SEMINAR

The perils of cleaning and other tales of our indoor air

Delphine Farmer
Colorado State University
Department of Chemistry

In the US, we spend 90% of our lives inside buildings – and likely even more than that now under stay-at-home orders! Yet our understanding of the chemistry in indoor air is limited. The House Observations of Microbial and Environmental Chemistry (HOMEChem) study was a collaborative field investigation designed to probe how everyday activities influence the emissions, chemical transformations and removal of trace gases and particles in indoor air. Sequential and layered experiments in a research house included cooking, cleaning, variable occupancy, and window-opening. In this talk, I'll describe both gas and particle experiments, and explore how chemistry and building parameters work together in a complex multiphase environment to influence the composition of the air we breathe both indoors and out. Cleaning with bleach is one particularly interesting example of indoor chemistry. We used chemical ionization mass spectrometry measurements during bleach mopping events to study chlorine compounds, and their interactions with both oxidized and reduced nitrogen. This chemistry produces an array of radicals, even in the low-light indoor environment, which can react with volatile organic compounds to produce an array of products. The chemistry observed during HOMEChem provides a strong contrast to the outdoor atmosphere, highlighting the importance of surface reactions and the need for new instrumentation and experiments.

Monday, April 27, 2020, 3:30 p.m
Virtual refreshments 3:15 p.m
Live webcast: https://meet.google.com/wgy-zxsn-efh
Phone: +1 812-727-7516, PIN: 432 472 682#