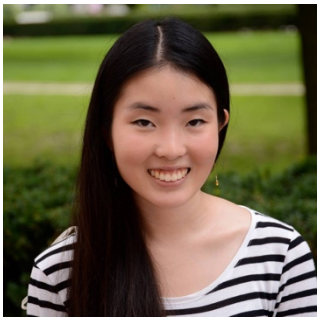
CHEMICAL ENGINEERING

DISTINGUISHED YOUNG SCHOLARS SERIES



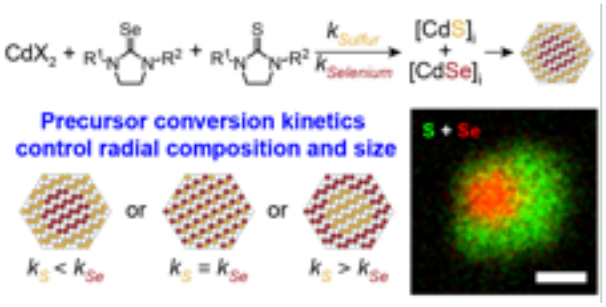
LESLIE HAMACHI

Aug 5, 2019

Postdoctoral research fellow
Northwestern University

Control over Cadmium Chalcogenide Nanocrystal Heterostructures via Precursor Conversion Kinetics

ABSTRACT: Semiconductor nanocrystals have been used for biological imaging, QLED TV, and solid state lighting applications because of their narrow color emission linewidths and energy efficiency. The nanocrystals used for these applications typically consist of two materials arranged in a core/shell geometry. Currently, the process involves a long series of engineered reaction steps, rendering these nanoparticles challenging to synthesize. We have developed a library of sulfur and selenium compounds that enable access to highly fluorescent cadmium chalcogenide core/shell nanocrystals in a single step. Because these molecules possess well-defined conversion kinetics, we can reproducibly synthesize core/shell or alloyed nanocrystal products based on the relative reaction rates of the precursors selected. The materials synthesized via this method can be used for solid state lighting applications or voltage imaging of neuronal activity.



LECTURE 4:00 – 5:00 (PAA) A118
Happy Hour in Benson Hall Lobby Following

CHEMICAL ENGINEERING
UNIVERSITY of WASHINGTON
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BIOGRAPHY: Leslie Hamachi is a postdoctoral research fellow at Northwestern University, working with Professor William Dichtel on covalent organic framework nanoparticles and polymer synthesis. She earned her PhD in chemistry from Columbia University in July of last year (2018) under the mentorship of Professor Jonathan Owen where she made thio- and selenoureas to improve quantum dot synthesis. She received her B.S. in chemistry from UC Berkeley in 2013 with a concentration in materials chemistry. In addition to lab work, Leslie is very passionate about science outreach activities and has participated in numerous programs aimed at sparking interest in the next generation of scientists through programs such as 1000 Girls, 1000 Futures through the New York Academy of Science and Skype a Scientist.