Physical Chemistry Seminar
In person/Virtual
219 Brown Lab/Zoom Link  https://udel.zoom.us/j/98093174367
Monday, March 7, 2022, 4pm

Chemistry in the sustainable extraction of valuable metals from complex mineral matrices

Our society depends, unavoidably, on the extraction of various metals from the earth crust in order to continue its development. The ever-decreasing concentration of valuable metals in ores, together with the increasing environmental concerns associated with mining activities, are currently pushing the development of new strategies to extract metals. Even though the chemistries of individual elements and minerals are well known, the presence of large amounts of complex minerals complicates the extractive processes. In this seminar, we will explore the thermodynamics and kinetics of dissolution (leaching) of silver minerals, focusing on the role of surface chemistry during the leaching process.

In this seminar, we will explore the thermodynamics and kinetics of dissolution (leaching) of silver-containing ores using wet chemistry analysis. Relevant information is obtained from mineralogical (polarization microscopy) tools and X-ray photoelectron spectroscopy (XPS), which provide a deeper understanding of the reactions taking place during a leaching process. The same strategy is employed to understand the effect of pre-treatments, which allows for a decrease in the consumption of leaching agents, an improvement of the kinetics of dissolution and an increase in the extraction of valuable metals.