CURRICULUM VITAE

Lara A. Estroff

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Education

Swarthmore College	Chemistry	BA, 1998
Yale University	Chemistry	PhD, 2003
Harvard University	Chemistry	Postdoctoral, 2003-2005

Appointments

4/23 -	**Herbert Fisk Johnson Professor of Industrial Chemistry**, Cornell University
8/20 -	**Chair** of Materials Science and Engineering, Cornell University
7/19 – 4/23	**Full Professor** of Materials Science and Engineering, Cornell University
7/15 - 12/19	**Director of Graduate Studies** of Materials Science and Engineering, Cornell University
7/12 – 6/19	**Associate Professor** of Materials Science and Engineering, Cornell University
2012 -	**Adjunct Associate Scientist**, Hospital for Special Surgery, New York, NY
2012-	**Member**, Kavli Institute at Cornell for Nanoscience
1/13 – 3/13	**Affiliate**, Lawrence Berkeley National Lab
1/08 – 6/12	**Adjunct Assistant Scientist**, Hospital for Special Surgery, New York, NY
8/05 – 6/12	**Assistant Professor** of Materials Science and Engineering, Cornell University
8/03 – 7/05	**NIH Post-doctoral Researcher**, Chemistry, Harvard University
8/98 – 7/03	**Graduate Research and Teaching Assistant**, Chemistry, Yale University
8/97 – 8/98	**Visiting Researcher**, Weizmann Institute of Science, Rehovot, Israel

Honors and Awards

Research

2024	*2024 MSE Donald E. and Marilyn O. Goll Lecture, Northwestern University*
2012	*Keynote Speaker*, Gordon Research Seminar on Biomineralization
2009	*Faculty Early CAREER Award*, National Science Foundation
2006	*James D. Watson Investigator Award*, NYSTAR (New York State)

Teaching, Advising, and Service

2024	*EPICC Award in Collaboration*, College of Engineering, Cornell University
2016	*Excellence in Teaching Award*, College of Engineering, Cornell University
2009	*Marilyn Emmons Williams Award* for "significant contributions to promoting undergraduate research at Cornell", Cornell Undergraduate Research Board
2007	*Excellence in Teaching Award*, College of Engineering, Cornell University

Professional Activities

Scientific Advisory Boards

Scientific Advisory Board, CSSAS, a DOE-EFRC, May 2023-2025

External Advisory Board, NYU MRSEC, April 2013-2020

Scientific Advisory Board Member, International Conference on the Chemistry and Biology of Mineralized Tissues (ICCBMT), Oct. 2013, Oct. 2019, Oct. 2023

Conference and Workshop Organization

Conference Chair, GRC on "Biomineralization", 2026

Vice Chair, GRC on "Biomineralization", New London, NH, August 2024

Organizing Committee, Soft Matter Far From Equilibrium – CHESS 2030 Workshop, June 10-11, 2021

Co-Host, Virtual Biomin Seminar Series, Jan-June 2021

Invited Participant, DOE Workshop on "Basic Research Needs for Synthesis Science for Energy Relevant Technology", Washington, DC, May 2016

Conference Chair, GRC on "Crystal Growth and Assembly", Biddeford, ME, July 2015

Symposium Organizer, "Reverse Engineering of Bioinspired Nanomaterials", Fall MRS Meeting, Boston, MA, Nov. 2014

Vice Chair, GRC on "Thin Film and Crystal Growth Mechanisms", Biddeford, ME, July 2013

Co-organizer, NSF Biomaterials Workshop "Biomaterials: Important Areas for Future Investment", Washington, DC, June 2012

Conference Chair, Materials Research Society Spring Meeting, San Francisco, CA, Apr. 2012

Organizer, Cornell Center for Materials Research (CCMR) Industrial Outreach Symposium, "The Future of Biologically-Inspired Materials: Fundamentals to Applications", Ithaca, NY, May 2011

Symposium Organizer, "Structure-Function Relationships in Biomaterials/Biominerals and Bio-mimetic Systems", Spring MRS Meeting, San Francisco, CA, Apr. 2009.

Symposium Organizer, "Ronald Breslow Award for Achievement in Biomimetic Chemistry: Symposium in Honor of Joanna Aizenberg", Spring ACS Meeting, New Orleans, LA, Apr. 2008.

Editorial Positions

Editorial Advisory Board Member*, Journal of Materials Chemistry B* (1/2013-12/2015)
Editorial Advisory Board Member*, Chemistry of Materials* (1/2013-12/2015)
Editorial Advisory Board Member, *Advanced Functional Materials* (2012 – present)
Outside Editor, *Proc. Natl. Acad. Sci.* (Jan. 2015)
Guest Editor*, Chemical Reviews,* "Biomineralization" thematic issue, Nov. 2008

Publications

Journal articles (published or in press): 97 total (h-index (Web of Science): 41, accessed Mar. 28, 2025)

Cornell Independent Career (underlined: Cornell Ph.D. or MS student or post-doc under my supervision; double underlined: Cornell Ph.D. or MS student or post-doc jointly advised on collaborative grant; *italics:* Cornell undergraduate under my supervision; [*]: corresponding author; [#]: equal contribution)

97) Lopez, S.G.; **Estroff, L.A.**; Bonassar, L.J.* "siRNA Treatment Enhances Collagen Fiber Formation in Tissue-Engineered Meniscus via Transient Inhibition of Aggrecan Production" *Bioengineering*, **2024**, *11*, 1308. 10.3390/bioengineering11121308

