Thiol-based click and coupling reactions have become a major focus in polymer and materials science. Using microfluidics, we recently demonstrated the ability to fabricate thiol–based microfibers from a variety of reagent components. In addition to dictating the resulting fiber shapes and sizes, we modified the surface chemistry of off-stoichiometric microfibers by attaching a fluorescent probe to the surface of the fibers via a biotin-streptavidin linkage. More recently, we reported the fabrication of nanocomposites containing gold and silver nanospheres using photoinitiated thiol-ene/yne chemistry. The resulting films and fibers exhibited unique optical and mechanical properties that could be tuned based on the type of brush ligand used to functionalize the nanoparticles that they contained, or by the concentration of nanoparticles that were within the polymer. The possibility of using thiol-ene/yne nanocomposites as unique surface enhanced Raman spectroscopy (SERS) conduits was also explored yielding promising results. The value of fabricating high-performance nanocomposites spans numerous research areas including surface chemistry, smart textiles, optically active materials and sensors. The ease with which such materials can be fabricated portends the use of thiol-based chemistry in myriad polymer applications.

Darryl A. Boyd is a synthetic inorganic and electrochemist by training. He received his BS in Chemistry at the University of Michigan. He went on to Purdue University where he received his MS in Biochemistry and Ph.D. in Inorganic Chemistry. Dr. Boyd is currently a Jerome & Isabella Karle Fellow in the Optical Sciences Division at the U.S. Naval Research Laboratory. His research interests encompass aspects of polymer chemistry, materials science and bio-inorganic chemistry, with an emphasis on materials fabricated via photopolymerizations, including photoinitiated thiol click chemistry. He is primarily interested in novel methods for producing nanocomposite polymer materials, and determining the unique optical and electrical

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SEH B1220
2:00 – 3:00 p.m
Refreshments will be served at 1:45 p.m.