DR. ROBERT J. MACFARLANE

Paul M. Cook Associate Professor

Department of Materials Science and Engineering, MIT

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Education

2013	PhD in Chemistry, Northwestern University, Evanston, IL
2006	MS in Inorganic Chemistry Yale University, New Haven, CT
2004	BA in Biochemistry, Willamette University, Salem, OR (Phi Beta Kappa, Magna cum Laude, with Honors)

Professional Experience

2020-present	Massachusetts Institute of Technology, Associate Professor
2015-2020	Massachusetts Institute of Technology, Assistant Professor
2013-2015	California Institute of Technology, Kavli Postdoctoral Fellow

Honors and Awards

2023	ACS PMSE Young Investigator Award
2019-present	Paul M. Cook Chair, MIT
2019	3M Non-Tenured Faculty Award
2017	ACS Unilever Award for Outstanding Young Investigator in Colloid & Surfactant Science
2017	NSF CAREER Award
2016-2019	Nanoscale Horizons Community Board Member
2016	AFOSR Young Investigator Program Award
2015-2018	AMAX Career Development Assistant Professorship Chair, MIT
2014	Noble Metal Nanoparticle Gordon Research Conference Selected Presentation
2014	IUPAC Young Investigator Award Honorable Mention
2013	Kavli Nanoscience Institute Post-Doctoral Fellowship
2011	Materials Research Society Gold Graduate Student Award
2011	International Precious Metals Institute Sabin Corp. Graduate Student Award
2010	International Institute for Nanotechnology Outstanding Researcher Award
2009	Ryan Fellowship, Northwestern University
2003	Barry M. Goldwater Scholar
2000	National Merit Scholar

Publications at MIT

37. G. J. Desroches, P. P. Gatenil, K. Nagao, R. J. Macfarlane
Mechanical reinforcement of waterborne latex pressure-sensitive adhesives with polymer-grafted nanoparticles
Journal of Polymer Science 2023, *in press.*

36. C. Chen, X. Luo, A. E.K. Kaplan, M. G. Bawendi, R. J. Macfarlane, M. Bathe
Ultrafast dense DNA functionalization of quantum dots and rods for scalable 2D array fabrication with nanoscale precision
Science Advances, 2023, *9*, eadh8508.

35. T. Hueckel, X. Luo, O. F. Aly, R. J. Macfarlane
Nanoparticle Brushes: Macromolecular Ligands for Materials Synthesis
Accounts of Chemical Research 2023, *56*, 1931-1941.

34 S. Dhulipala, D. W. Yee, Z. Zhou, R. Sun, J. E. Andrade, R. J. Macfarlane, C. M. Portela
Tunable Mechanical Response of Self-Assembled Nanoparticle Superlattices
Nano Letters 2023, *23*, 5155-5163.

33. D. W. Yee, M. S. Lee, J. An, R. J. Macfarlane
Reversible Diffusionless Phase Transitions in 3D Nanoparticle Superlattices
JACS 2023, *145*, 6051-6056.

32. C. C. Chazot, C. J. Thrasher, A. Peraire-Bueno, M. N. Durso, R. J. Macfarlane, A. J. Hart
Scalable, Versatile Synthesis of Ultrathin Polyetherimide Films and Coatings via Interfacial Polymerization
Advanced Functional Materials 2023, *33*, 2214566.

31. M. S. Lee, D. W. Yee, J. M. Kubiak, P. J. Santos, R. J. Macfarlane
Improving Nanoparticle Superlattice Stability with Deformable Polymer Gels
Journal of Chemical Physics 2023, *158*, 064901.

30. R. L. Li, C. J. Thrasher, T. Hueckel, R. J. Macfarlane
Hierarchically Structured Nanocomposites via a "Systems Materials Science" Approach
Accounts of Materials Research 2022, *3*, 1248-1259

29. A. Rendos, D. W. Yee, R. J. Macfarlane, K. A. Brown
Chemically-Adhesive Particles Form Stronger and Stiffer Magnetorheological Fluids
Smart Materials and Structures 2022, *7*, 077001

28. J. Xia, M. S. Lee, P. J. Santos, N. Horst, R. J. Macfarlane, H. Guo, A. Travesset
Nanocomposite Tectons as Unifying Systems for Nanoparticle Assembly
Soft Matter 2022, *18*, 2176-2192.