96) Whitman, M.A.; Mantri, M.; Spanos, E.; **Estroff, L.A.**; De Vlaminck, I.*; Fischbach, C.* "Bone mineral density affects tumor growth by shaping microenvironmental heterogeneity." *Biomater.*, **2025**, *315* 122916. https://doi.org/10.1016/j.biomaterials.2024.122916

95) Ortoll-Bloch, A.; Chen, Y.; Hiralal, E.; Washton, N.; Mueller, K.; De Yoreo, J.; Tao, J.*; **Estroff, L.A.*** "Thermodynamic and kinetic modulation of methylammonium lead bromide crystallization revealed by *in situ* monitoring", *Cryst Grow Des,* **2024**, *24*, 4955-4965. https://doi.org/10.1021/acs.cgd.4c00008

94) Park, S., Choi, S., Shimpi, A.A., **Estroff, L.A.**, Fischbach, C.*, Paszek, M.J. "Collagen Mineralization Decreases Nk Cell-Mediated Cytotoxicity of Breast Cancer Cells via Increased Glycocalyx Thickness" *Adv. Mater.*, **2024**, https://doi.org/10.1002/adma.202311505

93) Choi, S., Whitman, M.A., Shimpi, A.A., Sempertegui, N.D., Chiou, A.E., Druso, J.E., Verma, A., Lux, S.C., Cheng, Z, Paszek, M., Elemento, O., **Estroff, L.A.***, Fischbach, C.* "Bone-matrix mineralization dampens integrin-mediated mechanosignaling and metastatic progression in breast cancer" *Nature Biomed. Eng.,* **2023**, https://doi.org/10.1038/s41551-023-01077-3.

92) Lopez, S, Kim, JK, **Estroff, LA**, Bonassar, LJ* "Removal of GAGs Regulates Mechanical Properties, Collagen Fiber Formation, and Alignment in Tissue Engineered Meniscus", *ACS Biomater. Sci. Eng.*, **2023**, *9*, 1608-1619. DOI: 10.1021/acsbiomaterials.3c00136

91) JAMR Kunitake, D Sudilovsky, LM Johnson, H Loh, S Choi, PG Morris, MS Jochelson, NM Iyengar,

M Morrow, A Masic*, C Fischbach*, and **LA Estroff*** "Biomineralogical signatures of breast microcalcifications", *Science Advances*, **2023**, *9*, eade3152. http://www.science.org/doi/10.1126/sciadv.ade3152

90) Palin, D.*, Kunitake, JAMR, *Chang, M.P.*, Sutter, S., **Estroff, L.A.*** "Gel mediated chemo-mechanical control of calcium carbonate crystal formation", *J. Cryst. Grow.*, **2023**, *602*, 126943 DOI: https://doi.org/10.1016/j.jcrysgro.2022.126943

89) Lee, W.Y[#], Chapman, D.V.[#], Yu, F.[#], Tait, W.R., Thedford, R.P., Freychet, G., Zhernenkov, M, **Estroff, L.A.,** Wiesner, U.B.* "Triblock Terpolymer Thin Film Nanocomposites Enabling Two-Color Optical Super-Resolution Microscopy" *Macromolecules*, **2022**, *55*, 9452-9464. DOI: 10.1021/acs.macromol.2c01017

88) Gao, T., Boys, A.J., *Zhao, C., Chan, K.*, **Estroff, L.A.**, Bonassar, L.J.* "Non-Destructive Spatial Mapping of Glycosaminoglycan Loss in Native and Degraded Articular Cartilage Using Confocal Raman Microspectroscopy." *Frontiers Bioeng. Biotech.* **2021**, *9*, 744197 doi: 10.3389/fbioe.2021.744197

87) Gim, J., Koch, A., Otter, L.M., Savitzky, B.H., Erland, S., **Estroff, L.A.**, Jacob, D.E., Hovden, R.* "The Mesoscale Crystallinity of Nacreous Pearls", *Proc. Natl. Acad. Sci.,* **2021**, *118,* e2107477118. 10.1073/pnas.2107477118

86) Chapman, D.V.; Hinckley, JA; Erstling, JA; **Estroff**, **LA**; Wiesner, UB* "Orthogonal Nanoprobes Enabling Two-Color Optical Super- Resolution Microscopy Imaging of the Two Domains of Diblock Copolymer Thin Film Nanocomposites", *Chem. Mater.* **2021**, *33*, 5156–5167. **DOI:** 10.1021/acs.chemmater.1c01204

85) Yu, F; Thedford, RP; Hedderick, KR; Freychet, G; Zhernenkov, M; **Estroff, LA**; Nowack, KC; Gruner, SM; Wiesner, UB* "Patternable Mesoporous Thin Film Quantum Materials via Block Copolymer Self-Assembly: An Emergent Technology?" *ACS Appl. Mater. Interface*, **2021**, *13*, 34732-34741. **DOI:** 10.1021/acsami.1c09085

84) Krounbi, L., Hedderick, K., Eyal, Z., Shimoni, E., **Estroff, L.A.*,** Gal, A.* "Surface-induced coacervation facilitates localized precipitation of mineral precursors from dilute solutions" *Chem. Mater.* **2021**, *33*, 3534. *https://doi.org/10.1021/acs.chemmater.0c04668*

83) Kim, J.K., Boys, A.J., **Estroff, L.A.**, Bonassar, L.J.* "Combining TGF-β1 and Mechanical Anchoring to Enhance Collagen Fiber Formation and Alignment in Tissue Engineered Menisci" *ACS Biomater. Sci. Engin.*, **2021**, *7*, 1608-1620. https://doi.org/10.1021/acsbiomaterials.0c01791

