Harnessing the chemistry of cementitious materials towards the next-generation eco-efficient concretes

Dr. Monday U. Okoronkwo
Doshi Department of Chemical and Biochemical Engineering
Missouri S&T

Chemistry Seminar on *Cementitious Materials*

Monday
May 1 at 4 pm
in 303 Schrenk

Please contact Dr. Amitava Choudhury at choudhury@mst.edu for further information.

MISSOURI S&T

Abstract: The production of conventional cement is an energy- and CO_2-intensive process contributing to over 8 % of the global anthropogenic CO_2 emissions. To reduce the carbon footprint of cement and concrete, efforts are increasingly directed toward developing sustainable low-carbon alternative cementitious materials. Chemistry is at the heart of such efforts, helping us to understand what forms when cements react with water (hydration), and how they may impact the properties and performance of the resulting cement-based products. Through such understanding, the design and optimization of new alternative cements are enabled. This talk will present some of our work in understanding the hydration reactions and the development of phase assemblages and properties of some candidate low-carbon alternative cements, including blended cements, alkali-activated cements, sulfoaluminate cement, and carbonated cements.

About the speaker: Dr. Monday U. Okoronkwo is an Assistant Professor in the Doshi Department of Chemical and Biochemical Engineering at Missouri S&T. His educational training includes a Ph.D. in Chemistry from the University of Aberdeen UK and a postdoctoral at the University of California Los Angeles. He joined Missouri S&T in the Fall of 2018. His research is focused on the interdisciplinary area of materials for sustainable infrastructure, energy, and environment. His work has attracted several grants from federal agencies, and he is a recipient of many honors including the Missouri S&T College of Engineering and Computing Dean's Research Scholar Award 2021, and the National Science Foundation CAREER Award 2023.