27. M. Onoda, F. Jia, Y. Takeoka, R. J. Macfarlane
Controlling the dynamics of elastomer networks with multivalent brush architectures
Soft Matter 2022, *18*, 3644-3648.

26. J. M. Kubiak, B. Li, M. Suazo, R. J. Macfarlane
Polymer Grafted Nanoparticle Composites with Enhanced Thermal and Mechanical Properties
ACS Applied Materials & Interfaces 2022, *14*, 21535-21543.

25. M.S. Lee, D.W. Yee, M. Ye, R.J. Macfarlane
Nanoparticle Assembly as a Materials Development Tool
JACS 2022, *144*, 3330-3346.

24. G. J. Desroches, Y. Wang, J. M. Kubiak, R. J. Macfarlane
Crosslinking of Pressure-Sensitive Adhesives with Polymer-Grafted Nanoparticles
ACS Applied Materials & Interfaces 2022, *14*, 9579-9586.

23. J. M. Kubiak, R. J. Macfarlane
Polymer-Grafted Nanoparticles as Single-Component, High Filler Content Composites via Simple Transformative Aging
Advanced Functional Materials 2022, *32*, 2107139.

22. R. J. Macfarlane
From Nano to Macro: Thinking Bigger in Nanoparticle Assembly
Nano Letters 2021, *21*, 7432-7434.

21. F. Jia, J. Song, J. M. Kubiak, M. Onoda, P. J. Santos, K. Sano, N. Holten-Andersen, K. Zhang, R. J. Macfarlane
Brush Polymers as Nanoscale Building Blocks for Hydrogel Synthesis
Chemistry of Materials 2021, *14*, 5748-5756.

20. F. Jia, J. Kubiak, M. Onoda, Y. Wang, R. J. Macfarlane
Design and Synthesis of Quick Setting Nonswelling Hydrogels via Brush Polymers
Advanced Science 2021, *2100968*.

19. M. S. Lee, A. Alexander-Katz, R. J. Macfarlane
Nanoparticle Assembly in High Polymer Concentration Solutions Increases Superlattice Stability
Small 2021, *2102107*.

18. P. J. Santos, P. A. Gabrys, L. Z. Zornberg, R. J. Macfarlane
Macroscopic Materials Assembled from Nanoparticle Superlattices
Nature 2021, *591*, 586-591.
Highlighted in C&E News: "Nanoparticles lattices stack up in solids", March 29, 2021
Highlighted in Nature Chemistry: "Colloidal metallurgy", vol. 13, pg. 514-515
Highlighted in Matter: "Nanoparticles exploring the macroscopic world", vol. 4, pg. 2661-2663

17. Y. Wang, G. J. Desroches, R. J. Macfarlane
Ordered polymer composite materials: challenges and opportunities
Nanoscale 2021, *13*, 426-443.

16. J. M. Kubiak, A. P. Morje, D. J. Lewis, S. L. Wilson, R. J. Macfarlane
Dynamic Manipulation of DNA-Programmed Crystals Embedded in a Polyelectrolyte Hydrogel
ACS Applied Materials and Interfaces 2021, *13*, 11215-11223.

15. D. J. Lewis, D. J. D. Carter, R. J. Macfarlane
Using DNA to Control the Mechanical Response of Nanoparticle Superlattices
JACS 2020, *142*, 19181–19188.

14. T. Pashuck, N. Seeman, R. J. Macfarlane
Self-assembly of Bio-inspired and Biologically Functional Materials
MRS Bulletin 2020, *45,* 832-840.
Invited Article; Cover Feature

13. D. J. Lewis, L. Z. Zornberg, David J. Carter, R. J. Macfarlane
Single Crystal Winterbottom Constructions of Nanoparticle Superlattices
Nature Materials 2020*, 19*, 719-724.

12. P. J. Santos, R. J. Macfarlane
Reinforcing Supramolecular Bonding with Magnetic Dipole Interactions to Assemble Dynamic Nanoparticle Superlattices
JACS 2020, *142*, 1170-1174.

11. L. Z. Zornberg, P. A. Gabrys, R. J. Macfarlane
Optical Processing of DNA-Programmed Nanoparticle Superlattices
Nano Letters 2019*, 19*, 8074-8081.
Highlighted in Science: "Programming Programmable Materials", Science, 366, 703-704.

