# QIAN CHEN

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## ACADEMIC APPOINTMENTS

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| 2024–present | Full Professor, Department of Materials Science and Engineering, UIUC |
| 2021–2024 | Associate Professor (tenured), Department of Materials Science and Engineering, UIUC |
| 2015–2021 | Assistant Professor, Department of Materials Science and Engineering, UIUC |

## EDUCATION

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|---|---|
| 2012–2015 | Miller Fellow, University of California, Berkeley<br>Advisor: Prof. A. Paul Alivisatos |
| 2007–2012 | Ph.D. in Department of Materials Science and Engineering, UIUC<br>Advisor: Prof. Steve Granick<br>Thesis title: Synthesis and Self-Assembly of Multi-Block and Janus Particles |
| 2003–2007 | B.S. in Chemistry, Peking University, China |

## ACADEMIC HONORS AND AWARDS

### Research, Teaching, and Mentoring

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|---|---|
| 2024 | CZ Biohub Chicago Investigator Award |
| 2024 | MRS Outstanding Early Career Investigator Award |
| 2024 | Provost's Excellence in Graduate Student Mentoring, UIUC |
| 2023 | Soft Matter Lectureship |
| 2022 | Hanwha-TotalEnergies IUPAC Young Scientist Award |
| 2022/2020 | Dean's Award for Excellence in Research for Associate/Assistant Professor, College of Engineering, UIUC |
| 2021 | Racheff Faculty Scholar, College of Engineering, UIUC |
| 2019 | Teachers Ranked as Excellent, campus-level, UIUC (spring and fall) |
| 2018 | Defense University Research Instrumentation Program Award, Department of Defense |
| 2018 | Unilever Award, Division of Colloid & Surface Science, American Chemical Society (ACS) |
| 2018 | Alfred P. Sloan Research Fellow in Chemistry |
| 2018 | National Science Foundation CAREER Award |
| 2017 | Air Force's Young Investigator Research (YIP) Program Award |
| 2017 | ACS Petroleum Research Foundation Doctoral New Researcher Award, ACS |
| 2016 | The SN 10: Scientists to Watch (feature article here)<br>*Science News Magazine*, Washington, DC |
| 2016 | Distinguished Visiting Fellow<br>the Royal Academy of Engineering, United Kingdom |
| 2016 | Forbes 30 under 30 Science List |
| 2015 | Victor K. LaMer award, Division of Colloid & Surface Science, ACS |
| 2012–2015 | Miller Fellowship, University of California, Berkeley |
| 2009 | Warren Yee Memorial Fellowship, UIUC |

### Awards of Postdoctoral and Doctoral Research Advisees

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| 2024 | Advisee: Dr. Zhiheng Lyu, Women in Chemical Engineering Travel award, AIChE |
| 2024 | Advisee: Ahyoung Kim, Finalist for the Victor K. LaMer award, Division of Colloid & Surface Science, American Chemical Society |
| 2024 | Advisee: Falon Kalutantirige, 2024 Walter Klemperer Award for Outstanding Materials |

Chemistry Thesis, UIUC
2024 Advisee: Jiahui Li, Mavis Future Faculty Fellows, UIUC
2024 Advisee: Falon Kalutantirige, Beckman image contest winner, UIUC
2024 Advisee: Jiahui Li, Langmuir Graduate Student Award Finalist, UIUC
2024 Advisee: Chang Qian, Racheff-Intel Presentation Award, UIUC
2023 Advisee: Zhichu Tang, PPG-MRL Graduate Research Assistantship, UIUC
2023 Advisee: Chang Liu, Racheff-Intel Presentation Award, UIUC
2023 Advisee: Ahyoung Kim, Schmidt Science Fellow
2022 Advisee: Chang Liu, Oral Presentation Prize, Symposium SB05 "Emergent Order and Mesoscale Structure Formation in Soft Condensed Matter", 2022 Fall MRS Meeting
2022 Advisee: Oliver Lin, Government scholarship for studying aboard
Ministry of Education of Taiwan
2022 Advisee: Oliver Lin, Drickamer Fellowship, Department of Chemistry, UIUC
2022 Advisee: Jiahui Li, PPG-MRL Graduate Research Assistantship, UIUC
2022 Advisee: Falon Kalutantirige, Robert M. Joyce Travel Award
Department of Chemistry, UIUC
2021 Advisee: Ahyoung Kim, MRS Gold Graduate Student Award (Spring)
2021 Advisee: Dr. Hyosung An, ACS PMSE Future Faculty Scholar
2021 Advisee: Ahyoung Kim, Dissertation Completion Fellowship, the Graduate College, UIUC
2021 Advisee: Lehan Yao, Warren Yee Memorial Fellowship, College of Engineering, UIUC
2020 Advisee: Chang Liu, Grad College Fall 2020 Conference Presentation Award, UIUC
2020 Advisee: Ahyoung Kim, "Rising Stars in Soft and Biological Materials"
University of Chicago MRSEC
2020 Advisee: Dr. Wenxiang Chen
Selected speaker at the inaugural "North American Materials Colloquium Series"
2020 Advisee: Falon Kalutantirige, Lester E. and Kathleen A. Coleman Fellowship
Department of Chemistry, UIUC
2020 Advisee: Zihao Ou, Racheff-Intel Presentation Award
Department of Materials Science and Engineering, UIUC
2019 Advisee: Ahyoung Kim, PPG-MRL Graduate Research Assistantship, UIUC
2019 Advisee: Dr. Hyosung An, Hanwha Travel Award at the Emerging Junior Investigator Open Innovation Forum, 2019 AIChE Annual Meeting
2019 Advisee: Zihao Ou, Grad College Spring Travel Award, UIUC
2019 Advisee: Zihao Ou, Dow Presentation Award
Department of Materials Science and Engineering, UIUC
2018 Advisee: John W. Smith: 3M Graduate Fellowship, College of Engineering, UIUC
2018 Advisee: Binbin Luo, Dow Presentation Award
Department of Materials Science and Engineering, UIUC

## PROFESSIONAL SERVICES

### Conference Organization

2028(elected) Chair for Liquid Phase Electron Microscopy Gordon Research Conference (vice chair for the 2026 meeting)
2025 Chair for the MRS spring Meeting & Exhibit, Seattle
2025 Pacifichem, symposium organizer for "Cinematic molecular science and nanoscience explored by electron microscopy"
2025 MRS fall meeting & Exhibit, Boston
Symposium organizer "Multimodal operando/in situ characterizations of dynamic energy materials I"
2025 Microscopy and Microanalysis annual meeting
Symposium organizer for "In situ Characterization Material Synthesis and Processing"
2025 99$^{th}$ ACS colloids & Surface Science Symposium & 18$^{th}$ IACIS Conference
Track organizer for "Additive manufacturing and colloidal metamaterials"

2024 MRS fall Meeting & Exhibit, Boston
Symposium organizer for "NM07 – Building Advanced Materials via Aggregation and Self-assembly"

2023 20th International Microscopy Congress, Busan, Korea September 11–14, 2023
Symposium organizer for "PS-1. Nanomaterials – Understanding structure-function relationship by multi-modal and multi-dimensional microscopy"

2022 MRS fall Meeting & Exhibit, Boston November 27–December 2, 2022
Symposium organizer for "CH01-Understanding Dynamic Processes of Materials Synthesis, Self-Assembly and Processing via In Situ Techniques"

2022 Microscopy and Microanalysis annual meeting, Portland July 31–August 4, 2022
Symposium organizer for "P05 In Situ TEM Characterization of Dynamic Processes during Materials Synthesis and Processing"

2022 96th ACS Colloid & Surface Science Symposium, Golden, Colorado July 10–13, 2022
Symposium organizer for the Track on "Self and directed assembly"

2021 95th ACS Colloid & Surface Science Symposium, virtual June 14–16, 2021
Symposium organizer for the Track on "Advanced Experimental Methods in Colloids and Interface Science"

2021 MRS Spring Meeting & Exhibit, virtual April 18–23, 2021
Symposium organizer for "SM07: Building Advanced Materials by Self-Assembly"

2020 2020 Virtual AIChE Annual Meeting November 16–20, 2020
Co-chair for Session of "01C08 Directed and Self Assembly of Colloids"

