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| **Student** | **Advisor** | **Poster Title, Abstract & Student Bio** |
| Miranda Miao & Bianca Aleman | Dr. Shanju Zhang | Title: Photo-polymerization enabled carbon nanotube composites with applications in desalination  Abstract: Carbon nanotubes (CNTs) exhibit fascinating properties, and even more so when ordered in a coordinated fashion. Single walled carbon nanotubes (SWCNTs) have been ordered by using a liquid crystalline template. Ordering carbon nanotubes by incorporating them into a liquid crystalline phase creates lucrative properties such as increased fluid transport rates, film conductivity, and liquid crystal structure stability. One application of these properties is water filtration systems. Incorporating SWCNTs into the hexagonal liquid crystalline (LC) phase formed by both inert and polymerizable quaternary ammonium surfactants, before and after photopolymerization, has been investigated. One of the inert surfactants, C16MA, was synthesized and collected. SWCNTs were dispersed into the inert surfactant C16TAB using a microtip sonicator, bath sonicator, and a finally a centrifuge. Samples were prepared with various weight percentages of monomer and nanotube or surfactant dispersions. For polymerized samples, photoinitiator and crosslinker were added. Shear forces increased the alignment of the system, as shown by the development of a banded texture. Incorporating SWCNTs into the LC samples did not affect the LC morphology, as shown by polarized optical light microscopy (POM).  Bio: Miranda Miao is a junior in Materials Engineering at Cal Poly. She graduated in 2015 from Arcadia High School in Arcadia, CA. A major accomplishment by Miranda is getting accepted to Cal Poly. She is interested in botany. |