10. P. J. Santos, Z. Cao, J. Zhang, A. Alexander-Katz, R. J. Macfarlane
Dictating Nanoparticle Assembly via Systems-Level Control of Molecular Multivalency
JACS 2019,*141*, 14624-14632.

9. J. M. Kubiak, R. J. Macfarlane
Forming Covalent Crosslinks between Polymer Grafted Nanoparticles as a Route to Highly Filled and Mechanically Robust Nanocomposites
Advanced Functional Materials 2019, *29,* 1905168.

8. Y. Wang, P. J. Santos, J. M. Kubiak, X. Guo, M. S. Lee, R. J. Macfarlane
Multistimuli Responsive Nanocomposite Tectons for Pathway Dependent Self-Assembly and Acceleration of Covalent Bond Formation
JACS 2019, *141*, 13234-13243.

7. P. J. Santos, T. C. Cheung, R. J. Macfarlane
Assembling Ordered Crystals with Disperse Building Blocks
Nano Letters 2019, *19*, 5774-5780.

6. P. A. Gabrys, R. J. Macfarlane
Controlling Crystal Texture in Programmable Atom Equivalent Thin Films
ACS Nano 2019, *13*, 8452-8460.

5. P. A. Gabrys, L. Z. Zornberg, R. J. Macfarlane
Programmable Atom Equivalents: Atomic Crystallization as a Framework for Synthesizing Nanoparticle Superlattices
Small 2019*, 15*, 1970139.

4. D. J. Lewis, P. A. Gabrys, R. J. Macfarlane
DNA-Directed Non-Langmuir Deposition of Programmable Atom Equivalents
Langmuir 2018, *34*, 14842-14848.

3. P. A. Gabrys, S. E. Seo, M. X. Wang, E. Oh, R. J. Macfarlane, C. A. Mirkin
Lattice Mismatch in Crystalline Nanoparticle Thin Films
Nano Letters 2018, *18*, 579-585.

2. M. X. Wang, S. E. Seo, P. A. Gabrys, D. Fleischman, B. Lee, Y. Kim, H. A. Atwater, R. J. Macfarlane, C. A. Mirkin
Epitaxy: Programmable Atom Equivalents versus Atoms
ACS Nano 2017, *11*, 180–185.

1. J. Zhang, P. J. Santos, P. A. Gabrys, S. Lee, C. Liu, R. J. Macfarlane
Self-Assembling Nanocomposite Tectons
JACS 2016, *138*, 16228–16231

Publications prior to MIT

26. R. V. Thaner, I. Eryazici, R. J. Macfarlane, K. Brown, B. Lee, S. T. Nguyen, C. A. Mirkin
The Significance of Multivalent Bonding Motifs and "Bond Order" in DNA-Directed Nanoparticle Crystallization
JACS 2016, *138*, 6119–6122.

25. Y. Kim, R. J. Macfarlane, M. R. Jones, C. A. Mirkin
Transmutable nanoparticles with reconfigurable surface ligands
Science 2016, *351*, 579-582.

24. R. V. Thaner, Y. Kim, T. Li, R. J. Macfarlane, S. T. Nguyen, M. Olvera de la Cruz, C. A. Mirkin
Entropy-Driven Crystallization Behavior in DNA-Mediated Nanoparticle Assembly
Nano Letters 2015, *15*, 5545-5551.

23. R. J. Macfarlane, B. Kim, B. Lee, C. M. Bates, S-F. Lee, R. A. Weitekamp, A. B. Chang, K. T. Delaney, G. H. Frederickson, H. A. Atwater, R. H. Grubbs
Improving Brush Polymer Infrared One-Dimensional Photonic Crystals via Linear Polymer Additives
JACS 2014, *136*, 17374-17377.

22. R. J. Macfarlane*, R. V. Thaner*, K. A. Brown, B. Lee, J. Zhang, S. T. Nguyen, C. A. Mirkin
Importance of the DNA ‘bond’ in programmable nanoparticle crystallization
PNAS 2014, *111*, 14995-15000. **Equal Author Contribution*

21. A. J. Senesi, D. J. Eichelsdoerfer, K. A. Brown, B. Lee, E. Auyeung, C. H. Choi, R. J. Macfarlane, K. L. Young, C. A. Mirkin
Oligonucleotide Flexibility Dictates Crystal Quality in DNA-Programmable Nanoparticle Superlattices
Advanced Materials, 2014, *26*, 7235–7240.

