ANALYTICAL SEMINAR

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"Shining Light on Submicron Aerosols and Droplets: How Different Are They, and How Can We Tell?"

The physicochemical properties of aerosols and droplets govern fundamental processes spanning from respiratory virus transmission and atmospheric processes to remarkable accelerations in chemical reactivity recently discovered in microdroplets. Despite their outsized importance, these critical properties remain challenging to measure directly in situ due to the inherently small particle sizes, their dynamic nature, and the risk of perturbation during analysis. Here, our recent advances in the use of fluorescence probe spectroscopy as a versatile analytical tool for real-time, in situ measurements of critical aerosol properties, including phase state, pH, and viscosity, are presented. Additionally, how these measured properties differ or not from those of larger particles or bulk phases will be discussed, with implications in each of the aforementioned application areas.

PURDUE UNIVERSITY | James Tarpo Jr. and Margaret Tarpo Department of Chemistry

Tuesday, April 14, 2026 | 3:30 PM | WTHR 172