2020 Goldschmidt virtual 2020 June 21, 2020
Organizer for the virtual workshop on "Crystallization via non-classical pathways"

2019 Microscopy and Microanalysis annual meeting, Portland August 4–8, 2019
Session chair for "P01.4 - *In situ* TEM Characterization of Dynamic Processes During Materials Synthesis and Processing"

2019 93rd ACS Colloid & Surface Science Symposium, Atlanta, GA June 16–19, 2019
Symposium organizer for Track C: "Colloidal & Surface Interactions"

2019 MRS Spring Meeting & Exhibit, Phoenix, AZ April 22–26, 2019
Symposium organizer for "CP02: Design and In-Situ TEM for Self-assembling colloidal systems"

2018 MRS Spring Meeting & Exhibit, Phoenix, AZ April 2–6, 2018
Session Chair for "CM02.02: Crystal Nucleation, Growth, Transformation and Assembly II"

## Advisory and Editorial Board

2022–present Editorial Advisory Board in ACS Applied Nano Materials

2021–present Beckman Institute Executive Committee, UIUC

2020–present Scientific Advisory Board Member for a DOE-EFRC center
Center for the Science of Synthesis Across Scales (CSSAS)
University of Washington

2020–present Editorial Advisory Board Member for *iScience*,
interdisciplinary open access journal in Cell Press

2019–2022 Program Advisory Committee
Beckman Institute for Advanced Science and Technology, UIUC

## Community Training, Themed Workshop and Roundtable Participation

2024 Guest Editor for the themed issue of Chemical Reviews on "Fabrication at All Scales"

2024 Invited Host and Moderator for MRS webinar on "Nanoparticle Assemblies of Modern Complexity"

2024 Guest Editor for the April 2024 issue of *MRS Bulletin* on "Nanoparticle Assemblies of Modern Complexity"

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| 2023 | Guest Editor for the themed issue of *Chemical Reviews* on "Anisotropic Nanomaterials" |
| 2022 | Invited Discussion Leader for 2022 Liquid Phase Electron Microscopy Gordon Research Conference |
| 2022 | Invited Host and Moderator for MRS webinar on "Probing self-assembly via advanced microscopic techniques" |
| 2021 | Invited participant in DOE BES roundtable workshop on "Cryo-Electron Microscopy" engaged in cross-cutting planning and report writing for DOE BES report |
| 2021 | Organizer of the Tutorial Session on "Building Advanced Materials by Self-Assembly" MRS Spring Meeting & Exhibit, virtual |
| 2019 | Invited instructor in EM-Situ'19 workshop, Harvard University, Boston, MA |
| 2019 | Invited instructor to lecture on GSOFT Short Course on "Structures and Order in Soft Matter Physics," APS March Meeting<br>45-min lecture on "Structure and Dynamics Determination by Electron Microscopy" |
| 2017 | Invited instructor for the Active Matter workshop at the Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN |

## Services to Broaden Diversity and Inclusion

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| 2024 | Faculty host for NSF REU supported by Illinois MRSEC |
| 2023–present | Faculty host of the CERA (Collaboration and Exchange with Researchers in Africa) program to host global researchers from Africa for three months. |
| 2022-present | Faculty host for outreach for k-12 students in local schools such as Booker T. Washington Elementary School and university open house. |
| 2022-present | Faculty host for the Illinois GEAR UP program and the Illinois Young Scholar program to provide 6-week undergraduate research experience for students from community colleges (mostly first generation and students from underrepresented groups in STEM). |
| 2022–present | Faculty Mental Health Ambassador, UIUC |
| 2021 | MatSE Diversity Committee, UIUC |
| 2019,2024 | Beckman Open House, UIUC<br>Presented demonstrations on "squishy soft materials" to the general public visiting Beckman Institute |
| 2019 | High School Summer Research program at UIUC<br>Research host: Provided a 6-week lab experiences for Ms. Autumn Kennedy, a high school student from Rantoul Township High School (Rantoul, IL) |
| 2017 | Illinois-ChiS&E Alliance for Nurturing Excellence in STEM Education Leadership<br>Faculty host: Provided demos and tours to Chicago public school middle school students |
| 2016–2017 | Nano@illinois Research Experience for Teachers (RET) by National Science Foundation<br>Research host: Hosted STEM teachers (Dr. Nicole Ice, a math teacher at Wheeler High School, Marietta, GA; Valerie Cravens, a science teacher in Albuquerque High School, Albuquerque, NM) for 6 weeks each to conduct research in nanotechnology and develop STEM course modules |
| 2016–2017 | Illinois Female Engineers in Academia Training program<br>Panelist: Discussed with female engineering students and postdoctoral researchers on academic career questions (faculty application, life-work balance, etc.) |

## Review Service

### Proposal Reviews

#### *Mailed-in*

AFOSR (Biophysics Program); U.S. Army Research Office (Reactive Chemical Systems Program); NSF DMR (Condensed Matter & Materials Theory Program); DOE BES (Materials Chemistry; Biomolecular Materials); ACS Petroleum Research Fund; Ohio State University Research Seed Grant Program; Center for Functional Nanomaterials, Brookhaven National Laboratory.

#### *Panel*

NSF DMR (Solid State and Materials Chemistry Program)
Panel Reviewer for DOE BES Lawrence Berkley National Laboratory in 2022

**Manuscript Reviews**
Science, Nature, Nature Materials, Nature Catalysis, Nature Chemistry, Nature Communications, Science Advances, PNAS, Joule
Journal of American Chemical Society, Advanced Materials, Advanced Energy Materials, Macromolecules, Chemistry of Materials, Nano Letters, ACS Nano, ACS Applied Materials and Interfaces, Langmuir, Nanoscale, ACS Macro Letters, Analytical Chemistry, ACS Applied Nano Materials
Chemical Society Reviews, Soft Matter, Small, Journal of the Royal Society Interface, RSC Advances, Journal of Physics D: Applied Physics, Journal of Physics: Condensed Matter.

**National Awards**

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| 2019, 2024 | MRS Spring Meeting & Exhibit<br>Judge for MRS Graduate Student Award |
| 2016 | Judge for 2016 Davidson Fellows, Davidson Institute for Talent Development |

## PUBLICATIONS

Full publication list:
Qian Chen - Google Scholar

### Patent

Li, W Huang, Z Yang, MD Kraman, J Ni, Z Ou, Q Chen, JG Eden, "Rolled-up electromagnetic component for on-chip applications and method of making a rolled-up electromagnetic component", US Patent, 11031456

### Book Chapters (Invited)

5. Lehan Yao, Qian Chen*. Machine learning in nanomaterial electron microscopy data analysis. Chapter 10, 279-305 (2023) in the book of "Intelligent Nanotechnology" by Elsevier.
4. Shan Zhou, Wenxiang Chen, Qian Chen*. Characterizing self-assembly of plasmonic nanostructures in real space and reciprocal space, Chapter 6, 209–238 (2022) in the book of "World Scientific Reference on Plasmonic Nanomaterials."
3. Ahyoung Kim, Lehan Yao, Falon Kalutantirige, Shan Zhou, Qian Chen*, "Patchy nanoparticle synthesis and self-assembly," (2020) DOI: 10.5772/intechopen.93374
2. Chang Liu, Zihao Ou, Qian Chen*, "Nonclassical crystallization observed by liquid-phase transmission electron microscopy," Chapter 6, 115–146 (2020) in the ACS ebook of "Crystallization via non-classical pathways".
1. Zihao Ou, Binbin Luo, Andreas Neophytou, Dwaipayan Chakrabarti, Qian Chen*, "Synthesis and self-assembly of Janus and triblock patchy particles," Vol 13, 61–85 (2019) in the book of "Frontier of Nanoscience" by Elsevier.

### Journal Papers

101. Xiaolin Liu, Hao Yang, Hassan Harb, Rajarshi Samajdar, Toby J. Woods, Oliver Lin, Qian Chen, Adolfo I. B. Romo, Joaquin Rodriguez-Lopez, Rajeev S. Assary, Jeffrey S. Moore, Charles M. Schroeder, "Shape-persistent ladder molecules exhibit nanogap-independent conductance in singel-molecule junctions," ***Nature Chemistry*** 16, 1772 (2024).
100. Jiahui Li, John W Smith, Kai-Yu Huang, Hua Wang, Aditi Das, Hyunjoon Kong, Qian Chen, "Towards Correlative Electron Microscopy Imaging for Proteins and Cells," *Microscopy and*

*Microanalysis* 30, ozae044.807 (2024).