20. S. Kewalramani, J. W. Zwannikken, R. J. Macfarlane, C-Y. Leung, M. Olvera de la Cruz, C.A. Mirkin, M. J. Bedzyk
Counterion Distribution Surrounding Spherical Nucleic Acid-Au Nanoparticle Conjugates Probed by Small-Angle X-ray Scattering
ACS Nano 2013, *7*, 11301-11309.

19. S. L. Hellstrom, Y. Kim, J. S. Fakonas, A. J. Senesi, R. J. Macfarlane, C. A. Mirkin, H. A. Atwater
Epitaxial Growth of DNA-Assembled Nanoparticle Superlattices on Patterned Substrates
Nano Letters 2013, *13*, 6084-6090.

18. Y. Kim, R. J. Macfarlane, C. A. Mirkin
Dynamically Interchangeable Nanoparticle Superlattices Through the Use of Nucleic Acid-Based Allosteric Effectors
JACS 2013, *135*, 10342–10345.

17. A. J. Senesi, D. J. Eichelsdoerfer, R. J. Macfarlane, M. R. Jones, E. Auyeung, B. Lee, C. A. Mirkin
Stepwise Evolution of DNA-Programmable Nanoparticle Superlattices
Angew. Chem. Int. Ed., 2013, *52*, 6624–6628.

16. R. J. Macfarlane, M. N. O'Brien, S.H. Petrosko, C. A. Mirkin
Nucleic Acid-Modified Nanostructures as Programmable Atom Equivalents: Forging a New 'Table of Elements'
Angew. Chem. Int. Ed. 2013, *52*, 5688-5698.

15. C. Zhang, R. J. Macfarlane, K. L. Young, C. H. Choi, L. Hao, E. Auyeung, G. Liu, Z. Zhou, C. A. Mirkin
A general approach to DNA-programmable atom equivalents
Nature Materials 2013, *12*, 741-746.

14. R. J. Macfarlane, M. R. Jones, B. Lee, E. Auyeung, C. A. Mirkin
Topotactic Interconversion of Nanoparticle Superlattices
Science 2013, *341*, 1222-1225.

13. E. Auyeung, R. J. Macfarlane, C. H. Choi, J. C. Cutler, M. R. Jones, C. A. Mirkin
Transitioning DNA-Engineered Nanoparticle Superlattices from Solution to the Solid State
Advanced Materials 2012, *24*, 5181-5186.

12. T. Li, R. Sknepnek, R. J. Macfarlane, C. A. Mirkin, M. Olvera de la Cruz
Modeling the Crystallization of Spherical Nucleic Acid Nanoparticle Conjugates with Molecular Dynamics Simulations
Nano Letters 2012, *12*, 2509-2514.

11. K. L. Young, M. R. Jones, J. Zhang, R. J. Macfarlane, R. Esquivel-Sirvent, R. J. Nap, J. Wu, G. C. Schatz, B. Lee, C. A. Mirkin
Assembly of reconfigurable one-dimensional colloidal superlattices due to a synergy of fundamental nanoscale forces
PNAS 2012, *109*, 2240-2245.

10. E. Auyeung, J. Cutler, R. J. Macfarlane, M. R. Jones, J. Wu, G. Liu, K. Zhang, K. D. Osberg, C. A. Mirkin
Synthetically programmable nanoparticle superlattices using a hollow 3-D spacer approach
Nature Nanotechnology 2012, 7, 24-28.

9. R. J. Macfarlane, B. Lee, M. R. Jones, N. Harris, G. C. Schatz, C. A. Mirkin
Nanoparticle Superlattice Engineering with DNA
Science 2011, *334*, 204-208

8. M. R. Jones, R. J. Macfarlane, A. E. Prigodich, P. Patel, C. A. Mirkin
Nanoparticle Shape Anisotropy Dictates the Collective Behavior of Surface-Bound Ligands
JACS 2011, *133*, 18865–18869.

7. M. R. Jones, R. J. Macfarlane, B. Lee, J. Zhang, K. L. Young, A. J. Senesi, C. A. Mirkin
DNA-nanoparticle superlattices formed from anisotropic building blocks
Nature Materials 2010, *9*, 913-917.

