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

8/20 -	**Chair** of Materials Science and Engineering, Cornell University
7/19 -	**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

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 and Advising

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

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 and Oct. 2019

Conference and Workshop Organization

Vice Chair, GRC on "Biomineralization", 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

Academic Service

Cornell University

Faculty advisor, CCMR's Materials Characterization Facility (Fall 2009 – present)
Research Advisory Committee, Member, (Fall 2016-Summer 2019)
CCMR Executive Committee, At-large Representative for College of Engineering, (Summer 2015 – 2018)

Engineering College, Cornell University

Faculty Advisory Committee, Teaching Excellence Institute (Winter 2008- present)
Faculty Search Committee, Outside member, Earth and Atmospheric Sciences (Fall 2016)
Undergraduate Research Grants Review Committee (Fall 2013-Summer 2015)
Teaching Awards Committee, College of Engineering (Summer 2009 – Summer 2011)
Faculty Search Committee, Outside member, Mechanical and Aerospace Engineering (Fall 2010)
Faculty Search Committee, Outside member, Applied and Engineering Physics (Fall 2008)

Department of Materials Science and Engineering, Cornell University

Chair (August 2020 -)
Director of Graduate Studies (July 2015 – Dec. 2019)
Curriculum Committee (Summer 2015 – Winter 2019)
Faculty Search Committee (Fall 2006 – Fall 2008; Fall 2011; (Chair) 2017-2018; 2019; 2020)
Graduate Admissions Committee (Spring 2009; Spring 2012; Spring 2016 - present)
Undergraduate Advising Committee (Spring 2010 – present)
Faculty Advisor, LATTICE (Fall 2016 – present)
Faculty Advisor, Women in Materials Science and Engineering (WIMSE) (Fall 2007 – Spring 2016)
Seminar organizer (Fall 2006 – Spring 2009)

Publications

Journal articles (published or in press): 89 total (h-index (Web of Science): 36)

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)

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**, in press, 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

42) Moore, D.T.; Tan, K.W.; Sai, H.; Barteau, K.P.; Wiesner, U.*; **Estroff, L.A.*** "Direct crystallization route to methylammonium lead iodide perovskite from an ionic liquid." *Chem. Mater.*, **2015**, *27*, 3197-3199. 10.1021/cm5047484

41) Asenath-Smith, E.; Hovden, R.; Kourkoutis, L.F.; **Estroff, L.A.*** "Hierarchically-Structured Hematite Architectures Achieved by Growth in a Silica Hydrogel." *J. Am. Chem. Soc.*, **2015**, *137*, 5184-5192. 10.1021/jacs.5b01697

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

38) Chang, E.P.; Russ, J.A.; Verch, A.; Kroger, R.; **Estroff, L.A.**; Evans, J.S.* "Engineering of crystal surfaces and subsurfaces by framework biomineralization protein phases" *CrystEngComm*, **2014**, *16*, 7406-7409.

37) Chang, E.P.; Russ, J.A.; Verch, A.; Kroger, R.; **Estroff, L.A.**; Evans, J.S.* "The Intrinsically Disordered C-RING Biomineralization Protein, AP7, Creates Protein Phases That Introduce Nanopatterning and Nanoporosities into Mineral Crystals." *Biochemistry*, **2014**, *53*, 4317-4319

36) Moore, D.T.; Sai, H.; Tan, K.W.; **Estroff, L.A.**; Wiesner, U.* "Impact of the Organic Halide Salt on Final Perovskite Composition for Photovoltaic Applications" *Appl. Phys. Lett. Mater.*, **2014**, *2*, 081802. http://dx.doi.org/10.1063/1.4886275

35) Tan, K.W.; Moore, D.T.; Saliba, M.; Sai, H.; **Estroff, L.A.**; Hanrath, T.; Snaith, H.J.; and Wiesner, U.* "Thermally induced structural evolution and performance of mesoporous block copolymer-directed alumina perovskite solar cells", *ACS Nano*, **2014**, *8*, 4730-4739. 10.1021/nn500526t

34) Saliba, M.; Tan, K.W.; Sai, H.; Moore, D.T.; Scott, T.; Zhang, W.; **Estroff, L.A.**; Wiesner, U.*; and Snaith, H.J.* "The Influence of Thermal Processing Protocol Upon the Crystallization and Photovoltaic Performance of Organometal Trihalide Perovskites." *J. Phys Chem. C.*, **2014**, *118*, 17171-17177. 10.1021/jp500717w.