99. Falon C Kalutantirige, Paul Bogdan, Qian Chen, "Electron Tomographic Reconstruction of Soft Nanomaterials for Morphometry Studies," *Microscopy and Microanalysis* 30, Supplement_1 ozae044.893 (2024).

98. Carlos L. Bassani, Greg van Anders, Uri Banin, Dmitry Baranov, Qian Chen, et al. Eran Rabani, Michael Engel, Alex Travesset*, "Nanocrystal Assemblies: Current Advances and Open Problems," ***ACS Nano*** 18, 14791 (2024).

97. Zhiheng Lyu, Lehan Yao, Zhisheng Wang, Chang Qian, Zuochen Wang, Jiahui Li, Chang Liu, Yufeng Wang, Qian Chen*, "Nanoscopic Imaging of Self-Propelled Ultrasmall Catalytic Nanomotors," ***ACS Nano*** 18, 14231 (2024).

96. Kai-Yu Huang, Gaurav Upadhyay, Yujin Ahn, Masayoshoi Sakakura, Gelson J. Pagan-Diaz, Younghak Cho, Amanda C. Weiss, Chen Huang, Jennifer W. Mitchell, Jiahui Li, Yanqi Tan, Yu-Heng Deng, Austin Ellis-Mohr, Zhi Dou, Xiaotain Zhang, Sehong Kang, Qian Chen, Jonathan V. Sweedler, Sung Gap Im, Rashid Bashir, Hee Jung Chung, Gabriel Popescu, Martha U. Gillette, Mattia Gazzola, Hyunjoon Kong*, "Neuronal innervation regulates the secretion of neurotrophic myokines and exosomes from skeletal muscle," *Proceedings of the National Academy of Sciences* 121, e2313590121 (2024).

95. John W. Smith, Lauren N. Carnevale, Aditi Das,* Qian Chen.* "Electron videography of a lipid-protein tango," ***Science Advances*** 10, eadk0217 (2024).
    - Click here for the news report by Illinois News Bureau.

94. Qian Chen,* Xin Zhang. "Nanoparticle self-assemblies with modern complexity," ***MRS Bulletin*** 49, 310 (2024).

93. Dhruva D. Dhavale, Alexander M. Barclay, Collin G. Borcik, Katherine Basore, Deborah A. Berthold, Isabelle R. Gordon, Jialu Liu, Moses H. Hilchberg, Jennifer Y. O'Shea, Michael J. Rau, Zachary Smith, Soumyo Sen, Bock Summers, John W. Smith, Owen A. Warmuth, Richard J. Perrin, Joel S. Perlmutter, Qian Chen, James A. J. Fizpatrick, Charles D. Schweiters, Emad Tajkhorshid, Chad M. Rienstra, Paul T. Kotzbauer, "Structure of alpha-synucleain fibrils derived from human Lewy body dementia tissue," ***Nature Communications*** 15, 2750 (2024).

92. Onur Tosun, Preetha Sarkar, Chang Qian, Matthew Gilbert, Qian Chen, Nadya Mason, "Tuanble magnetic confinement effect in a magnetic superlattice of graphene," ***npj 2D materials and applications*** 8, 32 (2024).

91. Falon C. Kalutantirige, Jinlong He, Lehan Yao, Stephen Cotty, Shan Zhou, John W. Smith, Emad Tajkhorshid, Charles M. Schroeder, Jeffrey S. Moore, Hyosung An, Xiao Su, Ying Li,* Qian Chen.* "Beyond nothingness in the formation and functional relevance of voids in polymer films," ***Nature Communications*** 15, 2852 (2024).
    - Click here for the news report by Illinois News Bureau.
    - Highlighted by DOE Office of Science.

90. Chang Liu, Oliver Lin, Saran Pidaparthy, Haoyang Ni, Zhiheng Lyu, Jian-Min Zuo, Qian Chen. "4D-STEM mapping of nanocrystal reaction dynamics and heterogeneity in a graphene liquid cell," ***Nano Letters*** 24, 3890 (2024).

89. Lehan Yao, Zhiheng Lyu, Jiahui Li, Qian Chen. "No ground truth needed: unsupervised sinogram inpainting for nanoparticle electron tomography (UsiNet) to correct missing wedges," ***npj Computational Materials*** 10, 28 (2024).

88. Sung B. Kang, Guanglong Huang, Gaurav Singhal, Dajie Xie, Daniel H. Hsieh, Youngmun Lee, Ashish A. Kulkarni, John W. Smith, Qian Chen, Katsuyo Thornton, Sanjiv Sinha, Paul V. Braun. "Highly ordered eutectic mesostructures via template-directed solidification within thermally engineered templates," ***Advanced Materials*** 2308720 (2024).

87. Ahyoung Kim, Kireeti Akkunuri, Chang Qian, Lehan Yao, Kai Sun, Zi Chen, Thi Vo,* Qian Chen,* "Direct imaging of patch-clasping and relaxation in robust and flexible nanoparticle assemblies," ***ACS Nano*** 18, 939 (2024).

86. Rimsha Bhatta, Joonsu Han, Yusheng Liu, Yang Bo, David Lee, Jiadiao Zhou, Yujie Wang, Erik R. Nelson, Qian Chen, Xiaojia Shelly Zhang, Wael Hassaneen, Hua Wang, "Metabolic tagging of extracellular vesicles and development of enhanced extracellular vesicle based cancer vaccines," ***Nature Communications*** 14, 8047 (2023).

85. Yadong Xu, Yajuan Su, Xianchen Xu, Brian Arends, Ganggang Zhao, Daniel N. Ackerman, Henry Huang, St. Patrick Reid, Joshua L. Santarpia, Chansong Kim, Zehua Chen, Sana Mahoud, Yun Ling, Alexander Brown, Qian Chen, Guoliang Huang, Jingwei Xie, Zheng Yan, "Porous liquid metal-elastomer composites with high leakage resistance and antimicrobial property for skin-interfaced bioelectronics," ***Science Advances*** 9, eadf0575 (2023).

84. Xiaokang Wang, Jiahui Li, Qian Chen, "Synthesis and emergent properties of structurally complex materials with nonrandom disorder," ***Matter*** 6, 2555 (2023).

83. Wenxiang Chen, Saran Pidaparthy, Xun Zhan, Chu-yun Hwang, Zhichu Tang, Jian-Min Zuo, Qian Chen, "Correlative mapping of electrolyte-dependent microstructural development in cathode materials," *Microscopy and Microanalysis* 29 (S1), 1277 (2023).

82. Gabriel R. Burks, Lehan Yao, Falon C. Kalutantirige, Kyle J. Gray, Elizabeth Bello, Shreyas Rajagopalan, Shreyas Rajagopalan, Sarah B. Bialik, Jeffrey E. Barrick, Marianne Alleyne, Qian Chen, Charles M. Schroeder, "Electron tomography and machine larning for understanding the highly ordered structure of leafhopper brochosomes," ***Biomolecules*** 24, 190 (2023).

81. Yi Zhang, Jinsong Cui, Kuan-Yu Chen, Shanny Hsuan Kuo, Jaishree Sharma, Rimsha Bhatta, Zheng Liu, Austin Ellis-Mohr, Fufei An, Jiahui Li, Qian Chen, Kari D. Foss, Hua Wang, Yumeng Li, Annette M. Mccoy, Gee W. Lau, Qing Cao, "A smart coating with integrated physical antimicrobial and strain-mapping functionalities for orthopedic implants," ***Science Advances*** 9, eadg7397 (2023).

80. Younan Xia, Qian Chen, Uri Banin. "Introduction: Anisotropic Nanomaterials," ***Chemical Reviews*** 123, 3328 (2023).

79. Binbin Luo, Ziwei Wang, Tine Curk, Garrett Watson, Chang Liu, Ahyoung Kim, Zihao Ou, Erik Luijten,* Qian Chen* "Unravelling crystal growth of nanoparticles," ***Nature Nanotechnology*** 18, 589 (2023)

    - Click here for the news report by Illinois News Bureau.

