Abstract:
In the United States, the average person spends about 90% of their time indoors. While there have been significant advancements in our understanding of indoor environments, much remains unknown about human exposures in these spaces. To date, most studies have looked at volatile organic compounds (VOCs) that are directly emitted from sources such as cooking emissions and cleaning products as well as off-gassing from furniture and building materials. Once emitted, VOCs can be further processed and changed in the gas-phase such as by gas-phase oxidation. Oxidized VOCs are often more water soluble than their parent compounds and can partition into liquid water which, indoors, can exist as films on walls and other surfaces, in wet particles, on skin, and in the respiratory tract of occupants. Once oxidized VOCs partition into water, they can react further. Aqueous chemistry indoors can be a sink for some compounds and a source of others which will change indoor air chemical makeup and, therefore, exposure. This seminar discusses approaches to identify some of the important oxidized VOCs in indoor air as well as understanding their chemistry and fate in the built environment.