6. M. R. Jones, K. D. Osberg, R. J. Macfarlane, M. Langille, C. A. Mirkin
Templated Techniques for the Synthesis and Assembly of Plasmonic Nanostructures
Chemical Reviews 2011, *111*, 3736–3827.

5. R. J. Macfarlane, M. R. Jones, A. J. Senesi, K. Y. Young, B. Lee, C. A. Mirkin
Establishing the Design Rules for DNA-Mediated Colloidal Crystallization
Angew. Chem. Int. Ed. 2010, *49*, 4589-4592.

4. R. J. Macfarlane, C. A. Mirkin
Colloidal Assembly via Shape Complementarity
ChemPhysChem 2010, *11*, 3215-3217.

3. S. J. Hurst, H. D. Hill, R. J. Macfarlane, J. Wu, V. P. Dravid, C. A. Mirkin
Synthetically Programmable DNA Binding Domains in Aggregates of DNA- Functionalized Gold Nanoparticles
Small 2009, *5*, 2156-2161.

2. R. J. Macfarlane, B. Lee, H. D. Hill, A. J. Senesi, S. Seifert, C. A. Mirkin
Assembly and organization processes in DNA-directed colloidal crystallization
PNAS 2009, *106*, 10493-10498.

1. H. D. Hill*, R. J. Macfarlane*, A. J. Senesi, B. Lee, S. Y. Park, C. A. Mirkin
Controlling the lattice parameters of gold nanoparticle FCC crystals with duplex DNA linkers
Nano Letters 2008, *8*, 2341-2344. **Equal Author Contribution*

Patents

1. **R. J. Macfarlane**, R. H. Grubbs, "Brush Block Copolymer Blends Containing Linear Homopolymers and Random Copolymers", Patent no. CIT-6988-P, Filed on 9/10/2014
2. **R. J. Macfarlane**, J. Zhang, P. J. Santos, P. A. Gabrys, S. Lee, "Self-Assembling Nanocomposite Tectons", International Patent Application No. PCT/US2017/052787, Filed on 9/21/2017
3. **R. J. Macfarlane**, G. J. Desroches, J. Przyojski, S. Zoellner, "Compositions, Articles, and Methods Involving Pressure-Sensitive Adhesives Comprising Polymer-Grafted Particles", US Provisional Application No.: 63/242,174, Filed 2/10/2022
4. **R. J. Macfarlane**, J. M. Kubiak, "Compositions, Articles, and Methods Involving Polymer Grafted Particles", US Provisional Application No.: 63/270012, File 8/6/2021

Invited Presentations:

113. "Macroscopic Materials Synthesized with Polymer Brush Grafted Nanoparticles"
2023, **Texas A&M**, College Station, TX

112. "Macroscopic Materials Synthesized with Polymer Brush Grafted Nanoparticles"
2023, **WEG Internal Colloquium**, Brazil *(Virtual)*

111. "Polymer Brush Grafted Nanoparticles for Materials Synthesis"
2023, **ACS Fall Conference**, San Francisco, CA

110. "Assembly, Processing, and Fabrication of DNA-Assembled Nanoparticle Materials"
2023, **ACS Fall Conference**, San Francisco, CA

109. "Nanoparticle Superlattice Assemblies: Classical Crystal Structures, but Unconventional Growth Modes"
2023, **Crystal Growth Gordon Research Conference**, Manchester, NH

108. "Macroscopic Materials Assembled from Nanoparticle Superlattices"
2023, **Kavli Institute for Theoretical Physics**, Santa Barbara, CA

107. "Macroscopic Materials Assembled from Nanoparticle Superlattices"
2023, **UC Santa Barbara Materials Seminar**, Santa Barbara, CA

106. "Nanoparticle Superlattice Assemblies: Classical Crystal Structures, but Unconventional Growth Modes"
2023, **Kavli Institute for Theoretical Physics**, Santa Barbara, CA

105. "DNA-Programmed Assembly: Structure-Property Development and Device Fabrication"
2023, **ACS Spring Conference**, Indianapolis, IN

104. "Macroscopic Materials Assembled from Nanoparticle Superlattices"
2023, **ACS Spring Conference**, Indianapolis, IN

