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Distinguished Postdoc

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Ph.D., Physics, Brandeis University

Research Summary:
My Ph.D. work focused on the self-assembly of bio-inspired building blocks, such a filamentous viruses and bacterial flagella. Using biochemical methods, I tailored individual particle properties for fundamental studies in soft-condensed matter physics. My work in the self-assembly of non-amphiphilic colloidal membranes was awarded the 2010 Cozzarelli Prize in Engineering and Applied Sciences by the National Academy of Sciences. At the Center of Nanoscale Materials, my efforts have turned to materials chemistry and ligated nanoparticle membranes, where I have contributed to studies investigating their mechanical properties, and demonstrated their propensity to influence ion-transport in membrane separation processes.

Selected Recent Publications:

Ion-Transport Controlled by Nanoparticle Functionalized Membranes, E. Barry, S. P. McBride, H. M. Jaeger, and X. M. Lin. *Nature Communications* 5, 6847 (2014)

Fracture and Failure of Nanoparticle Monolayers and Multilayers. Y. Wang, P. Kanjanaboos, E. Barry, S. P. McBride, X. M. Lin, and H. M. Jaeger *Nano Letters* 14, 826-830 (2014).

Reconfigurable self-assembly through chiral control of interfacial tension, T. Gibaud, E. Barry, M. J. Zakhary, M. Henglin, A. Ward, Y. Yang, C. Berciu, R. Oldenbourg, M. F. Hagan, D. Nicastro, R. B. Meyer and Z. Dogic. *Nature* 481, 348–351 (2012)

Entropy Driven Self-Assembly of Non-Amphiphilic Colloidal Membranes, E. Barry and Z. Dogic, *Proc. Natl. Acad. Sci.,* 107, 10348 (2010)