

Dean's Colloquium
Dr. Peter Njoki
Department of Chemistry and Biochemistry



When: Wednesday, January 25th, 2023

Where: Turner 129

Time: 3:00 – 4:00 pm

Title: Synthesis of Anisotropic Nanomaterials

Abstract: The ever increasing need to reduce CO₂ gas emission in the atmosphere has led to design of nanomaterials that can convert CO₂ to value-added products. This presentation focuses on the fabrication of copper-based nanostructures via microwave irradiation. We chose copper because it is abundant, inexpensive, and a valuable constituent in heterogeneous catalysis of CO₂. Yet, copper is susceptible to oxidation that leads to loss of catalytic activity and applicability. To overcome this drawback, we alloyed copper with other metals that enhance stability and activity. Our lab has synthesized copper-silver nanoparticles by reacting aqueous copper (II) nitrate and silver nitrate with sodium acrylate (reducing/capping agent) using microwave irradiation. The morphology and composition of the nanoparticles were examined by UV-vis spectroscopy (UV-vis) and scanning transmission electron microscopy - energy dispersive spectroscopy (STEM-EDS). We plan to use the nanoparticles to explore electrocatalytic reduction of CO₂ gas to value-added organic products.

Bio: Dr. Peter Njoki is an Associate Professor of Chemistry in the Department of Chemistry and Biochemistry. Professor Njoki joined the faculty at Hampton in 2014. He pursued his doctoral and postdoctoral studies at Binghamton University (State University of New York) and Syracuse University, respectively. His research interest includes nanoscience, materials chemistry, catalysis, renewable energy, and forensic chemistry. He has published 40+ peer-reviewed articles that have received over 5,100 citations with an h-index of 28. He presently holds three patents in fabrication of nanomaterials for bioanalytical and catalytic applications. He serves as PI, Co-PI, Co-I, and consultant on active ACS-PRF, NIH, NSF, and ONR grants. He is a member of the American Chemical Society, Materials Research Society, and Virginia Academy of Science. He is a 2022 recipient of the Carnegie African Diaspora Fellowship award from Carnegie African Diaspora Fellowship Program (CADFP).