78. Dongsheng Li*, Qian Chen, Jaehun Chun, Kristen Fichthorn, James De Yoreo, Haimei Zheng, "Nanoparticle assembly and oriented attachment: Correlating controlling factors to the resulting structures," ***Chemical Reviews*** 123, 3127 (2023)

77. Deborah Liu, Samyukta Shrivastav, Soheil Daraydel, Nathan Levandovsky, Hyosung An, Siddhesh Shevade, Qian Chen, Jessica A. Krogstad, Daniel V. Krogstad, "Biofeedstock-induced metal corrosion: Reactions between carbon steel and triacylglycerol-based solutions at elevated temperature," ***Corrosion Science*** 216, 111088 (2023).

76. Zhiheng Lyu, Lehan Yao, Wenxiang Chen, Falon Kalutantirige, Qian Chen* "Electron microscopy studies of soft nanomaterials," ***Chemical Reviews*** 123, 4051 (2023).

75. Zhuang Xu, Kyung Sun Park, Justin J Kwok, Oliver Lin, Bijal B Patel, Prapti Kafle, Daniel W Davies, Qian Chen, Ying Diao* "Not all aggregates are made the same: distinct structures of solution aggregates drastically modulate assembly pathways, morphology, and electronic properties of conjugated polymers," ***Advanced Materials*** 34, 2203055 (2022).

74. Shan Zhou, Jiahui Li, Jun Lu, Haihua Liu, Ji-Young Kim, Ahyoung Kim, Lehan Yao, Chang Liu, Chang Qian, Zachary D. Hood, Xiaoying Lin, Wenxiang Chen, Thomas E. Gage, Ilke Arslan, Alex Travesset, Kai Sun, Nicholas A. Kotov,* Qian Chen* "Chiral assemblies of pinwheel superlattices on substrates," ***Nature*** 612, 259 (2022).

- Click here for the news report by Illinois News Bureau.

73. Ahyoung Kim, Thi Vo, Hyosung An, Progna Banerjee, Lehan Yao, Shan Zhou, Chansong Kim, Delia J. Milliron, Sharon C. Glotzer,* Qian Chen* "Symmetry-breaking in patch formation on triangular gold nanoparticles by asymmetric polymer grafting," ***Nature Communications*** 13, 6774 (2022).
    - Selected to Nature Communications editors' Highlight in Materials Science and Chemistry.
72. Wenxiang Chen, Xun Zhan, Renliang Yuan, Saran Pidaparthy, Adrian Xiao Bin Yong, Hyosung An, Zhichu Tang, Kaijun Yin, Arghya Patra, Heonjae Jeong, Cheng Zhang, Kim Ta, Zachary W. Riedel, Ryan M. Stephens, Daniel P. Shoemaker, Hong Yang, Andrew A. Gewirth, Paul V. Braun, Elif Ertekin, Jian-Min Zuo*, Qian Chen* "Formation and impact of nanoscopic oriented phase domains in electrochemical crystalline electrodes," ***Nature Materials*** 22, 92, (2023)
    - Click here for the news report by Illinois News Bureau.
71. Hao Yu, Falon C Kalutantirige, Lehan Yao, Charles M Schroeder,* Qian Chen,* Jeffrey S Moore* "Self-assembly of repetitive segment and random segment polymer architectures," ***ACS Macro Letters*** 11, 1366 (2022).
70. Lehan Yao, Hyosung An, Shan Zhou, Ahyoung Kim, Erik Luijten, Qian Chen* "Seeking regularity from irregularity: Unveiling the synthesis–nanomorphology relationships of heterogeneous nanomaterials using unsupervised machine learning," ***Nanoscale*** 14, 16479 (2022).
    - Invited to the themed issue of "Nanoscale 2023 Emerging Investigators".
69. Cheng Zhang, Xun Zhan, Talha Al-Zoubi, Yanling Ma, Pei-Chieh Shih, Fangfang Wang, Wenxiang Chen, Saran Pidaparthy, Ryan M Stephens, Qian Chen, Jian-Min Zuo, Hong Yang* "Electrochemical generation of Birnessite $MnO_2$ nanoflowers for intercalation of $Mg^{2+}$ ions," ***Nano Energy*** 102 107679 (2022).
68. Zuochen Wang, Chang Liu, Qian Chen* "In-situ imaging of nucleation and growth of superlattices from nanoscale colloidal nanoparticles," ***Journal of Crystal Growth*** 601, 126955 (2023).
    - Invited to the special issue dedicated to the scientific achievements of Dr. Alex Chernov.
67. Daniel E Clark, Victoria A Lumsargis, Daria D Blach, Kuixin Zhu, Alexander J Shumski, Lehan Yao, Qian Chen, Libai Huang, Christina W Li* "Quantifying structural heterogeneity in individual $CsPbBr_3$ quantum dot superlattices," ***Chemistry of Materials*** 34, 10200 (2022).
66. Gangbin Yan, George Kim, Renliang Yuan, Eli Hoenig, Fengyuan Shi, Wenxiang Chen, Yu Han, Qian Chen, Jian-Min Zuo, Wei Chen, Chong Liu* "The role of solid solutions in iron phosphate-based electrodes for selective electrochemical lithium extraction," ***Nature Communications*** 13, 4579 (2022)
65. Ganggang Zhao, Yun Ling, Yajuan Su, Zanyu Chen, Cherian J Mathai, Ogheneobarome Emeje, Alexander Brown, Dinesh Reddy Alla, Jie Huang, Chansong Kim, Qian Chen, Xiaoqing He, David Stalla, Yadong Xu, Zehua Chen, Pai-Yen Chen, Shubhra Gangopadhyay, Jingwei Xie, Zheng Yan, "Laser-scribed conductive, photoactive transition metal oxide on soft elastomers for Janus on-skin electronics and soft actuators," ***Science Advances*** 8, eabp9734 (2022).
64. Kyung Sun Park, Zhengyuan Xue, Bijal B. Patel, Hyosung An, Justin J. Kwok, Prapti Kafle, Qian Chen, Diwakar Shukla, Ying Diao* "Chiral emergence in multistep hierarchical assembly of achiral conjugated polymers," ***Nature Communications*** 13, 2738 (2022)
63. Wenxiang Chen, Xun Zhan, Reliant Yuan, Saran Pidaparthy, Zhichu Tang, Jian-Min Zuo, Qian Chen* "4D-STEM mapping of nanoscale structural ordering in cathode materials," *Microscopy and Microanalysis* 28 (S1), 2608 (2022).
62. Oliver Lin, Chang Liu, Wenxiang Chen, Jian-Min Zuo, Qian Chen* "Structural characterization of gold nanoparticles using liquid-phase 4D-STEM," *Microscopy and Microanalysis* 28 (S1), 1860 (2022).
61. Chang Liu, Lehan Yao, Qian Chen* "Machine learning based tracking of single nanoparticle

vibrations from a projected 3D moiré lattice," *Microscopy and Microanalysis* 28 (S1), 94 (2022).