103. "Macroscopic Materials Assembled from Nanoparticle Superlattices"
2023, **Purdue University**, West Lafayette, IN

102. "Synthesis of Polymer Nanocomposites Using Supramolecular-Controlled Assembly"
2023, **MIT Chemistry Seminar Series**, Cambridge, MA

101. "Macroscopic Materials Assembled from Nanoparticle Superlattices"
2022, **Pacific Polymer Conference**, Brisbane, Australia

100. "When does a Chemical Become a Material"
2022, **MIT DMSE Seminar Series**, Cambridge, MA

99. "Macroscopic Materials Assembled from Nanoparticle Superlattices"
2022, **Temple University Chemistry Department Seminar Series**, Philadelphia, PA

98. "Macroscopic Materials Assembled from Nanoparticle Superlattices"
2022, **University of Texas Austin Chemistry Department Seminar Series**, Austin, TX

97. "Macroscopic Materials Assembled from Nanoparticle Superlattices"
2022, **Indiana University–Purdue University Indianapolis Chemistry Department Seminar Series**, Indianapolis, IN

96. "Macroscopic Materials Assembled from Nanoparticle Superlattices"
2022, **Indiana University Bloomington Chemistry Department Seminar Series**, Bloomington, IN

95. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **Notre Dame Mechanical Engineering Department Seminar Series**, South Bend, IN

94. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **Wesleyan University Chemistry Department Seminar Series**, Middletown, CT

93. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **Rice University MSNE Department Seminar Series**, Houston, TX

92. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **Noble Metal Nanoparticles Gordon Research Conference**

91. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **Systems Chemistry Gordon Research Conference**

90. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **MRS Spring Meeting**, Honolulu, HI

89. “DNA-directed assembly of materials and devices with intentionally programmed structure-property relationships”
2022, **MRS Spring Meeting**, Honolulu, HI

87. “‘Systems’ Materials Science via Supramolecular Chemistry and Nanomaterial Assembly”
2022, **UC Berkeley Materials Science Department Seminar Series**, Berkeley, CA

87. “Macroscopic Materials via Nanoparticle Assembly”
2022, **Lawrence Berkeley National Lab Seminar Series**, Berkeley, CA

86. “Macroscopic Materials via Nanoparticle Assembly”
2022, **Yonsei University Materials Science Seminar Series**, Seoul, South Korea

85. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **ACS Spring Meeting**, San Diego, CA

84. “DNA-directed assembly of materials and devices with intentionally programmed structure-property relationships”
2022, **ACS Spring Meeting**, San Diego, CA

83. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **Argonne National Laboratory Seminar Series**, Argonne, IL

82. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **Cambridge University Chemistry Department Seminar Series**, Virtual

81. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **Caltech Chemistry Department Seminar Series**, Pasadena, CA

80. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **UCLA Chemistry Department Seminar Series**, Los Angeles, CA

79. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2022, **Rice University Chemistry Department Seminar Series**, Houston, TX

78. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2021, **Columbia University Chemical Engineering Seminar Series**, New York, NY

77. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2021, **Pacifichem 2021**, Virtual

76. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2021, **Northwestern University Chemistry Department Seminar Series**, Evanston, IL

75. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2021, **NIST Seminar Series**, Virtual

74. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2021, **3M Non-Tenured Faculty Seminar**, Virtual

73. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2021, **ACS National Meeting**, Atlanta, GA

72. “Single Crystal Winterbottom Constructions of Nanoparticle Superlattices”
2021, **ACS National Meeting**, Atlanta, GA

71. “Single Crystal Winterbottom Constructions of Nanoparticle Superlattices”
2021, **ACS Colloids National Meeting**, Houston, TX

70. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2020, **Nanoscience Global Webinar presented by *Nano Letters***

69. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2021, **Japan Society for the Promotion of Science**, Tokyo

68. “‘Systems’ Approaches to Hierarchical Materials”
2021, **Merrimack College**, North Andover, MA

67. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2020, **Nanoscience Global Webinar presented by *Nano Letters***

66. “Self-assembly of Bioinspired and Biologically Functional Materials”
2020, **MRS Bulletin Webinar**

65. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2020, **Noble Metal Nanoparticles Gordon Research Conference** *(Delayed, COVID-19)*