33) Asenath-Smith, E.; **Estroff, L.A.*** "Sectioning of Individual Hematite Pseudocubes with Focused Ion Beam Enables Quantitative Structural Characterization at Nanometer Length Scales." *Microscopy and Microanalysis*, **2014**, *20*, 635-644. http://dx.doi.org/10.1017/S143192761400004X.

32) Sai, H.; Tan, K.W.; Hur, K.; Asenath-Smith, E.; Hovden, R.; Jiang, Y.; Riccio, M.; Muller, D.A.; Elser, V.; **Estroff, L.A.**; Gruner, S.M.; Wiesner, U.* "Hierarchical Porous Polymer Scaffolds from Block Copolymers." *Science*, **2013**, *341*, 530-534. 10.1126/science.1238159

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15) Bilgicer, B.; Thomas, S. W.; Shaw, B. F.; Kaufman, G. K.; Krishnamurthy, V. M.; **Estroff, L. A.**; Yang, J.; Whitesides, G. M.* "A non-chromatographic method for the purification of a bivalently active monoclonal IgG antibody from biological fluids." *J. Am. Chem. Soc.* **2009**, *131*, 9361-9367.

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Graduate Research

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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.

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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.

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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

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

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.

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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.

Ph.D. Theses Supervised

1. Emily Asenath-Smith (2015) *Bio-inspired Crystallization of Oxide Compounds within Inorganic Matrices,* Doctor of Philosophy, Cornell University

2. Amy Richter Blakeley (2012) *Understanding the Effect of Interface Chemistry in Biomineralization – Development of an in Vitro Model for Calcium Phosphate Mineralization*, Doctor of Philosophy, Cornell University

3. Alex Boys (2019) *Characterization Of The Meniscal Attachments And The Extension Of This Knowledge To Tissue Engineering And Other Biological Systems*, Doctor of Philosophy, Cornell University

4. Jason Dorvee (2011) *In Vitro Mineralization: Examining the Formation of Calcium Phosphates in a Hydrogel-based Double Diffusion System,* Doctor of Philosophy, Cornell University
5. Coit Hendely (2017) *In Situ Atomic Force Microscopy Of Growing Crystals Reveals Fundamental Mechanisms Of Crystal Growth And Incorporation Of Additives,* Doctor of Philosophy, Cornell University
6. Abby Goldman (2019) *Bio-Inspired Crystal Growth As A Route Towards Tuning Electromagnetic Properties,* Doctor of Philosophy, Cornell University
7. Ellen Keene (2010) *Matrix - Mineral Interfaces in Biomineralization: Designing an in Vitro Assay for Nacre Formation,* Doctor of Philosophy, Cornell University
8. Miki Kunitake (2014) *The Effects of Structure and Composition on the Hardness of Biogenic and Synthetic Single Crystal Calcite,* Doctor of Philosophy, Cornell University
9. Hanying Li (2009) *Single-Crystal Composites: Gel-Incorporated Single-Crystals Grown from Hydrogel Media,* Doctor of Philosophy, Cornell University
10. Debra (DengWen) Lin (2012) *Development of in Vitro Models to Examine Cell-Mineral Interactions and Cell-mediated Mineral Formation,* Doctor of Philosophy, Cornell University
11. David Moore (2015) *Crystal Growth of Organic-Inorganic Lead Halide Perovskites: Impact of Kinetic Parameters on Morphology, Structure, and Properties*, Doctor of Philosophy, Cornell University
12. Amnon Ortoll-Bloch (2020) *Elucidating Crystallization Pathways In Hybrid Organic–Inorganic Perovskites*, Doctor of Philosophy, Cornell University
13. Reum Scott (2019), *Calcium Phosphate Sol-Gel Combustion Synthesis And Its Application In Bio-Inspired Composite Production*, Doctor of Philosophy, Cornell University
14. Ethan Susca (2018) *Self-Assembly Of Triblock Terpolymer/Preceramic Blends And The Preparation Of Macroscopic Double Gyroid Mesophase Single Crystals*, Doctor of Philosophy, Cornell University

Outreach Activities

- ACS Bridge Site – Ezra's Bridge co-Director
- Engaged Cornell Curriculum Grant "Materials Science and Engineering for High School Students" with Julie Nucci, Bruce van Dover
- 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 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)