60. Hyosung An, John W. Smith, Bingqiang Ji, Stephen Cotty, Shan Zhou, Lehan Yao, Falon C. Kalutantirige, Wenxiang Chen, Zihao Ou, Xiao Su, Jie Feng, Qian Chen* "Mechanism and performance relevance of nanomorphogenesis in polyamide films revealed by quantitative 3D imaging and machine learning," ***Science Advances*** 8, eabk188 (2022).
    - Click here for the news report by Illinois News Bureau.
59. Wenxiang Chen, Zhichu Tang, Qian Chen* "Engineering particle size for multivalent ion intercalation: Implications for ion battery systems," ***ACS Applied Nano Materials*** 5, 5983 (2022).
    - Invited contribution to "Early career forum articles"
58. Zhichu Tang, Wenxiang Chen, Zhiheng Lyu, Qian Chen* "Size-dependent reaction mechanism of λ-$MnO_2$ particles as cathodes in aqueous zinc-ion batteries," ***Energy Material Advances*** 2022, 9765710 (2022)
57. Qian Chen* "Beyond snowflakes: heterogeneity in nanomaterials," ***Nano Letters*** 22, 3 (2022).
    - Invited Viewpoint by the Editors.
56. Chang Qian, Lehan Yao, Chang Liu, John W. Smith, Qian Chen* "Integrating machine learning with liquid-phase TEM imaging to study nanoscale crystallization and macromolecular heterogeneity", *Microscopy and Microanalysis*, 27 (S2), 37 (2021).
55. John W. Smith, Chang Liu, Qian Chen* "Using molecular dynamics simulations to understand electron beam interactions with macromolecules in liquid-phase transmission electron microscopy," *Microscopy and Microanalysis*, 27 (S1), 2892 (2021).
54. John W. Smith, Qian Chen* "Enabling low-dose liquid-phase TEM with advanced signal processing, machine learning, and molecular simulation," *Microscopy and Microanalysis*, 27 (S1), 1314 (2021).
53. Ahyoung Kim, Chang Liu, Erik Luijten, Qian Chen* "Formation nd surface melting of nanoparticle superlattices in a solution," *Microscopy and Microanalysis*, 27 (S1), 1244 (2021).
52. Chang Liu, Zihao Ou, Qian Chen* "Direct imaging on the deformation and sintering of polymeric particles at the nanoscale by liquid-phase TEM," *Microscopy and Microanalysis*, 27 (S1), 2630 (2021).
51. Yingfeng Yang, Hanze Ying, Zhixia Li, Jiang Wang, Yingying Chen, Binbin Luo, Danielle L. Gray, Andrew Ferguson, Qian Chen, Y. Z, Jianjun Cheng* "Near quantitative synthesis of urea macrocycles enabled by bulky N-substituent," ***Nature Communications***, 12, 1572 (2021).
50. Zihao Ou, Chang Liu, Lehan Yao, Qian Chen* "Nanoscale cinematography of soft matter system under liquid-phase TEM," ***Accounts of Materials Research*** 1, 41 (2020).
    - Invited paper for the inaugural issue of the journal.
49. Cheongwon Bae, Jaedeok Lee, Lehan Yao, Suhyeon Park, Yeonju Lee, Jieun Lee, Qian Chen, Juyeong Kim* "Mechanistic insight into gold nanorod transformation in nanoscale confinement of ZIF-8," ***Nano Research*** 14, 66 (2020)
48. Zihao Ou, Lehan Yao, Hyosung An, Bonan Shen, Qian Chen* "Imaging how thermal capillary waves and anisotropic interfacial stiffness shape nanoparticle supracrystals," ***Nature Communications*** 11, 4555 (2020).
    - Selected to Nature Communications editors' Highlight in Inorganic, Nanoscale and Physical Chemistry.
47. Qian Chen, Jong Min Yuk, Matthew R. Hauwiller, Jungjae Park, Kyun Seong Dae, Jae Sung Kim, A. Paul Alivisatos "Nucleation, growth, and superlattice formation of nanocrystals observed in liquid cell transmission electron microscopy," ***MRS Bulletin*** 45, 713 (2020).

46. John W. Smith, Qian Chen* "Liquid-phase electron microscopy imaging of cellular and biomolecular systems," ***Journal of Materials Chemistry B*** 8, 8490 (2020).
    - Invited paper for the special issue of "Emerging Investigators 2020".
45. Lehan Yao, Zihao Ou, Binbin Luo, Cong Xu, Qian Chen* "Machine learning to reveal nanoparticle dynamics from liquid-phase TEM videos," ***ACS Central Science*** 6, 1421 (2020).
    - Selected as front cover of the issue.
44. Chang Liu, Qian Chen* "Interfacial crystallization under DNA control," ***Nature Materials*** 19, 704 (2020).
    - Invited News & Views by *Nature Materials*
43. Chang Liu, Zihao Ou, Fucheng Guo, Binbin Luo, Wenxiang Chen, Limin Qi*, Qian Chen* "Colloid–atom duality in the assembly dynamics of concave gold nanoarrows," ***Journal of American Chemical Society*** 142, 11669 (2020).
42. Zihao Ou,¶ Ziwei Wang,¶ Binbin Luo, Erik Luijten*, Qian Chen* "Kinetic pathways of crystallization at the nanoscale," ***Nature Materials*** 19, 450 (2020).
    - Click here for the news report by Illinois News Bureau.
    - News & Views by *Nature Materials*: "Seeing crystal formation one particle at a time"
41. Wen Huang, Zhendong Yang, Mark D. Kraman, Qingyi Wang, Zihao Ou, Miguel Muñoz Rojo, Ananth Saran Yalamarthy, Victoria Chen, Feifei Lian, Jimmy H. Ni, Siyu Liu, Haotian Yu, Lei Sang, Julian Michaels, Dane J. Sievers, J. Gary Eden, Paul V. Braun, Qian Chen, Songbin Gong, Debbie G. Senesky, Eric Pop, Xiuling Li* "Monolithic mtesla-level magnetic induction by self-rolled-up membrane technology," ***Science Advances*** 6 (3), eaay4508 (2020).
40. Hyosung An, John W. Smith, Wenxiang Chen, Zihao Ou, Qian Chen* "Charting the quantitative relationship between two-dimensional morphology parameters of polyamide membranes and synthesis conditions," ***Molecular Systems Design & Engineering*** 5, 102 (2020).
    - Invited paper for the special issue of "MSDE Emerging Investigators 2020".
    - Selected as front cover of the issue.
39. John W. Smith, Xing Jiang, Hyosung An, Alexander M. Barclay, Giuseppe Licari, Emad Tajkhorshid, Edwin G. Moore, Chad M. Rienstra*, Jeffrey S. Moore*, Qian Chen* "Polymer–peptide conjugates convert amyloid into protein nanobundles through fragmentation and lateral association," ***ACS Applied Nano Materials*** 3, 937 (2020).
    - Invited paper for the special forum celebrating the contributions of Young Investigators in *ACS Applied Nano Materials*.
38. Xing Jiang, Abigail J. Halmes, Giuseppe Licari, John W. Smith, Yang Song, Edwin G. Moore, Qian Chen*, Emad Tajkhorshid*, Chad M. Rienstra*, Jeffrey S. Moore* "Multivalent polymer–peptide conjugates: a general platform for inhibiting amyloid beta peptide aggregation," ***ACS Macro Letters*** 8, 1365 (2019).
37. Ahyoung Kim, Shan Zhou, Lehan Yao, Stacey Ni, Binbin Luo, Charles E Sing, Qian Chen* "Tip-patched nanoprisms from formation of ligand islands," ***Journal of American Chemical Society*** 141, 11796 (2019).
36. John W. Smith, Lauren N. Carnevale, Aditi Das, Qian Chen* "Real-time electron microscopy of protein nanodiscs using graphene liquid cells," *Microscopy and Microanalysis* 25 (S2), 1498 (2019).
35. Xun Zhan, Renliang Yuan, Wenxiang Chen, Qian Chen, Jian-Min Zuo "Determination of crystallinity in $Li_{1-x}Mg_xMn_2O_4$ nanocrystals based on diffraction patterns correlation analysis and strain mapping," *Microscopy and Microanalysis* 25 (S2), 1972 (2019).
34. Zihao Ou, Binbin Luo, Chang Liu, Qian Chen* "Liquid-phase TEM imaging of self-assembly

pathways of anisotropic nanoparticles," *Microscopy and Microanalysis* 25 (S2), 1414 (2019).

33. Wenxiang Chen, Xun Zhan, Binbin Luo, Zihao Ou, Pei-Chieh Shih, Lehan Yao, Saran Pidaparthy, Arghya Patra, Hyosung An, Paul V. Braun, Ryan M. Stephens, Hong Yang, Jian-Min Zuo*, Qian Chen* "Effects of particle size on $Mg^{2+}$ ion intercalation into λ-$MnO_2$ cathode materials," ***Nano Letters*** 19, 4712 (2019).

32. Binbin Luo, Ahyoung Kim, John W. Smith, Zihao Ou, Zixuan Wu, Juyeong Kim, Qian Chen* "Hierarchical self-assembly of 3D lattices from polydisperse anisometric colloids," ***Nature Communications*** 10, 1815 (2019).

    - Click here for the news report by Illinois News Bureau. News by other websites such as phys.org, NSF science news, and nanotech-now.
    - Selected for the "*Editor's highlight*".