64. “Macroscopic Materials Assembled from Nanoparticle Superlattices”
2020, **Systems Chemistry Gordon Research Conference** *(Delayed, COVID-19)*

63. “Single Crystal Winterbottom Constructions of Nanoparticle Superlattices”
2020, **Goldschmidt Conference**, Honolulu, HI *(Virtual due to COVID-19)*

62. “‘Systems’ Approaches to Hierarchical Materials”
2020, **University of Massachusetts Lowell**, Lowell, MA

61. “‘Systems’ Approaches to Hierarchical Materials”
2020, **University of Illinois Urbana Champaign**, Urbana, IL

60. “Systems-Level Control of Structural Hierarchy”
2020, **UC Berkeley**, Berkeley, CA

59. “Biokleptic, Biomimetic, and Bioinspired Approaches to Materials Systems”
2020, **DOD Basic Research Forum**, Washington, DC

58. “A Systems Approach to Supramolecular Materials”
2019, **City University New York ASRC**, New York, NY

57. “A Systems Approach to Supramolecular Materials”
2019, **Brandeis University**, Waltham, MA

56. “A Systems Approach to Supramolecular Materials”
2019, **Northeastern University**, Boston, MA

55. “A Systems Approach to Supramolecular Materials”
2019, **Boston University**, Boston, MA

54. “DNA-Programmed Interfacial Crystallization”
2019, **ACS Fall Meeting**, San Diego, CA

53. “Systems-Level Control of Structural Hierarchy”
2019, **ACS Fall Meeting**, San Diego, CA

52. “Systems-Level Control of Structural Hierarchy”
2019, **Tel Aviv University**, Tel Aviv, Israel

51. “Systems-Level Control of Structural Hierarchy”
2019, **Weizmann Institute**, Tel Aviv, Israel

50. “Systems-Level Control of Structural Hierarchy”
2019, **Hebrew University of Jerusalem**, Tel Aviv, Israel

49. “A Systems Approach to Supramolecular Materials”
2019, **Gordon Research Conference on Self-Assembly and Supramolecular Chemistry**, Les Diablerets, Switzerland

48. “Systems-Level Control of Structural Hierarchy”
2019, **MRS Spring Meeting**, Phoenix, AZ

47. “Surface-Directed, DNA-programmed Crystallization of Nanoparticles”
2019, **ACS Spring Meeting**, Orlando, FL

46. “Systems-Level Control of Structural Hierarchy”
2019, **ACS Spring Meeting**, Orlando, FL

45. “Systems-Level Control of Structural Hierarchy”
2019, **84th Annual Meeting of the Israeli Chemical Society**, Tel Aviv, Israel

44. “Systems-Level Control of Molecular Multivalency”
2018, **MRS Fall Meeting**, Boston, MA

43. “‘Soft’ Epitaxy of Programmable Atom Equivalents”
2018, **MRS Fall Meeting**, Boston, MA

42. “Systems-Level Control of Structural Hierarchy”
2018, **Rutgers**, New Brunswick, NJ

41. “Systems-level Control of Structural Hierarchy in Nanocomposites”
2018, **University of Connecticut Polymer Program Symposium**, Storrs, CT

40. “Systems-Level Control of Molecular Multivalency”
2018, **Ryan Fellows Symposium**, Evanston, IL

39. “Holistic Control of Structural Hierarchy in Nanocomposites”
2018, **ACS Fall Meeting**, Boston, MA

38. “Holistic Control of Structural Hierarchy in Nanocomposites”
2018, **Boston Regional Inorganic Chemistry Meeting**, Providence, RI

37. “‘Soft’ Epitaxy of Programmable Atom Equivalents”
2018, **ACS Spring Meeting**, Boston, MA

36. “Holistic Structural Hierarchy in Nanoparticle Composites”
2018, **ACS Spring Meeting**, Boston, MA

35. “‘Soft’ Epitaxy of Programmable Atom Equivalents”
2017, **MRS Fall Meeting**, Boston, MA

34. “Programming Material Structure from Molecular to Macroscopic Length Scales”
2017, **6th International Conference on DNA Nanotechnology**, Beijing, China

33. "'Soft' Epitaxy of Programmable Atom Equivalents"
2017, **ACS Fall Meeting**, Washington, DC