82) Palin, D., Style, R.W., Zlopasa, J., *Petrozzini, J.J.*, Pfeifer, M.A., Jonkers, H.M., Dufresne, E.R., **Estroff, L.A.*** "Forming Anisotropic Crystal Composites: Assessing the Mechanical Translation of Gel Network Anisotropy to Calcite Crystal Form", *J. Am. Chem. Soc.*, **2021**, *143*, 3439-3447. https://doi.org/10.1021/jacs.0c12326

81) Vidavsky, N.*[,#], Kunitake, JAMR[#], **Estroff, L.A.*** "Multiple Pathways for Pathological Calcification in the Human Body" *Adv Healthcare Mater.* **2020**, 2001271. https://doi.org/10.1002/adhm.202001271

80) Shtukenberg, A.G.*, Drori, R.*, Sturm, E.V., Vidavsky, N.. Haddad, A., Zheng, J., **Estroff, L.A.**, Weissman, H., Wolf, S.G., Shimoni, E., Li, C., Fellah, N., Efrati, E.*, Kahr, B.*. "Crystals of Benzamide, the First Polymorphous Molecular Compound, Are Helicoidal", *Angew. Chem. Int. Ed.*, **2020**, *59*, 14593-14601. https://doi.org/10.1002%2Fanie.202005738

79) Zhou, H., Boys, A.J., *Harrod, J.B.*, Bonassar, L.J.*, **Estroff, L.A.*** "Mineral Distribution Spatially Patterns Bone Marrow Stromal Cell Behavior on Monolithic Bone Scaffolds." *Acta. Biomater.* **2020**, *112*, 274-285. 10.1016/j.actbio.2020.05.032

78) Chiou, A.E., Hinckley. J.A., Khaitan, R., Varsano, N., Hernandez, C.J., **Estroff, L.A.**, Weiner, S., Addadi, L., Wiesner, U.B., Fischbach, C.*, "Fluorescent Silica Nanoparticles to Label Metastatic

Tumor Cells in Mineralized Bone Microenvironments", *Small*, **2020**, 2001432, 10.1002/smll.202001432

77) Noble, J.M.[#], Roberts, L.M.[#], Vidavsky, N.[#], Aaron E. Chiou, A.E., Fischbach, C., Paszek, M.J.*, **Estroff, L.A.***, Kourkoutis, L.F.* "A Comparative Analysis Of Techniques Used To Characterize Extracellular Vesicles", *J. Struct. Biol.*, **2020**, *210*, 107474. https://doi.org/10.1016/j.jsb.2020.107474

76) Ortoll-Bloch, A.G.[#]; Herbol, H.C.[#]; Sorenson, B.; Poloczek, M.; **Estroff, L.A.***; Clancy, P.*, "Bypassing Solid-State Intermediates by Solvent Engineering the Crystallization Pathway in Hybrid Organic-Inorganic Perovskites" *Cryst. Grow. Des.*, **2020**, *20*, 1162-1171. https://doi.org/10.1021/acs.cgd.9b01461.

75) Hinckley, J.A.[#], Chapman, D.V.[#], Hedderick, K.R., Oleske, K.W., **Estroff, L.A.**, Wiesner, U.B.* "Quantitative Comparison of Dye and Ultrasmall Fluorescent Silica Core-Shell Nanoparticle Probes for Optical Super-Resolution Imaging of Block Copolymer Thin Film Surfaces", *ACS MacroLett.* **2019**, *8,* 1378-1382. acsmacrolett.9b00675

74) He, F.; Springer, N. L.; Whitman, M. A.; Pathi, S. P.; Lee, Y.; Mohanan, S.; Marcott, S.; Chiou, A. E.; Blank, B. S.; Iyengar, N.; Morris, P. G.; Jochelson, M.; Hudis, C. A.; Shah, P.; Kunitake, J.A.M.R.; **Estroff, L. A.;** Lammerding, J.; Fischbach, C.* "Hydroxyapatite Mineral Enhances Malignant Potential in a Tissue -Engineered Model of Ductal Carcinoma in Situ (DCIS)." *Biomaterials* **2019**, *224*, 119489. j.biomaterials.2019.119489

73) L.A. Fielding, C.T. Hendley, E. Asenath-Smith, **L.A. Estroff**, S.P. Armes*, Rationally designed anionic diblock copolymer worm gels are useful model systems for calcite occlusion studies, *Polym. Chem.* **2019,** *10* 5131–5141. https://doi.org/10.1039/c9py00889f.

72) Susca, E., Beaucage, P., Thedford, R.P., Singer, A., Gruner, S.M., **Estroff, L.A.**, Wiesner, U.* "Preparation of Macroscopic Block Copolymer-Based Gyroidal Mesoscale Single Crystals by Solvent Evaporation" *Adv. Mater* **2019**, *31*, 1902565. adma.201902565

71) Boys, A.J., Kunitake, J.A.M.R., Henak, C., Cohen, I., **Estroff, L.A.***, Bonassar, L.J.* "Understanding the Stiff-to-compliant Transition of the Meniscal Attachments by Spatial Registration of Raman Microscopy and Confocal Elastography" *ACS Appl. Mater. Interfaces,* **2019**, *11, 26559-26570. acsami.9b03595.*

70) Boys, A.J., Zhou, H., *Harrod, J.B.*, McCorry, M.C., **Estroff, L.A.***, Bonassar, L.J.* "Top-down Fabrication of Spatially Controlled Mineral Gradient Scaffolds for Interfacial Tissue Engineering.", *ACS Biomater. Sci. Eng.*, **2019**, *5*, 2988-2997 10.1021/acsbiomaterials.9b00176

69) Vidavsky, N., Kunitake, JAMR, Diaz-Rubio, M.E., Chiou, A.E., Loh, H.C., Zhang, S., Masic, A.*, Fischbach, C.*, **Estroff, L.A.*** "Mapping and profiling lipid distribution in a 3D model of breast cancer progression", *ACS Cent. Sci.*, **2019**, *5,* 768-780. http://dx.doi.org/10.1021/acscentsci.8b00932.

