The smoke emitted by flames and engines often appears black due to high concentrations of tiny “soot” particles. These light-absorbing, chemically and morphologically complex particles have major climate and health effects. For example, soot particles are considered second only to CO₂ in direct global warming, and, in the case of diesel exhaust, have recently been declared carcinogenic by the WHO.

The fate of soot particles in the atmosphere and in the human body depends on particle properties like size, shape, surface chemistry, and chemical composition. These properties all depend on combustion conditions, which change rapidly during a dynamic process like wood-burning. After emission, continued change occurs due to atmospheric oxidation and mixing.

To understand the dynamic evolution of soot, real-time analysis can be invaluable. This talk will describe the chemical and morphological characterization of soot by online techniques such as aerosol mass spectrometry, with an emphasis on the shape and composition of wood-burning aerosols.

January 8, 2014, 3 - 4 pm
Wallberg Building, 200 College Street, Room 407