31. Xiaohui Song, John W. Smith, Juyeong Kim, Nestor J. Zaluzec, Wenxiang Chen, Hyosung An, Jordan M. Dennison, David G. Cahill, Matthew A. Kulzick, Qian Chen* "Unraveling the morphology–function relationships of polyamide membranes using quantitative electron tomography," ***ACS Applied Materials & Interfaces*** 11, 8517 (2019).

30. Zihao Ou, Ahyoung Kim, Wen Huang, Paul V. Braun, Xiuling Li, Qian Chen*, "Reconfigurable nanoscale soft materials," ***Current Opinion in Solid State and Materials Science*** 23, 41 (2019).

    - Invited paper for the themed issue on "Active and adaptive soft matter".

29. Zihao Ou, Xiaohui Song, Wen Huang, Xing Jiang, Subing Qu, Qingyi Wang, Paul V. Braun, Jeffrey S. Moore, Xiuling Li, Qian Chen* "Colloidal metal-organic framework hexapods prepared from post-synthesis etching with enhanced catalytic activity and rollable packing," ***ACS Applied Materials & Interfaces*** 10, 40990 (2018).

28. Mikhail Ovsyanko, Emrah Yucelen, Evgeniya Pechnikova, Meiken Falke, Qian Chen, Nestor J. Zaluzec "Soft matter X-Ray microanalysis in the analytical electron microscope," *Microscopy and Microanalysis* 24 (S1), 776 (2018).

27. Juyeong Kim, Xiaohui Song, Ahyoung Kim, John W. Smith, Binbin Luo, Zihao Ou, and Qian Chen* "Reconfigurable polymer shells on shape-anisotropic gold nanoparticle cores," *Macromolecular Rapid Communications* 39, 1800101 (2018).

    - Invited paper for the special issue of Young Investigators.

26. Nina Sekerak, Kristin M. Hutchins, Binbin Luo, Jin Gu Kang, Paul V. Braun, Qian Chen, Jeffrey S. Moore "Size control of cross-linked carboxy-functionalized polystyrene particles: Four orders of magnitude of dimensional versatility," *European Polymer Journal* 101, 202 (2018).

25. Juyeong Kim, Zihao Ou, Matthew R. Jones, Xiaohui Song, Qian Chen* "Imaging the polymerization of multivalent nanoparticles in solution," ***Nature Communications*** 8, 761 (2017).

    - Click here for the news report by Illinois News Bureau.

24. Binbin Luo, John W. Smith, Zihao Ou, Qian Chen* "Quantifying the self-assembly behavior of anisotropic nanoparticles using liquid-phase transmission electron microscopy," ***Accounts of Chemical Research*** 50, 1125 (2017).

    - Invited paper for the special issue of "Direct visualization of chemical and self-assembly processes with transmission electron microscopy".

23. Binbin Luo, John W. Smith, Zixuan Wu, Juyeong Kim, Zihao Ou, Qian Chen* "Polymerization-like co-assembly of silver nanoplates and patchy spheres," ***ACS Nano*** 11, 7627 (2017).

22. Juyeong Kim, Xiaohui Song, Feiji, Binbin Luo, Nicole F. Ice, Qipeng Liu, Qiao Zhang, Qian Chen* "Polymorphic assembly from beveled gold triangular nanoprisms," ***Nano Letters*** 17, 3270 (2017).

    - Click here for the report on "Playing with nanoparticle legos: polymorphism in nanoantenna

arrays".

21. Kristin M. Hutchins, Chih-Yi Lee, Binbin Luo, Qian Chen, Jeffrey S. Moore*, "Effects of cross-linking density on interfacial polymerization and scaffold formation in functionalized polymer beads," *Industrial & Engineering Chemical Research* 56, 4883 (2017).
20. Juyeong Kim, Matthew R. Jones, Zihao Ou, Qian Chen* "*In situ* electron microscopy imaging and quantitative structural modulation of nanoparticle superlattices," ***ACS Nano*** 10, 9801 (2016).
    - Highlighted and interviewed as the only article selected in November by ACS Nano podcast (Nov. 2016, Episode 112).
    - 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".
19. Huicheng Hu, Fei Ji, Yong Xu, Jiaqi Yu, Qipeng Liu, Lei Chen, Qian Chen, Peng Wen, Yeshayahu Lifshitz, Yan Wang, Qiao Zhang*, Shuit-Tong Lee* "Reversible and precise self-assembly of Janus metal-organosilica nanoparticles through a linker-free approach," ***ACS Nano*** 10, 7323 (2016).

**Prior to Independent Faculty Career at UIUC**

18. 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, A. Paul Alivisatos, "Single-particle mapping of nonequilibrium nanocrystal transformation," *Science* 354, 874 (2016).
17. Jungwon Park, Hans Elmlund, Peter Ercius, Jong Min Yuk, David T. Limmer, Qian Chen, Kwanpyo Kim, Sang Hoon Han, David A. Weitz, Alex Zettl, A. Paul Alivisatos, "3D structure of individual nanocrystals in solution by electron microscopy," *Science* 349, 290 (2015).
16. Yingjie Zhang, Qian Chen, A. Paul Alivisatos, Miquel Salmeron, "Charge carrier trapping dynamics in quantum dot field effect transistors," *Nano Letters* 15, 4657 (2015).
15. 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 (2015).
14. 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 (2015).
    - Highlights by Kyle J. M. Bishop, "Nanoscale self-assembly: seeing is understanding", *ACS Central Science* 1, 16 (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 (2014).
12. 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 (2013).
11. Xiaoming Mao, Qian Chen, Steve Granick, "Entropy favours open colloidal lattices," *Nature Materials* 12, 217 (2013).
    - News & views by Michael E. Cates, "Patchy colloids: entropy stabilizes open crystals," *Nature Materials* 12, 179 (2013).
10. Qian Chen, Jing Yan, Jie Zhang, Sung Chul Bae, Steve Granick, "Janus and multiblock colloidal particles," Invited feature article for *Langmuir* 28, 13555 (2012).
9. Kundan Chaudhary, Qian Chen, Jaime J. Juárez, Steve Granick, Jennifer A. Lewis, "Janus colloidal matchsticks," *Journal of the American Chemical Society* 134, 12901 (2012).
8. Qian Chen, Sung Chul Bae, Steve Granick, "Staged self-assembly of colloidal metastructures,"

*Journal of the American Chemical Society* 134, 11080 (2012).

7. 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 (2011).
6. Qian Chen, Sung Chul Bae, Steve Granick, "Directed self-assembly of a colloidal kagome lattice," *Nature* 469, 381 (2011).
   - News & views by Flavio Romano and Francesco Sciortino, "Colloidal self-assembly: patchy from the bottom up," *Nature Materials* 10, 171 (2011).
5. Qian Chen, Jonathan Whitmer, Shan Jiang, Sung Chul Bae, Erik Luijten, Steve Granick, "Supracolloidal reaction kinetics of Janus spheres," *Science* 331, 199 (2011).
4. Shan Jiang, Qian Chen, Mukta Tripathy, Erik Luijten, Kenneth S. Schweizer, Steve Granick, "Janus particle synthesis and assembly," *Advanced Materials* 22, 1060 (2010)
3. Steve Granick, Shan Jiang, Qian Chen, "Janus particles," *Physics Today* 62, 68 (2009).
2. Shan Jiang, Mitchell J. Schultz, Qian Chen, Jeffrey S. Moore, Steve Granick, "Solvent-free synthesis of Janus colloidal particles," *Langmuir* 24, 10073 (2008).
1. Nana Zhao, Yang Wei, Nijuan Sun, Qian Chen, Jingwei Bai, Longping Zhou, Yao Qin, Meixian Li, Limin Qi, "Controlled synthesis of gold nanobelts and nanocombs in aqueous mixed surfactant solutions," *Langmuir* 24, 991 (2008).