68) Iannucci, L.E., Boys, A.J., McCorry, M.C., **Estroff, L.A.**, Bonassar, L.J.* "Cellular and Chemical Gradients to Engineer the Meniscus-to-Bone Insertion" *Adv. Healthcare Mater.* **2019**, 1800806, 10.1002/adhm.201800806.

67) Choi, S., Friedrichs, J., Song, Y.H., Werner, C., **Estroff, L.A.***, Fischbach, C.* "Intrafibrillar, bone-mimetic collagen mineralization regulates breast cancer cell adhesion and migration" *Biomater.*, **2019**, *198*, 95-106. https://doi.org/10.1016/j.biomaterials.2018.05.002

66) Hendley, C.T., Fielding, L.A., Jones, E.R., Ryan, A., Armes, S.P., **Estroff, L.A.*** "Mechanistic Insights Into Diblock Copolymer Nanoparticle-Crystal Interactions Revealed Via In Situ Atomic Force Microscopy" *J. Am. Chem. Soc.*, **2018**, *140*, 7936-7945. http://dx.doi.org/10.1021/jacs.8b03828.

65) Vidavsky, N., Kunitake, JAMR, Chiou, A.E.,Northrup, P.A., Porri, T., Ling, L., Fischbach, C.*, **Estroff, L.A.***, "Studying biomineralization pathways in a 3D culture model of breast cancer microcalcifications"**,** *Biomater.* **2018**, *179,* 71-82. https://doi.org/10.1016/j.biomaterials.2018.06.030

64) Richards, J.M., Kunitake, J.A.M.R., Hunt, H.B., Wnorowski, A.N., Lin, D.W., Boskey, A.L., Donnelly, E., **Estroff, L.A.**, Butcher, J.T.* "Crystallinity of Hydroxyapatite Drives Myofibroblastic Activation and

Calcification in Aortic Valves" *Acta Biomater.*, **2018**, *71,* 24-36, https://doi.org/10.1016/j.actbio.2018.02.024

63) Kunitake JAMR, Choi S, Nguyen KX, *Lee MM*, He F, Sudilovsky D, Morris PG, Jochelson MS, Hudis CA, Muller DA, Fratzl P, Fischbach C*, Masic A*, **Estroff LA***. "Correlative imaging reveals physicochemical heterogeneity of microcalcifications in human breast carcinomas." *J. Struct. Biol.* **2018**, *202*, 25-43, https://doi.org/10.1016/j.jsb.2017.12.002

62) Boys, A[#], McCorry, M.C.[#], Rodeo, S., Bonassar, L.*, **Estroff, L.A.***, "Next Generation Tissue Engineering of Orthopedic Soft Tissue-to-Bone Interfaces" *MRS Commun.*, **2017**, *7*, 289-308.

61) Oleske, K.W., Barteau, K.P., Beaucage, P.A., Asenath-Smith, E., Wiesner, U.*, **Estroff, L.A.*** "Nanopatterning of Crystalline Transition Metal Oxides by Surface Templated Nucleation on Block-Copolymer Mesostructures" *Cryst. Grow. Des.*, **2017**, *17*, 5775-5782. 10.1021/acs.cgd.7b00767

60) Goldman, A.R., Asenath-Smith, E., **Estroff, L.A.*** "Mosaic Anisotropy Model for Magnetic Interactions in Mesostructured Crystals" *APL Materials*, **2017**, *5,* 10490*,* 10.1063/1.5007794

59) He, F., Chiou, A.E., Loh, H.C., Lynch, M., Seo, B.R., Song, Y.H., Lee, M.J., Hoerth, R., Bortel, E.L., Willie, B.M., Duda, G.N., **Estroff, L.A.,** Masic, A., Wagermaier, W., Fratzl, P., Fischbach, C.* "Multiscale characterization of the mineral phase at skeletal sites of breast cancer metastasis", *PNAS,* **2017**, *114*, 10542-10547, 10.1073/pnas.1708161114

58) Oleske, K.W., Barteau, K.P., Turker, M.Z., Beaucage, P.A., **Estroff, L.A.,*** Wiesner, U.*, "Block Copolymer Directed Nanostructured Surfaces as Templates for Confined Surface Reactions", *Macromolecules*, **2017**, *50*, 542-549, 10.1021/acs.macromol.6b01969

57) Goldman, A.R., *Fredricks, J.L.*, **Estroff, L.A.***, "Exploring Reaction Pathways in the Hydrothermal Growth of Phase-Pure Bismuth Ferrites" *J. Cryst. Grow.* **2017**, *468*, 104-109, http://dx.doi.org/10.1016/j.jcrysgro.2016.09.054

56) Wu, F.; Chen, W.; Gillis, B.; Fischbach, C.; **Estroff, L.A.**; Gourdon, D.* "Protein-crystal interface mediates cell adhesion and proangiogenic secretion" *Biomaterials*, **2017**, *116*, 174-185, http://dx.doi.org/10.1016/j.biomaterials.2016.11.043

55) Asenath-Smith, E., Noble, J.M., Hovden, R., *Uhl, A.M.*, *DiCorato, A.*, Kim, Y.Y., Kulak, A.N., Meldrum, F.C., Kourkoutis, L.F., **Estroff, L.A.*** "Physical confinement promotes formation of Au/Cu_2O heterostructures with Au nanoparticles entrapped within crystalline Cu_2O nanorods", *Chem. Mater.* **2017**, *29*, 555-563, DOI: 10.1021/acs.chemmater.6b03653

54) *DiCorato, A.E.*, Asenath-Smith, E., Kulak, A.N., Meldrum, F.C., **Estroff, L.A.*** "Cooperative Effects of Confinement and Surface Functionalization Enable the Formation of Au/Cu_2O Metal-Semiconductor Heterostructures" *Cryst. Grow. Des.,* **2016**, *16*, 6804-6811, DOI: 10.1021/acs.cgd.6b00913.