32. "Self-Assembling Nanocomposite Tectons"
2017, **ACS Fall Meeting**, Washington, DC

31. "Polymer- and DNA-Directed Assembly of Nanocomposites" *(Plenary Lecture)*
2017, **ACS Colloids Meeting**, New York, NY

30. "Polymer- and DNA-Directed Assembly of Nanocomposites"
2017, **New England Complex Fluids Workshop**, Yale, CT

29. "Polymer- and DNA-Directed Assembly of Nanocomposites"
2017, **Draper Laboratory**, Boston MA

28. "Self-Assembling Nanocomposite Tectons"
2016, **MRS Fall Meeting**, Boston MA

27. "Polymer- and DNA-Directed Assembly of Nanocomposites"
2016, **Soft Materials Structures and Devices Seminar Series**, MIT

26. "DNA Directed Assembly of Programmable Atom Equivalents"
2016, **Nebraska Center for Energy Sciences Research, U. Nebraska**, Lincoln, NE

25. "DNA-Directed Assembly of 'Programmable Atom Equivalents'"
2016, **Micro and Nanotechnologies for Medicine: Emerging Frontiers and Applications, Biomaterials Innovation Research Center**, MIT

24. "DNA-Directed Assembly of 'Programmable Atom Equivalents'"
2016, **Materials Design and Processing from Nano to Mesoscale**, Cornell, NY

23. "Materials by Design: Programmable Assembly at the Nanoscale"
2015, **Stanford University Materials Science Department Seminar**, CA

22. "Materials by Design: Programmable Assembly at the Nanoscale"
2015, **UT Austin**, Austin, TX

21. "Materials by Design: Programmable Assembly at the Nanoscale"
2015, **University of Chicago**, Chicago, IL

20. "Materials by Design: Programmable Assembly at the Nanoscale"
2015, **UC San Diego**, San Diego, CA

19. "Materials by Design: Programmable Assembly at the Nanoscale"
2015, **Penn State University**, University Park, PA

18. "Materials by Design: Programmable Assembly at the Nanoscale"
2015, **UC Berkeley**, Berkeley, CA

17. "Materials by Design: Programmable Assembly at the Nanoscale"
2015, **MIT**, Boston, MA

16. "Materials by Design: Programmable Assembly at the Nanoscale"
2015, **Yale University**, New Haven, CT

15. "Materials by Design: Programmable Assembly at the Nanoscale"
2015, **UW Madison**, Madison, WI

14. "High Fidelity IR 1D Photonic Crystals via Brush Polymer Self-assembly"
2015, **Pacifichem Conference**, Honolulu, HI

13. "Materials by Design: Programmable Assembly at the Nanoscale"
2014, **Boston University**, Boston, MA

12. “Materials by Design: Programmable Assembly at the Nanoscale”
2014, **University of Washington**, Seattle, WA
11. “Materials by Design: Programmable Assembly at the Nanoscale”
2014, **Princeton Chemistry**, Princeton, NJ
10. “Materials by Design: Programmable Assembly at the Nanoscale”
2014, **UCLA**, Los Angeles, CA
9. “Materials by Design: Programmable Assembly at the Nanoscale”
2014, **Texas A&M**, College Station, TX
8. “Materials by Design: Programmable Assembly at the Nanoscale”
2014, **North Carolina State University**, Raleigh, NC
7. “Materials by Design: Programmable Assembly at the Nanoscale”
2014, **UIUC**, Urbana-Champaign, IL
6. “Materials by Design: Programmable Assembly at the Nanoscale”
2014, **Brown University**, Providence, RI
5. “Programmable Self-Assembly with Particles and Polymers”
2014 **UCSD Nanoengineering Seminar**, San Diego, CA
4. “Ternary Nanoparticle Superlattices via Reversible Symmetry Interconversion”
2014 **Gordon Research Conference on Noble Metal Nanoparticles**, Mount Holyoke, MA
3. “Nanoparticle Superlattice Engineering with DNA”
2014 **NYU Soft Matter Institute**, New York, NY
2. “Nanoparticle Superlattice Engineering with DNA”
2012 **International Beilstein Symposium**, Priem Am Chiemsee, Germany
1. “Nanomaterials Synthesis with DNA-Programmed Nanoparticle Assembly”
2011, **Energy Frontier Research Center Summit**, Washington, D. C.