
Stephanie Richins, Lara Teich, None, Chemical Material Engineering Collaboration — The presence of arsenic in New Mexico water bodies is a concern. It is urgent to develop processes for its removal. Recently, graphitized carbon nitride g-C$_3$N$_4$ with proper bandgap (2.7 eV) has attracted attention. However, the efficiency for g-C$_3$N$_4$ needs improvement due to its low charge separation efficiency and low surface area. Polyacrylonitrile (PAN) is an inexpensive polymer. When heated, it forms graphitized g-PAN with graphite-like sheet network structure, which should facilitate the charge separation efficiency and increase the surface area of g-C$_3$N$_4$. In this work, we report the synthesis of g-C$_3$N$_4$ and its composites with g-PAN with different compositions. Characterization including BET surface area, morphology, crystal structure, microstructure by N$_2$ adsorption/desorption, electron microscopies, and x-ray diffraction. The photocatalytic oxidation of As(III) under visible light irradiation as a function of the percentage g-PAN in g-C$_3$N$_4$ is evaluated. The correlation between photocatalytic performance with composition, microstructure, and surface area will be discussed.