## INVITED PRESENTATIONS (since April 2015)

### Plenary or Keynote Talks

| | |
|---|---|
| 2025 | Keynote invited speaker for Gold 2025 conference, San Sebastian, Spain |
| 2024 | Keynote invited speaker for the 2024 NSF Nanoscale Science and Engineering Grantees Conference on "Nano-AI Convergence", Alexandria, VA (Dec 2024) |
| 2024 | Keynote invited speaker for the "Synthesis of colloids, crystals, and nanomaterials" track, 98th ACS Colloid & Surface Science symposium, Seattle (Jun 2024) |
| 2024 | Awardee talk on "The ordered, the heterogeneous, and the intertwined" for the MRS Outstanding Early-Career Investigator Award, 2024 Spring MRS meeting at Seattle (Apr 2024) |
| 2024 | Keynote: Symposium on "Colloidal forces: Connecting molecular to macroscopic scales", ACS spring 2024 meeting (Mar 2024). Award talk for 2023 Soft Matter Lectureship |
| 2023 | Keynote: Symposium on "Hybrid Functional Materials of Polymers for Inorganic Nanoparticles", fall 2023 ACS meeting (Aug 2023). |
| 2023 | Keynote: Crystal Growth and Self-assembly Gordon Research Conference (Jun 2023). |
| 2019 | AIChE Annual Meeting, Orlando, FL (Nov 12, 2019)<br>Plenary Talk of "Area 1C, Interfacial Phenomena" on "Cinematography at the nanoscale, from colloidal crystallization to protein transformation" |
| 2019 | Keynote Speaker, Track C: "Colloidal & Surface Interactions", 93rd ACS Colloid & Surface Science Symposium, Atlanta, GA (Jun 18, 2019). |
| 2018 | 92nd ACS Colloid & Surface Science Symposium, State College, PA (Jun 12, 2018)<br>Plenary Talk on "Direct nanoscopic imaging: from crystallizing of nanoparticles to crumpling of polymer films" |
| 2015 | 89th ACS Colloid & Surface Science Symposium, Pittsburgh, PA (Jun 17, 2015)<br>Plenary Talk on "Dynamic colloidal self-assembly: from patchy spheres to anisotropic nanocrystals" |

## All Invited Talks

118. Macromolecules Innovation Institute (MII), Virginia Tech (Sept 2025)
117. Invited speaker, "Label-free Single-Molecule Sensing" Gordon Research Conference (June 2025)
116. Invited discussion leader, "Crystal Growth and Assembly" Gordon Research Conference (June 2025)
115. 5th International Workshop on In-situ TEM, Porto, Portugal (May 2025)
114. Keynote invited speaker for Gold 2025 conference, San Sebastian, Spain (May 2025)
113. Department of Materials Science and Engineering, Stanford University (May 2025)
112. Symposium on "Complexity Engineering of Materials Combining Order, Disorder and Hierarchical Organization," 2025 MRS spring meeting (Apr 2025)
111. Symposium on "Achieving and Exploiting Complexity Through the Synthesis and Application of Hybrid Hierarchical Materials," 2025 MRS spring meeting (Apr 2025)
110. Symposium on "Nanoparticle materials: Synthesis and self-assembly," ACS spring 2025 meeting (Mar 2025)
109. Symposium on "Surface Chemistry of Colloidal Nanocrystals: A Tribute to the Legacy of Dr. Dong Qin," ACS spring 2025 meeting (Mar 2025).
108. Symposium on "Living Soft Matter", American Physical Society meeting, Anaheim, CA (Mar 2025).
107. Workshop on Functional and Regenerative Materials, University of Illinois Chicago (Jan 2025).
106. Department of Chemistry, Yale University (Jan 2025).
105. Colloquium at the Center for Functional Nanomaterials, Brookhaven National Laboratory, NY (Jan 2025).
104. Keynote invited speaker for the 2024 NSF Nanoscale Science and Engineering Grantees Conference on "Nano-AI Convergence", Alexandria, VA (Dec 2024)
103. *Nature* Conference on Phase Engineering of Nanomaterials, Nature Publisher, Hong Kong (Nov 2024)
102. Frontiers of Electron Microscopy and Materials Science (FEMMS) 2024, Catania, Italy (Sept 2024).
101. European Microscopy Congress, Copenhagen, Denmark (Aug 2024).
100. Symposium on "Mineral Crystallization, Aggregation & Dissolution," ACS fall 2024 meeting, Denver (Aug 2024)
99. Symposium on "Advanced Nanoparticle Characterization," ACS fall 2024 meeting, Denver (Aug 2024)
98. Symposium on "Instrumentation & Methodology", European Microscopy Conference 2024, Copenhagen, Denmark (Aug 2024).
97. Symposium on "P09.Advances in In Situ TEM Characterization of Dynamic Processes in Materials", 2024 Microscopy and Microanalysis Meeting, Cleveland (Aug 2024).
96. Symposium on "P11. Frontiers in Electron tomography", 2024 Microscopy and Microanalysis Meeting, Cleveland (Aug 2024).
95. Keynote invited speaker for the "Synthesis of colloids, crystals, and nanomaterials" track, 98th ACS Colloid & Surface Science symposium, Seattle (Jun 2024).
94. Invited Topic lead for the NSF workshop on "Nanomaterial Assemblies", University of Chicago, (Jun 2024).
93. Workshop by Canadian Centre for Electron Microscopy, McMaster University, Canada (May 2024).
92. Physical Chemistry Seminar, Department of Chemistry, Stanford University (Apr 2024).
91. Lightening talk of MRS Outstanding Early-Career Investigator Awardee, spring 2024 MRS meeting (Apr 2024).
90. Symposium on "CH04: Characterization of Materials Dynamics", spring 2024 MRS meeting (Apr

2024).

89. Symposium on "CH01: Characterizing Dynamic Processes of Materials Synthesis and Processing via In Situ Techniques", spring 2024 MRS meeting (Apr 2024).
88. Seminar of Lawrence Berkeley National Laboratory, Berkeley, CA (Mar 2024).
87. Symposium on "Colloidal forces: Connecting molecular to macroscopic scales", ACS spring 2024 meeting (Mar 2024)
86. Midwest Microscopy and Microanalysis Society (MMMS) spring meeting, Northwestern University (Mar 2024).
85. Molecular Engineering & Science Institute, University of Washington, Seattle (Feb 2024).
84. Liquid phase electron microscopy Gordon Research Conference (Feb 2024).
83. ISAMS-5 symposium, University of California, Irvine (Dec 2023).
82. Symposium on "CH02: Advances in In Situ TEM Characterization of Dynamic Processes in Materials" fall 2023 MRS meeting (Nov 2023).
    - Selected as the Journal of Materials Research Distinguished Invited Speaker for the symposium.
81. Symposium on "SF02: Crystallization and Assembly at Interfaces: Fundamental Breakthroughs Enabled by Data-Centric Analysis and In-Situ/Operando Techniques", fall 2023 MRS meeting (Nov 2023).
80. Department of Chemical & Biomolecular Engineering, University of California, Los Angeles (Nov 2023).
79. School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA (Sep 2023).
78. Symposium "PS-10. Organic Chemistry: Applications of liquid phase electron microscopy and other advanced microscopy methods", 20th International Microscopy Congress, Busan, Korea (Sep 2023).
77. Pre-congress workshop & symposium on "Organic Chemistry", 20th International Microscopy Congress, Busan, Korea (Sep 2023).
76. Symposium on "Surface, Interface and Coating Materials", fall 2023 ACS meeting (Aug 2023).
75. Symposium on "Data Analytics and AI for Soft Materials: Manufacturing and Healthcare", fall 2023 ACS meeting (Aug 2023).
74. Symposium on "Hybrid Functional Materials of Polymers for Inorganic Nanoparticles", fall 2023 ACS meeting (Aug 2023).
73. KITP conference "Structure Design and Emerging Phenomena in Nanoparticle Assemblies: What's next", University of California, Santa Barbara (May 2023).
72. KITP workshop: Nanoparticle Assemblies: A New Form of Matter with Classical Structure and Quantum Function (May 2023).
71. ASAXS workshop, Argonne National Laboratory (May 2023)
70. JFI colloquium, University of Chicago (May 2023)
69. Symposium on "Building Advanced Materials via Aggregation and Self-assembly", Spring 2023 MRS meeting (Apr 2023)
68. ACS National Award for Creative Invention – Symposium in honor of Younan Xia, Spring 2023 ACS meeting (Mar 2023).
67. Purdue University, Department of Materials Science and Engineering (Nov 7, 2022)
66. Invited topical review on "Correlative Methods", 2022 Liquid phase electron microscopy Gordon Research Conference, Ventura CA (Oct 11, 2022)
65. Symposium "A02 - Beyond Visualization with in situ and Operando TEM", 2022 Microscopy and Microanalysis Meeting (Aug 2, 2022).
64. X62 — Real-World Data Analytics & Quantitative Liquid and Gas Environmental Electron Microscopy, Pre-meeting Congresses, 2022 Microscopy and Microanalysis Meeting, Portland, OR

(Jul 31, 2022).

