

QIAN CHEN

Materials Science and Engineering
University of Illinois at Urbana-Champaign (UIUC)
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EDUCATION

- 2012 Ph.D. Materials Science and Engineering, University of Illinois at Urbana-Champaign, IL
Advisor: Prof. Steve Granick
- 2007 B.S. Chemistry, Peking University, Beijing, China

EXPERIENCE

- 2015- Assistant Professor, Department of Materials Science and Engineering, UIUC
- 2015- Affiliate, Department of Chemistry, Frederick Seitz Materials Research Laboratory, UIUC
- 2012-2015 Miller Fellow, Miller Institute for Basic Research in Science
University of California, Berkeley
Faculty host: Prof. A. Paul Alivisatos

HONORS

- 2016 **2017 Air Force's Young Investigator Research (YIP) Program Award** (list [here](#))
Air Force Office of Scientific Research, Arlington, VA
- 2016 **The SN 10: Scientists to Watch** (feature article [here](#))
Science News Magazine, Washington, DC
- 2016 **Distinguished Visiting Fellow**
the Royal Academy of Engineering (RAEng), UK
- 2016 **Forbes 30 under 30 Science List**
- 2015 **Victor K. LaMer award (one per year in US)**
Division of Colloid and Surface Science, American Chemical Society
- 2012-2015 **Miller Postdoctoral Fellowship** at University of California, Berkeley
- 2009-2010 **Warren Yee Memorial Fellowship**, UIUC

PUBLICATIONS

* Designates corresponding author.

1. Juyeong Kim, Zihao Ou, Matthew R. Jones, Xiaohui Song, and [Qian Chen](#)*, "Imaging the polymerization of multivalent nanoparticles in solution", accepted, *Nature Communications* (2017).
2. Binbin Luo, John W. Smith, Zixuan Wu, Juyeong Kim, Zihao Ou, and [Qian Chen](#)*, "Polymerization-like co-assembly of silver nanoplates and patchy spheres", *ACS Nano* (2017): DOI:10.1021/acsnano.7b02059
3. Juyeong Kim, Xiaohui Song, Feiji, Binbin Luo, Nicole F. Ice, Qipeng Liu, Qiao Zhang and [Qian Chen](#)*, "Polymorphic assembly from beveled gold triangular nanoprisms", *Nano Letters*, 17, 3270–3275 (2017).
- Click [here](#) for the report on "Playing with nanoparticle legos: polymorphism in nanoantenna arrays".
4. Kristin M. Hutchins, Chih-Yi Lee, Binbin Luo, [Qian Chen](#) and Jeffrey S. Moore, "Effects of cross-linking density on interfacial polymerization and scaffold formation in functionalized polymer beads," *Industrial & Engineering Chemical Research*, 56, 4883–4886 (2017).