53) Zachman, M.J.; Asenath-Smith, E.; **Estroff, L.A.**, Kourkoutis, L.F.* "Site-Specific Preparation of Intact Solid-Liquid Interfaces by Label-Free *In Situ* Localization and Cryo-FIB Lift-Out", *Microsc. Microanal.*, **2016**, *22*, 1338-1349, doi.org/10.1017/S1431927616011892

52) Chang, EP; Roncal-Herrero, T; Morgan, T; Dunn, KE; Rao, A.; Kunitake, JAMR; Lui, S; Bilton, M; **Estroff, LA**; Kroger, R; Johnson, S; Colfen, H; Evans, JS* "Synergistic Biomineralization Phenomena Created by a Combinatorial Nacre Protein Model System", *Biochem.*, **2016**, *55*, 2401-2410. 10.1021/acs.biochem.6b00163

51) Susca, E.M.; Beaucage, P.A.; Hanson, M.A.; Werner-Zwanziger, U.; Zwanziger, J.W.; **Estroff, L.A.**, Wiesner, U., "Self-Assembled Gyroidal Mesoporous Polymer-Derived High Temperature Ceramic Monoliths" *Chem. Mater.* **2016**, *28*, 2131–2137. 10.1021/acs.chemmater.5b05011

50) Kim, Y.Y.*; Carloni, J.D.; Demarchi, B.; Sparks, D.; Reid, D.; Kunitake, M.E.; Tang, C.C.; Duer, M.J.; Freeman, C.L.; Pokroy, B.; Penkman, K.; Harding, J.; **Estroff, L.A.**; Baker, S.P.*; Meldrum, F.C.* "Tuning Hardness in Calcite by Incorporation of Amino Acids." *Nature Mater.* **2016**, *15*, 903-910. 10.1038/nmat4631

49) Kim, Y.Y.; Semsarilar, M.; Carloni, J.D.; Cho, K.R.; Kulak, A.N.; Polishchuk, I.; Hendley, C.T.; Smeets, P.J.M.; Fielding, L.A.; Pokroy, B.; Tang, C.C.; **Estroff, L.A.**; Baker, S.P.; Armes, S.P.; Meldrum, F.C.* "Structure and Properties of Nanocomposites Formed by the Occlusion of Block

Copolymer Worms and Vesicles Within Calcite Crystals." *Adv. Funct. Mater.*, **2016**, *26,* 1382-1392. 10.1002/adfm.201504292

48) Song, R.Q.; Hoheisel, T.N.; Sai, H.; Li, Z; Carloni, J.D.; Wang, S.; Youngman, R.E.; Baker, S.P.; Gruner, S.M.; Wiesner, U.*; **Estroff, L.A.*** "Morphology and Property Control of Periodically-Ordered Calcium Phosphate Nanostructures by Block Copolymer-Directed Self-Assembly." *Chem Mater.*, **2016**, *28*, 838-847. 10.1021/acs.chemmater.5b04266

47) Hovden, R.[#]; Wolf, S.E.[#]; Holtz, M.E.; Marin, F.; Muller, D.A.; **Estroff, L.A.*** Nanoscale Assembly Processes for Nacre Formation in Mollusk Shells (*Pinna nobilis*): From Disorder to Order, *Nature Commun.*, **2015**, *6*, 10097. 10.1038/NCOMMS10097

46) Asenath-Smith, E.; **Estroff, L.A.*** Role of Akaganeite (beta-FeOOH) in the Growth of Hematite (alpha-Fe_2O_3) in an Inorganic Silica Hydrogel, *Cryst. Grow. Des.*, **2015**, *15*, 3388-3398. 10.1021/acs.cgd.5b00475

45) Choi, S.; Coonrod, S.; **Estroff, L.A.***; Fischbach, C.* Chemical and physical properties of carbonated HA affect breast cancer cell behavior, *Acta Biomater.* **2015**, *24,* 333-342. http://dx.doi.org/10.1016/j.actbio.2015.06.001

44) Hendley, C.T.; Tao, J.; Kunitake, J.A.M.R.; de Yoreo, J.J.*; **Estroff, L.A.*** Microscopy techniques for investigating the control of organic constituents on biomineralization, *MRS Bulletin*, **2015**, *40*, 480-489. 10.1557/mrs.2015.98

43) Wu, F.; Lin, D.D.W.; Chang, J.H.; Fischbach, C.; **Estroff, L.A.**; Gourdon, D.* "Effect of the Materials Properties of Hydroxyapatite Nanoparticles on Fibronectin Deposition and Conformation." *Cryst. Grow. Des.*, **2015**, *15*, 2452-2460. 10.1021/acs.cgd.5b00231

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40) Moore, D.T.; Sai, H.; Tan, K.W.; Smilgies, D.M.; Zhang, W.; Snaith, H.J.; Wiesner, U.*; **Estroff, L.A.*** "Crystallization kinetics of organic-inorganic trihalide perovskites and the role of the lead anion in crystal growth." *J. Am. Chem. Soc.*, **2015**, *137*, 2350-2358. doi: 10.1021/ja512117e.

