
**ETH Materials News (Sept.15, 2017)**

Breaking Ice: Music.Video.Dance. & the Environment  
**Indigogo (Sept 18, 2014)**

Synopsis: Dense Suspensions Spread Best  
**APS NEWS (July 23, 2014)**

Arts|Science Initiative collaborations inspire new directions, approaches to research.  
**UChicago News (June 16th, 2014)**

UChicago Arts|Science Initiative awards five graduate collaboration grants.  
**UChicago News (March 4th, 2014)**

---

## Conferences and Presentations

---

### *Invited Talks*

- |   |                |
|---|----------------|
| Physics Department Colloquium, Brandeis University, Waltham, USA<br><i>Surface tension and surface elasticity of soft solids</i>  | January 2018   |
| Soft matter interfaces: from biology to engineering applications,<br>Monte Verita, Switzerland<br><i>Direct Measurements of surface tension of strained soft solids</i> | November 2017  |
| Guanghua Forum, Fudan University, Shanghai, China<br><i>Why soft is great?</i>  | Decemeber 2016 |
| Shenzhen Forum, Sun Yat-sen University, Guangzhou, China<br><i>Direct measurements of surface stress of stretched soft solids</i>                                       | Decemeber 2016 |
| Physics Seminar, University of Fribourg, Fribourg, Switzerland<br><i>Wetting on Soft Solids: Role of Solid Surface Stress</i>   | November 2016  |
| Physics Seminar, University of Chicago, Chicago, USA<br><i>Direct measurements of surface stress of stretched soft solids</i>   | June 2016      |
| Squishy Physics, Harvard University, Boston, MA, USA<br><i>New understandings of complex dynamics of granular suspensions</i>   | March 2015     |
| Journal Club Seminar, Yale University, New Haven, CT, USA<br><i>Friction and viscous interactions in dense granular materials</i>                                       | January 2015   |
| Humanities Day: Chicago, IL, USA<br><i>Breaking Ice: A Panel on the Arts Science Initiative</i>   | October 2014   |
| Bag lunch Seminar: JFI, Chicago, IL, USA<br><i>Shear thickening in highly viscous suspensions.</i>  | January 2014   |

## Contributed Talks and Posters

(Incoming) 10th European Solid Mechanics Conference, Bologna, Italy	July 2018
<i>Direct Measurements of surface elasticity of strained soft solids</i>	
APS March Meeting, Los Angeles, USA	March 2018
<i>Direct Measurements of surface elasticity of strained soft solids</i>	
Liquid@Interfaces, Grenoble, France	October 2017
<i>Direct Measurements of Surface Tension of Strained Soft Solids</i>	
Mechanical Instabilities in Fluids and Solids, Jerusalem, Israel	October 2017
<i>Direct Measurements of Surface Tension of Stretched Solids (Poster)</i>	
Gordon Research Conference: Nano-Mechanical Interfaces, Hong Kong	August 2017
<i>Direct Measurements of Surface Tension of Stretched Solids (Poster)</i>	
CCMX-MaP Technology Aperitif, Zurich, Switzerland	October 2016
<i>Wetting on Soft Solids: Role of Solid Surface Stress (Poster)</i>	
4th International Soft Matter Conference, Grenoble, France	September 2016
<i>Direct measurements of surface stress of stretched soft solids</i>	
MicroMast Conference, Brussels, Belgium	September 2016
<i>Direct measurements of surface stress of stretched soft solids</i>	
2016 ACS Colloids Meeting, Harvard University, Boston, MA, USA	May 2016
<i>Direct measurements of surface stress of stretched soft solids</i>	
NECF Workshop, Yale University, New Haven, CT, USA	March 2016
<i>Direct measurements of surface stress of stretched soft solids</i>	
APS March Meeting: Baltimore, MA, USA	March 2016
<i>Direct measurements of surface stress of stretched soft solids</i>	
NECF Workshop, Harvard University, Cambridge, MA, USA	Dec 2015
<i>Wetting of droplets on soft gels</i>	
New.Mech 2015, Boston University, Boston, MA, USA	October 2015
<i>Wetting of droplets on soft gels</i>	
APS March Meeting: San Antonio, TX, USA	March 2015
<i>Stress fluctuations in dense granular suspensions</i>	
Computation Institute, University of Chicago, Chicago, IL, USA	February 2015
<i>Shear thickening in dense granular suspensions</i>	
APS DFD Meeting: San Francisco, CA, USA	November 2014
<i>Preventing shear thickening in granular suspensions by enhancing hydrodynamic interactions</i>	
Breaking Ice (Exhibition): Links Hall at Constellation, Chicago, IL, USA	October 2014
Art and Science Collaboration Symposium: Chicago, IL, USA	May 2014
<i>Breaking ice</i>	
APS March Meeting: Denver, CO, USA	March 2014
<i>Dilation dynamics of granular suspensions during the shear thickening transition</i>	
APS March Meeting: Boston, MA, USA	February 2012
<i>Drops of Yield-Stress Liquid Impacting a Solid Surface</i>	

## Professional Service

---

**Session chair** of APS March Meeting: Soft Interface Mechanics  
Los Angeles, United States (2018).

**Session chair** of Soft Matter Interfaces: from Biology to Engineering Applications  
Monte Verita, Ascona, Switzerland (2017).

**Organizer** of ETH Material Science Journal Club  
ETH Zurich, Zurich, Switzerland (2016- present).

**Organization Assistant** of 66th New England Complex Fluids Workshop  
Yale University, New Haven, CT, United States (2016).

**Referee** for ACS Macro Letters, Tribology Letters, Transactions on Biomedical Engineering, and CMSE 2014.

**Vice president** of Fudan Alumni Association in Switzerland (2018).

**Outreach:** Physics with Bang (Dec. 2013 & 2014, Chicago, USA); Art and Science Collaboration Project (2014-2015, Chicago, USA); ETH Materials Day (Sept. 2017, Zurich, Switzerland) .

**Member** of American Physical Society (since 2012), American Chemical Society (since 2016)

## Teaching Experience

---

**General Physics II (PHYS 132 (B))**, Spring 2011, University of Chicago

**General Physics II (PHYS 122)**, Winter 2011, University of Chicago

**Modern Physics (PHYS 154)**, Fall 2010, University of Chicago

**Quantum Mechanics I (Graduate Level)**, Fall 2009, New York University

**Light and Color**, Spring 2009, New York University

**General Physics I**, Fall 2008, New York University