DEPARTMENT OF **CHEMICAL & ENVIRONMENTAL ENGINEERING**

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LYNN RUSSELL

PROFESSOR
SCRIPPS INSTITUTION OF OCEANOGRAPHY
UC SAN DIEGO

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COMPARING ORGANIC PARTICLES FROM SMOG CHAMBERS AND THE ATMOSPHERE

Characteristic organic functional group compositions can be used to identify aerosols by source type, including fuel combustion, terrestrial vegetation, and ocean bubble bursting. Each of these sources often accounts for more than a third of organic mass, some of which is secondary organic aerosol (SOA) from gas-phase precursors. Atmospheric SOA associated with combustion sources is consistent with both alkane and aromatic precursors. Low organonitrate group concentrations are found in humid ambient conditions. The remote forest observations have ratios of carboxylic acid, organic hydroxyl, and non-acid carbonyl groups similar to those observed for isoprene and monoterpene chamber studies, but in biogenic aerosols transported downwind of urban areas the formation of esters replaces the acid and hydroxyl groups and leaves only non-acid carbonyl groups. Forest fires include biogenic emissions that produce SOA with organic components similar to isoprene and monoterpene chamber studies, also resulting in non-acid carbonyl groups in SOA. In this talk we will focus on measurements from Bakersfield, California, where secondary organics from motor vehicle emissions are responsible for most of the summertime fine particle pollution.