5. Binbin Luo, John W. Smith, Zihao Ou and Qian Chen*, “Quantifying the self-assembly behavior of anisotropic nanoparticles using liquid-phase transmission electron microscopy,” *Accounts of Chemical Research*, 50, 1125–1133 (2017).
6. Juyeong Kim, Matthew R. Jones, Zihao Ou and Qian Chen*, “*In situ* electron microscopy imaging and quantitative structural modulation of nanoparticle superlattices,” *ACS Nano*, 10, 9801–9808 (2016).
 - **Highlighted and interviewed** as the only article selected in November by *ACS Nano* podcast (Nov. 2016, Episode 112). Click [here](#) for the interview.
 - **News Report** by Alexander Chilton from BP International Center for Advanced Materials about presentations based on this work, “Chen provides a glimpse of the 'Forgotten Nanoscale' during RAEng Fellowship visit”.
7. Huicheng Hu, Fei Ji, Yong Xu, Jiaqi Yu, Qipeng Liu, Lei Chen, Qian Chen, Peng Wen, Yeshayahu Lifshitz, Yan Wang, Qiao Zhang and Shuit-Tong Lee, “Reversible and Precise Self-Assembly of Janus Metal-Organosilica Nanoparticles through a Linker-Free Approach,” *ACS Nano*, 10, 7323–7330 (2016).
8. Xingchen Ye, Matthew R. Jones, Layne B. Frechette, Qian Chen, Alexander S. Powers, Peter Ercius, Gabriel Dunn, Grant M. Rotskoff, Son C. Nguyen, Vivekananda P. Adiga, Alex Zettl, Eran Rabani, Phillip L. Geissler, and A. Paul Alivisatos, “Single-particle mapping of nonequilibrium nanocrystal transformation,” *Science* 354, 874–877 (2016).
9. Jungwon Park, Hans Elmlund, Peter Ercius, Jong Min Yuk, David T. Limmer, Qian Chen, Kwanpyo Kim, Sang Hoon Han, David A. Weitz, Alex Zettl, and A. Paul Alivisatos, “3D structure of individual nanocrystals in solution by electron microscopy,” *Science* 349, 290–295 (2015).
10. Yingjie Zhang, Qian Chen, A. Paul Alivisatos, Miquel Salmeron, “Charge carrier trapping dynamics in quantum dot field effect transistors,” *Nano Letters* 15, 4657–4663 (2015).
11. Somin E. Lee, Qian Chen, Ramray Bhat, Shayne Petkiewicz, Jessica M. Smith, Vivian E Ferry, A. Paul Alivisatos, Mina J. Bissell, “Reversible aptamer-Au plasmon rulers for secreted single molecules,” *Nano Letters* 15, 4564–4570 (2015).
12. Qian Chen, Hoduk Cho, Karthish Manthiram, Mark Yoshida, Xingchen Ye, A. Paul Alivisatos, “Interaction potentials of anisotropic nanocrystals from the trajectory sampling of particle motion using in situ liquid phase transmission electron microscopy,” *ACS Central Science* 1, 33–39 (2015).
 - **Highlights** by Kyle J. M. Bishop, “Nanoscale self-assembly: seeing is understanding,” *ACS Central Science* 1, 16–17 (2015).
13. Kundan Chaudhary, Jaime J. Juárez, Qian Chen, Steve Granick, Jennifer A. Lewis, “Reconfigurable assemblies of Janus rods in AC electric fields,” *Soft Matter* 10, 1320–1324 (2014).
14. Qian Chen, Jessica M. Smith, Jungwon Park, Kwanpyo Kim, Davy Ho, Haider I. Rasool, Alex Zettl, A. Paul Alivisatos, “3D motion of DNA-Au nanoconjugates in graphene liquid cell EM,” *Nano Letters* 13, 4556–4561 (2013).
15. Xiaoming Mao, Qian Chen, Steve Granick, “Entropy favours open colloidal lattices,” *Nature Materials* 12, 217–222 (2013).
 - **News & views** by Michael E. Cates, “Patchy colloids: entropy stabilizes open crystals,” *Nature Materials* 12, 179–180 (2013).
16. Qian Chen, Jing Yan, Jie Zhang, Sung Chul Bae, Steve Granick, “Janus and multiblock colloidal particles,” Invited feature article for *Langmuir* 28, 13555–13561 (2012).
17. Kundan Chaudhary, Qian Chen, Jaime J. Juárez, Steve Granick, Jennifer A. Lewis, “Janus colloidal matchsticks,” *Journal of the American Chemical Society* 134, 12901–12903 (2012).
18. Qian Chen, Sung Chul Bae, Steve Granick, “Staged self-assembly of colloidal metastructures,” *Journal of the American Chemical Society* 134, 11080–11083 (2012).
19. Qian Chen, Erich Diesel, Jonathan K. Whitmer, Sung Chul Bae, Erik Luijten, Steve Granick, “Triblock colloids for directed self-assembly,” *Journal of the American Chemical Society* 133, 7725–7727 (2011).

20. Qian Chen, Sung Chul Bae, Steve Granick, “Directed self-assembly of a colloidal kagome lattice,” *Nature* 469, 381–384 (2011).
 - **News & views** by Flavio Romano and Francesco Sciortino, “Colloidal self-assembly: patchy from the bottom up,” *Nature Materials* 10, 171–173 (2011).
 21. Qian Chen, Jonathan Whitmer, Shan Jiang, Sung Chul Bae, Erik Luijten, Steve Granick, “Supracolloidal reaction kinetics of Janus spheres,” *Science* 331, 199–202 (2011).
 22. Shan Jiang, Qian Chen, Mukta Tripathy, Erik Luijten, Kenneth S. Schweizer, Steve Granick, “Janus particle synthesis and assembly,” *Advanced Materials* 22, 1060–1071 (2010)
 23. Steve Granick, Shan Jiang, Qian Chen, “Janus particles,” *Physics Today* 62, 68–69 (2009).
 24. Shan Jiang, Mitchell J. Schultz, Qian Chen, Jeffrey S. Moore, Steve Granick, “Solvent-free synthesis of Janus colloidal particles,” *Langmuir* 24, 10073–10077 (2008).
 25. Nana Zhao, Yang Wei, Nijuan Sun, Qian Chen, Jingwei Bai, Longping Zhou, Yao Qin, Meixian Li and Limin Qi, “Controlled synthesis of gold nanobelts and nanocombs in aqueous mixed surfactant solutions,” *Langmuir* 24, 991–998 (2008).
- **Most-cited** *Langmuir* articles published in 2008.

