

Interview with EMSL users [video transcript]:
Julia Laskin and Alex Laskin
July 2009

Narrator: We are here at the Environmental Molecular Sciences Laboratory today to talk to Dr. Alex Laskin and Dr. Julia Laskin about their recent research into alkaloids and forest fires.

Julia Laskin: Hi, I'm Julia Laskin, and I work here at the Environmental Molecular Sciences Laboratory. Our recent research focused on characterization of aerosol particles produced by biomass burning. We analyzed those particles using an EMSL high-resolution mass spectrometer that is specially dedicated for the analysis of environmental samples.

Our characterization demonstrated that there is a class of compounds present in aerosols that are called alkaloids that was not characterized previously by other techniques. These compounds are fairly basic and as such they can affect the acidity or basicity of aerosol particles, and their activity as cloud condensation nuclei and their ability/activity in terms of cloud formation.

In addition, these compounds are fairly toxic. They are actually produced by plants as natural poisons, and they can be either toxic to humans or, in small amounts, they are actually used as drugs.

Alex Laskin: The fact that we found these alkaloids as a characteristic emissions from the biomass burning of ponderosa pine trees might be an interesting observation because it might have an important regional impact on the western United States, because, first, these trees are very abundant in this area. Second, foresters do prescribed or planned burns here to help forests grow. When they do these burns, they are done under smoldering conditions exactly the way when these compounds are mostly released from the biofuel.

So, the release of these compounds from the biofuel may have an important environmental impact on the health of the foresters and on the population in this area.

Our continued research is focused on the quantitative characterization of these compounds in the emissions.

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