Analytical Chemistry Seminar
219 Brown Laboratory/ Zoom
Zoom Link https://udel.zoom.us/j/98093174367
Friday, December 22, 2022, 4pm

Oxygen as an overlooked reagent in cell culture: The need for better 3D tissue and tumor model systems

The diffusion-dominated environments found in tumors are a consequence of cellular proliferation outpacing vascularization. These poorly oxygenated regions result in aberrant cellular signaling and the acidification of the extracellular environment. Cancerous cells adapt to these oxygen-stressed environments, resulting in aggressive phenotypes such as drug resistance and increased invasive potential. Our laboratory develops devices and methods to evaluate the role of oxygen on cellular behavior in tissue-like environments. By treating oxygen as a reagent, we specifically ask questions focused on how traditionally relied-upon culture methods (e.g., atmospheric or 20% O2 levels) overlook important cellular responses occurring at physiologically relevant oxygen tensions. In this talk, I will share some recent examples of why oxygen must be accounted for when evaluating (1) drug sensitivity and resistance in tumor models, (2) the potential toxicity of environmental contaminants, and (3) the metabolic activity and competency of healthy hepatocytes in liver models.