INVITED TALKS (since 2015)

1. Invited Talk, **Noble Metal Nanoparticles Gordon Research Conference**, South Hadley, MA (Jun, 2018)
2. Invited Talk, Symposium on “CM02 – In situ TEM characterization of dynamic processes during materials synthesis and processing”, **MRS Spring Meeting 2018**, Phoenix, AZ (Apr, 2018).
3. Invited Talk, Symposium on “NM05 – Colloidal Nanoparticles—From Synthesis to Applications”, **MRS Spring Meeting 2018**, Phoenix, AZ (Apr, 2018).
4. A Trilogy of Triangular Nanoprisms, Invited Talk, ACS COLL Symposium on “Responsive, Programmable Assembly of Active Colloids for Functional Materials”, **American Chemical Society National Meeting**, DC (Aug 22, 2017)
5. Imaging Phase Transition Dynamics at the Nanoscale, Invited Talk, **Active Matter workshop at the Center for Nanophase Materials Sciences**, Oak Ridge National Laboratory, Oak Ridge, TN (Jul 31, 2017).
6. Direct Imaging of Crystallization Kinetics and Interfacial Fluctuations of Nanoparticle Superlattices, Invited Talk, **10th Liquid Matter Conference**, Ljubljana, Slovenia (Jul 17, 2017).
7. Direct Imaging of Crystallization Kinetics and Interfacial Fluctuations of Nanoparticle Superlattices, Invited Talk, **New Frontiers in Colloid Science**, University of Birmingham, UK (Jul 13, 2017).
8. Surprises in Self-assembly Dynamics at the Nanoscale, Invited Talk, **UK Colloids 2017**, Manchester, UK (Jul 11, 2017)
9. Surprises in Self-assembly Dynamics at the Nanoscale, Invited Talk, CSI2 seminar at the Wyandotte Site of **BASF Incorporation** (Apr 6, 2017)
10. Surprises in Self-Assembly Dynamics at the Nanoscale, Invited Talk, School of Materials Science, **University of Manchester**, Manchester, UK (Jan 18, 2017)
11. Surprises in Self-Assembly Dynamics at the Nanoscale, Invited Talk, Condensed Matter Physics, **University of Edinburgh**, Edinburgh, UK (Jan 16, 2017)
12. Surprises in Self-Assembly Dynamics at the Nanoscale, Invited Talk, Department Seminar in Department of Chemical and Biomolecular Engineering, **University of Wisconsin**, Madison, WI (Sep 27, 2016)
13. 4D Nanoscopic Imaging of Reactions and Self-Assembly, Invited Talk, **CNST 14th Annual Nanotechnology Workshop**, Urbana, IL (May 5, 2016)
14. Surprises in Self-Assembly Dynamics at the Nanoscale, Invited talk, **CECAM workshop** on “Emergent dynamics of out-of-equilibrium colloidal systems at nano- to microscales”, Lausanne, Switzerland (April 20, 2016)

15. Dynamic Colloidal Self-assembly: From Patchy Spheres to Anisotropic Nanocrystals, Invited Victor LaMer Award Talk, **ACS Colloid and Surface Science Symposium**, Pittsburgh, PA (Jun 17, 2015)
16. Imaging Dynamics: From Patchy Spheres to Anisotropic Nanocrystals, Invited Talk, ICAM Annual Conference 2015, **Argonne National Laboratory**, IL (May 12, 2015)

REVIEWING EXPERIENCES

Journal Referee

Science Advances, Proceedings of the National Academy of Sciences of the United States of America, Journal of American Chemical Society, Advanced Materials, Macromolecules, Nano Letters, Langmuir, ACS Nano, ACS Applied Materials and Interfaces, ACS Macro Letters, Chemical Society Reviews, Soft Matter, Small, Journal of the Royal Society Interface, RSC Advances, Scientific Reports, Journal of Physics D: Applied Physics, Journal of Physics: Condensed Matter.

Proposal Review

NSF DMR (Condensed Matter & Materials Theory); DOE BES (Materials Chemistry); U.S. Army Research Office; ACS Petroleum Research Fund

SYNERGESTIC ACTIVITIES

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| 2017-present | Faculty host for ICANEXSEL program:
Provide demos and lab tours to diverse, Chicago Public School middle school students on their campus visit. ICANEXSEL stands for Illinois-ChiS&E Alliance for Nurturing Excellence in STEM Education Leadership) |
| 2016-present | Faculty host for nano@illinois Research Experience for Teachers (RET):
Host science, technology, engineering, and mathematics (STEM) teachers for six weeks to conduct research in the Chen group on nanoscience. |
| 2016-present | Panelist for iFEAT (Illinois Female Engineers in Academia Training) program:
Present to female engineering students and postdoctoral researchers on academic career questions (faculty application, life-work balance, <i>etc.</i>) |
| 2016-present | Contributor to the Nano-BIO node project at UIUC:
Develop open-source image/video analysis tools for transmission electron microscopy. |
| 2016 | Judge for 2016 Davidson Fellows, Davidson Institute for Talent Development |