MSE SEMINAR

April 21, 2017
113 McBryde Hall
3:30 – 4:30 PM
Refreshments at 3:00 PM

Amelia McMullen

Graduate Student
Materials Science and Engineering, Virginia Tech

"Biofilm formation on antimicrobial stainless steels"

ABSTRACT

The formation of biofilms on surfaces and subsequent biofouling, or microbiologically influenced corrosion (MIC), pose extensive environmental health and safety problems both on Earth and in space. Ninety-nine percent of the world's population of bacteria are biofilm forming. However, the principles which govern how different microbial cells interact and self-organize into these complex films is still poorly understood. Once mature, biofilms are robust and difficult to remove. If the reversible attachment phase of biofilm formation can be interrupted by a biologically resistant surface, this could help mitigate biofilm maturation on a given surface. This project aims to characterize and advance conventional bioresist materials which inhibit biofilm growth and MIC but remain easy to integrate into existing manufacturing processes. This work focuses on wetted, metallic materials, for use in coolant tanks, piping, water distribution/treatment systems, and closed environmental systems such as the NASA International Space Station Environmental Control and Life Support System (ECLSS). Specifically, the potential long-term antimicrobial effects of copper- and silver-alloyed stainless steels within a low shear, continuous flow growth environment are being investigated.

BIOSKETCH

Amelia McMullen is a M.S. student within the Materials Science and Engineering Department working under Dr. Mitsu Murayama. Amelia graduated from Rochester Institute of Technology in 2014 with a B.S. in Chemistry and a minor in German Language. She won multiple internship awards from NASA.