63. MACRO 2022, the 49th World Polymer Congress (Jul 17, 2022).
62. Dow's Technical Community Organization (TCO) External Seminar Series, Dow Chemical Company, virtual (Apr 21, 2022).
61. Symposium on "Experimental and Computational Methods for Predictive Self-Assembly", 2022 ACS Spring Meeting (Mar 22, 2022).
60. Session N18: Single-Molecule Characterization of Polymers and Soft Matter I: Heterogeneous and Crowded Environments, APS March meeting, Chicago IL (Mar 16, 2022).
59. Polymer Colloids workshop, San Diego, CA (Feb 21, 2022).
58. Materials Research Lecture, California Institute of Technology, Pasadena, CA (Feb 24, 2022).
57. Symposium on "Advances in Colloidal Crystal Engineering", 2021 Pacifichem Conference, Honolulu, HI (Dec 2021).
56. Symposium on "In-situ TEM Characterization of Dynamic Processes during Materials Synthesis and Processing", 2021 Pacifichem Conference, Honolulu, HI (Dec 2021).
55. Symposium on "Direct Visualization of Chemical and Self-Assembly Processes with High-resolution Microscopy" 2021 Pacifichem Conference, Honolulu, HI (Dec 2021).
54. 5th Conference on In Situ and Correlative Electron Microscopy (CISCEM), Paris (Sep 2021).
53. Symposium on "P03 - Exploring beam-sample interactions for uncovering the atomic nature of matter", 2021 Microscopy and Microanalysis Meeting (Aug 2021).
52. Symposium on "P10 - Investigating phase transitions in functional materials and devices by in situ/operando TEM", 2021 Microscopy and Microanalysis Meeting (Aug 2021).
51. Symposium on "Hybrid Functional Materials from Controlled Assembly of Polymer and Inorganic Nanoparticles", 2021 ACS Fall Meeting (Aug 2021).
50. Midwest Thermodynamics and Statistical Mechanics conference (Jun 16, 2021).
49. Symposium on "CT02-*In Situ* TEM Characterization of Dynamic Processes During Materials Synthesis and Processing", (Apr 18, 2021).
48. Symposium on "NM05: Functional Nanoparticle Materials—Synthesis, Property and Applications ", 2021 Spring MRS Meeting (Apr 18, 2021).
47. ACS GEOC Symposium on "Crystallization pathways: New perspectives on nucleation, growth & dissolution of natural & synthetic materials", 2021 ACS Spring Meeting (Apr 14, 2021).
46. Department of Materials Science and Engineering, University of California, Irvine (Apr 8, 2021).
45. Department of Materials Science and Engineering, Columbia University (Apr 2, 2021).
44. Department of Chemistry, University of Connecticut (Mar 3, 2021).
43. Nanoscience Global Lecture by Nano Letters (Feb 22, 2021).
42. Department of Chemical Engineering, University of Notre Dame (Feb 9, 2021).
41. Department of Materials Science and Engineering, Northwestern University (Feb 2, 2021).
40. Symposium on "F.MT01 – Advanced In Situ Characterization of Materials Kinetics", 2020 Virtual MRS fall meeting (Dec 2, 2020).
39. Symposium on "S.CT08 – Crystallization via Nonclassical Pathways in Synthetic, Biogenic and Geologic Environments", 2020 Virtual MRS spring meeting (Nov 28, 2020).
38. Beckman Director's Seminar, University of Illinois at Urbana-Champaign (Oct 8, 2020).
37. MRS OnDemand Webinar Series, Liquid Phase Electron Microscopy (Sep 23, 2020).
36. Department of Chemistry, Penn State University, State College, PA (Feb 26, 2020).
35. Liquid Phase Electron Microscopy Gordon Research Conference, Lucca, Italy (Jan 2020).
34. EM-Situ'19 workshop, Harvard University, Boston, MA (Dec 6, 2019).

33. Symposium on "Building Advanced Materials via Particle-Based Crystallization and Self-assembly of Molecules with Aggregation-Induced Emission," MRS Fall Meeting 2019, Boston, MA (Dec 5, 2019).
32. Department of Chemical Engineering, University of Michigan, Ann Arbor, MI (Nov 5, 2019).
31. PPG Seminar, PPG Industries, Pittsburgh, PA (Sep 24, 2019).
30. Symposium on "P01 – In situ TEM Characterization of Dynamic Processes During Materials Synthesis and Processing," Microscopy & Microanalysis 2019 Meeting, Portland, OR (Aug 6, 2019).
29. "Nano Assembly 2040", Shanghai, China (Aug 3, 2019)
28. Colloid & Interface Symposium, Hong Kong SAR, China (Jun 13, 2019)
27. Dow Discussion Group on Interface Science, Dow Chemical Company, Midland, MI (May 13, 2019)
26. Symposium on "QN08 – Colloidal Nanoparticles—From Synthesis to Applications," MRS Spring Meeting 2019, Phoenix, AZ (Apr 23, 2019).
25. GSOFT Short Course on "Structures and Order in Soft Matter Physics," 2019 APS March Meeting, Denver, CO (Mar 3, 2019).
24. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA (Mar 13, 2019).
23. Topics in Bioengineering Seminar, School of Engineering and Applied Science, Harvard University, Cambridge, MA (Feb 7, 2019).
22. International Centre for Advanced Materials in BP Incorporation (Dec 7, 2018).
21. Department of Chemical and Biomolecular Engineering, University of Houston, Houston, TX (Oct 12, 2018).
20. Symposium on "Advances in colloid & surface chemistry enabled by cryogenic and in situ liquid-cell electron microscopy," 2018 ACS national meeting, Boston, MA (Aug 19, 2018).
19. Noble Metal Nanoparticles Gordon Research Conference, South Hadley, MA (Jun 19, 2018).
18. Symposium on "NM05 – Colloidal Nanoparticles—From Synthesis to Applications", MRS Spring Meeting 2018, Phoenix, AZ (Apr 4, 2018).
17. Symposium on "CM02 – In situ TEM characterization of dynamic processes during materials synthesis and processing", MRS Spring Meeting 2018, Phoenix, AZ (Apr 3, 2018).
16. Department of Materials Science and Nanoengineering, Rice University, Houston, TX (Mar 29, 2018).
15. Department of Physics, Allegheny College, Meadville, PA (Oct 23, 2017)
14. Department of Chemistry, Ohio State University, Columbus, OH (Sep 25, 2017)
13. ACS COLL Symposium on "Responsive, Programmable Assembly of Active Colloids for Functional Materials", 2017 ACS Fall National Meeting, Washington, DC (Aug 22, 2017)
12. Active Matter workshop at the Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN (Jul 31, 2017).
11. 10th Liquid Matter Conference, Ljubljana, Slovenia (Jul 17, 2017).
10. New Frontiers in Colloid Science, University of Birmingham, UK (Jul 13, 2017).
9. UK Colloids 2017, Manchester, UK (Jul 11, 2017)
8. CSI2 seminar at the Wyandotte Site of BASF Incorporation (Apr 6, 2017)
7. School of Materials Science, University of Manchester, Manchester, UK (Jan 18, 2017)
6. Condensed Matter Physics, University of Edinburgh, Edinburgh, UK (Jan 16, 2017)
5. Department Seminar in Department of Chemical and Biomolecular Engineering, University of Wisconsin, Madison, WI (Sep 27, 2016)
4. CNST 14th Annual Nanotechnology Workshop, Urbana, IL (May 5, 2016)

3. CECAM workshop on “Emergent dynamics of out-of-equilibrium colloidal systems at nano- to microscales”, Lausanne, Switzerland (Apr 20, 2016)
2. Victor LaMer Award Talk, ACS Colloid and Surface Science Symposium, Pittsburgh, PA (Jun 17, 2015)
1. ICAM Annual Conference 2015, Argonne National Laboratory, IL (May 12, 2015)