39) Zhang, W.; Saliba, M.; Moore, D. T.; Pathak, S.; Horantner, M.; Stergiopoulos, T.; Stranks, S. D.; Eperon, G. E.; Alexander-Webber, J. A.; Abate, A.; Sadhanala, A.; Yao, S.; Chen, Y.; Friend, R. H.; **Estroff, L. A.**; Wiesner, U.; Snaith, H. J.* "Ultra-smooth organic-inorganic perovskite thin-film formation and crystallization for efficient planar heterojunction solar cells." *Nat. Commun.* **2015**, *6*, 6142. doi: 10.1038/ncomms7142

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Post-doctoral Research

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13) Love, J.C.; **Estroff, L.A.**; Kriebel, J.K.; Nuzzo, R.G.; Whitesides, G.M.* “Self-assembled monolayers of thiolates on metals as a form of nanotechnology” *Chem. Rev.*, **2005**, *105*, 1103-1170.

Graduate Research

12) Saraogi, I.; Hebda, J.A.; Becerril, J.; **Estroff, L.A.**; Miranker, A.D.; Hamilton, A.D.* “Synthetic α-helix mimetics as agonists and antagonists of islet amyloid polypeptide aggregation” *Angew. Chem. Int. Ed.*, **2010**, *49*, 736-739.

11) **Estroff, L.A.**; Hamilton, A.D.* “Water gelation by small organic molecules” *Chem. Rev.,* **2004**, *104*, 1201-1218.

10) **Estroff, L.A.**; Addadi, L.; Weiner, S.; Hamilton, A.D.* “An organic hydrogel for the growth of calcium carbonate” *Org. & Biomol. Chem*. **2004**, 137-141.

9) **Estroff, L.A.**; Incarvito, C.D.; Hamilton, A.D.* “Design of a synthetic foldamer that modifies the growth of calcite crystals” *J. Am. Chem. Soc.* **2004**, *126*, 2-3.

8) **Estroff, L.A.**; Huang, J.S.; Hamilton, A.D.* “Fiber formation in water by a mono-urea dicarboxylic acid” *Chem. Commun.* **2003**, 2958-2959.

7) **Estroff, L.A.**; Leiserowitz, L.; Addadi, L.; Weiner, S.; and Hamilton, A.D.* “Characterization of an organic hydrogel: A cryo-TEM and x-ray diffraction study” *Adv. Mater.* **2003**, *15*, 38-42.

6) **Estroff, L. A.**; Hamilton, A. D.* "At the interface of organic and inorganic chemistry: Bio-inspired synthesis of composite materials" *Chem. Mater.* **2001**, *13*, 3227-3235.

5) **Estroff, L. A.**; Hamilton, A. D.* "Effective gelation of water using a series of bis-urea dicarboxylic acids" *Angew. Chem. Int. Ed. Engl.* **2000**, *39*, 3447-3450.

Undergraduate Research

4) Paley, R. S.*; **Estroff, L. A.**; Gauguet, J. M.; Hunt, D. K.; Newlin, R. C. "Enantiopure η^4-(1-sulfinyldiene)iron(0) tricarbonyl complexes as templates for carbocycle construction via ring- closing metathesis" *Org. Lett.* **2000**, *2*, 365-368.

3) Albert, R. M.; Lavi, O.; **Estroff, L.**; Weiner, S.*; Tsatskin, A.; Ronen, A.; Lev-Yadun, S. "Mode of occupation of Tabun Cave, Mt Carmel, Israel during the Mousterian Period: A study of the sediments and phytoliths" *J. Archaeol. Sci.* **1999**, *26*, 1249-1260.

2) Paley, R. S.*; **Estroff, L. A.**; McCulley, D. J.; Martinez-Cruz, L. A.; Sanchez, A. J.; Cano, F. H. "Diastereoselective allylations of enantiopure 3- and 4- substituted η^4-(1Z)-(sulfinyldienal)iron(0) tricarbonyl complexes" *Organometallics* **1998**, *17*, 1841-1849.

1) Paley, R. S.*; deDios, A.; **Estroff, L. A.**; Lafontaine, J. A.; Montero, C.; McCulley, D. J.; Rubio, M. B.; Ventura, M. P.; Weers, H. L.; de la Pradilla, R. F.; Castro, S.; Dorado, R.; Morente, M. "Synthesis and diastereoselective complexation of enantiopure sulfinyl dienes: The preparation of sulfinyl iron(0) dienes" *J. Org. Chem.* **1997**, *62*, 6326-6343.

Peer-Reviewed Book Chapters

3) He F, Choi S, **Estroff L**, Fischbach C., "Mineralized Cell Culture Systems for Studying Bone Metastatic Breast Cancer". In: K. Burg, ed. *Engineering 3D Tissue Test Systems*; Taylor & Francis. **2016**

2) Krishnamurthy, V.M.; **Estroff, L.A.**; Whitesides, G.M. "Multivalency in Ligand Design" in *Fragment-Based Approaches in Drug Discovery*; Jahnke, W and Erlanson, D, Eds; **2006**, Wiley-VCH.

1) **Estroff, L.A.**; Hamilton, A.D. "Cryo-TEM, X-Ray Diffraction and Modeling of an Organic Hydrogel" in *Molecular Gels: Materials with Self-Assembled Fibrillar Networks*; Terech, P. and Weiss, R.G., Eds.; **2005**, Springer: Dordrecht, The Netherlands.

Editorial Articles

3) Kröger, N.*, Brunner, E., **Estroff, L.**, Marin, F. "The role of organic matrices in biomineralization." *Discov Mater* **1,** 21 (2021). https://doi.org/10.1007/s43939-021-00021-z

2) **Estroff, L.A.***; Cohen, I. "Biomineralization: Micelles in a crystal." *Nature Materials*, **2011***, 10,* 810-811.

1) **Estroff, L.A.*** "Introduction: Biomineralization." *Chem. Rev.*, **2008**, *108*, 4329-4331.

Edited Books

1) *Structure-Property Relationships in Biomineralized and Biomimetic Composites*, Kisailus, D.; **Estroff, L.**, Landis, W., Zavattieri, P., and Gupta, H.S., Eds; **2009**, Materials Research Society: Warrendale, PA; Mater. Res. Soc. Symp. Proc. Vol. 1187

Selected Press Coverage

21) "Solar solutions: 'Crazy' perovskite offers sustainable alternative to silicon" *Cornell Chronicle,* by David Nutt, Feb. 12, 2025 https://news.cornell.edu/stories/2025/02/solar-solutions-crazy-perovskite-offers-sustainable-alternative-silicon

20) "Tooling up against mechanobiology orthodoxy" https://www.nature.com/articles/s41551-023-01159-2

19) "Bone mineral slows down breast cancer cells" News and Views, *Nature Biomedical Engineering* https://www.nature.com/articles/s41551-023-01122-1

18) "Mineralization of bone matrix regulates tumor cell growth" *Cornell Chronicle,* by David Nutt, Aug. 7, 2023

https://news.cornell.edu/stories/2023/08/mineralization-bone-matrix-regulates-tumor-cell-growth

17) "Microcalcification 'fingerprints' can yield info about cancer" *Cornell Chronicle,* by David Nutt, Feb. 22, 2023 and accompanying video: https://youtu.be/XWWUSjcfnkk

https://news.cornell.edu/stories/2023/02/microcalcification-fingerprints-can-yield-info-about-cancer

16) "Pathological Mineralization" *Academic Minute Podcast,* April 12, 2022, https://academicminute.org/2022/04/lara-estroff-cornell-university-pathological-mineralization/

15) "Scientists harness machine learning to lower solar energy cost" *Cornell Chronicle*, by David Nutt, Sept. 1, 2021.

14) "Spotlights on Recent *JACS* Publications: Translating Gel Anisotropy into Crystal Form", by Dalia Yablon, *J. Am. Chem. Soc.* 2021, V143, 4465-4466.

13) "Seashells Inspire New Superstrong Glass Composite" *Scientific American* by Sophie Bushwick, November 8, 2021

https://www.scientificamerican.com/article/seashells-inspire-new-superstrong-glass-composite/

12) "Eggshell nanostructure protects a chick a helps it hatch" *Science News* by Laurel Hamers, March 30, 2018

https://www.sciencenews.org/article/eggshell-nanostructure-protects-chick-and-helps-it-hatch

11) "Metastatic breast cancer affects bone mineral before spreading" by Tom Fleischman, *Cornell Chronicle*, Sept. 21, 2017.

https://news.cornell.edu/stories/2017/09/metastatic-breast-cancer-affects-bone-mineral-spreading

10) "Tuning the hardness of crystals" by Laurel Hamers (materials360online), Published online: June 14, 2016. http://www.materials360online.com/newsDetails/62477

9) "Made better through science: Calcite tuned to be mollusk-tough" *Cornell Chronicle*. Published online May 2, 2016, http://www.news.cornell.edu/stories/2016/05/made-better-through-science-calcite-tuned-be-mollusk-tough

8) "Materials scientists learn how mother of pearl is made" *Cornell Chronicle*. Published online Dec. 4, 2015, http://www.news.cornell.edu/stories/2015/12/materials-scientists-learn-how-mother-pearl-made

7) "Spotlight: The Benefits of Biomimicry". *The Accelerator.* Published online March 25, 2014, http://blog.engineeringstudents.org/?p=3619#more-3619

6) "Tiny Insights", *Chemistry World*, Published online March 20, 2013, http://www.rsc.org/chemistryworld/2013/03/3d-imaging-tomography-microscopy

5) "Rock-Munching Mollusks: A Model for Artificial Bones" interview for "Morning Edition" NPR Broadcast, Jan. 13, 2011.

4) "Biominerals: Tomography Reveals All", *Nature Chemistry*, Published online Dec. 11, 2009, doi:10.1038/nchem.514

3) "Calcite Close-Up", *Chemical & Engineering News*, 2009, *87*, 7.

2) "Physical Forces at Work in Biocomposites", *Physics World*, Nov. 27, 2009.

1) "Calcite Biocomposites Up Close", *Science*, 2009, *326*, 1194-1195.

Patents and Invention Disclosures

2) DT Moore, H. Sai, KW Tan, **LA Estroff**, UB Wiesner "Crystalline organic-inorganic halide perovskite thin films and methods of preparation" US Patent 9,895,714, 2018, Date of Patent: Feb. 20, 2018.

1) Krishnamurthy, V.M.; **Estroff, L.A.**; Semety, V.; Thomas, S.W.; Kaufman, G.K.; Bilgicer, Z.B.; Whitesides, G.M. "Purification of a Bivalently Active Antibody Using a Non-chromatographic Method" Patent No. US 8,124,743 B2 Date of Patent: Feb. 28, 2012.

Invited Conference Presentations (outside Cornell) (2015-present)

31) Fall MRS "Crystal Clear Symposium" December 2024

30) ICCBMT, October 2023

29) ACS, Symposium in Recognition of Uli Wiesner (August 2023)

28) MCOII2023 (McMaster University) (June 2023)

27) OneChemistry (JHU) (April 2022, in person)

26) 16th International Symposium on Biomineralization, Biomin XVI (August 2021,virtual)

25) American Conference on Crystal Growth and Epitaxy ACCGE-22 (August 2021, virtual, keynote)

24) Gordon Research Conference (GRC) on Biomineralization (August 2018)

23) American Physical Society (APS), Los Angeles, CA (March 2018)

22) GRC on Multifunctional Materials and Structures (January 2018)

21) American Conference on Crystal Growth and Epitaxy (ACCGE-21) (invited talks in 2 sessions), Santa Fe, NM (August 2017)

20) GRC on Crystal Growth and Assembly (June 2017)

19) Symposium in honor of NYU President, Prof. Andrew D. Hamilton, New York University, NY, NY (November 2016)

18) International Conference on Crystal Growth and Epitaxy (ICCGE-18), Nagoya, Japan (August 2016)

17) GRC on Crystal Engineering (June 2016)

16) Batsheva Symposium on Biomineralization, Rehovot, Israel (Feb. 2016)

University Invited Presentations (outside Cornell) (2015-present)

35) McGill University, Department of Chemistry and Department of Materials, April 2025

34) Northwestern MSE, *2024 MSE Donald E. and Marilyn O. Goll Lecture*, November 2024

33) PNNL, October 2024

32) U Michigan MSE, November 2023

31) Yale Chemistry, Sept. 2023

30) UC Riverside, May 2023

29) UPenn, Department of Materials Science and Engineering (in person, November 2022)

28) Andrew D. Hamilton 70th Birthday Symposium, NYU (in person, October 2022)

27) NCCR for Bio-Inspired Materials Synthesis (virtual, May 2022)

26) Bob Paley Retirement Symposium, Swarthmore College, Department of Chemistry (in person, Dec. 2021)

25) University of California, Berkeley, Department of Materials Science and Engineering (virtual, Fall 2021)

24) University of Illinois, Urbana-Champange, Department of Materials Science and Engineering (virtual Fall 2020)

23) Johns Hopkins University, Department of Materials Science and Engineering (February 2020)

22) Haverford College, Department of Chemistry (September 2019)

21) Swarthmore College, Department of Chemistry (September 2019)

20) University of Michigan, Department of Materials Science and Engineering (January 2019)

19) Yale University, Department of Chemical Engineering (April 2017)

18) Oberlin College, Department of Chemistry (February 2015)

Courses Taught

MSE/BME 5620 – Biomineralization (3 credits; Materials application course; newly developed course in 2007)

MSE 3010/5810 – Materials Chemistry (3 credits; MSE core; junior level; redesigned curriculum in 2006; added "active-learning" recitation in 2014)

MSE 4610 – Biomedical Materials (3 credits; Materials elective course; revised curriculum)

MSE 5210 – Properties of Solid Polymers (3 credits; Materials elective course)

ENGRG 1050 – Freshmen Advising Seminar (1 credit)

MSE 4040 – Senior Lab (3 credits)

Graduate Field Memberships at Cornell University

Materials Science and Engineering

Biomedical Engineering

Chemistry and Chemical Biology

Outreach Activities

- GRS on Crystal Growth and Assembly; Career Development panel, June 2025
- "Science and Suds" on Biomineralization at Hopshire, Dec. 2024
- Celebrating 140 Years of Women in Engineering at Cornell Symposium (March 2025)/PCCW Grant

- FAN Ivy+ Faculty Fellow
- ACS Bridge Site – Ezra's Bridge co-Director (2021-present)
- Engaged Cornell Curriculum Grant "Materials Science and Engineering for High School Students" with Julie Nucci, Bruce van Dover
- GradSWE panel
- Research Experience for Teachers (RET) "Diatom Hunt" (Summers 2016, 2017, 2018)
- Spatial Visualization Class (Summer 2015)
- Water activity in Pre-K classroom (June 2016, July 2014)
- SWE TEEMS (Outreach program for high school students from Syracuse) Panel (Jul. 2012)
- Coffeehouse at Tatkon Center, Cornell New Student Programs (Feb. 2012)
- REU (Research Experience for Undergraduates) "Fun-Talk" (Summers 2024, 2011, 2007)
- Cornell Institute for Chemistry Teachers, instructor (Jul. 2010)
- "The Learning Web" in Ithaca, NY, mentor for local high school student (Summer 2010)
- Curie Academy and Catalyst Program, Cornell diversity programs, speaker (Summers 2007, 2008, 2010, 2014, 2015)
- Expanding Your Horizons, Adult Panel (Apr. 2010)
- "Bring your child to work day" Materials Science Activity, co-leader (Apr. 2010)
- Ithaca Egg Drop (sponsored by Ithaca Science Center), Emcee (Apr. 2010)
- "Explore! 2008", orientation program for incoming freshmen, faculty presenter (Aug. 2008)
- "Kitchen chemistry" program for students at the Ithaca Youth Bureau (CCMR Outreach), leader.
- "Ask a Scientist" Columns for the *Ithaca Journal* (also available online, CCMR), contributor.
- Research Experience for Teachers (RET) and REU mentor (Summers 2006 and 2007)

Professional Societies

Member of Sigma Xi, Phi Beta Kappa, ACS, MRS, AAAS