

Products of OH + Furan Reactions and Some Implications for Aromatic Hydrocarbon Atmospheric Degradation

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Unsaturated 1,4-dicarbonyls are important products of the atmospheric degradations of aromatic hydrocarbons such as benzene, toluene, xylenes and trimethylbenzenes, which comprise ~20% of the non-methane volatile organic compounds present in urban air masses in the USA. However, in many cases the measured formation yields of the unsaturated 1,4-dicarbonyls are significantly lower than those of these presumed co-product 1,2-dicarbonyls. These discrepancies could be due to analytical problems and/or rapid photolysis of unsaturated 1,4-keto-aldehydes and unsaturated 1,4-dialdehydes, or to incorrect reaction mechanisms for the OH radical-initiated reactions of aromatic hydrocarbons. Since unsaturated 1,4-dicarbonyls are major products of OH + furans, with apparently simpler product distributions and mechanisms, we have investigated the reactions of OH radicals with furan, 2- and 3-methylfuran, and 2,3- and 2,5-dimethylfuran, in the presence of NO. Using direct air sampling atmospheric pressure ionization tandem mass spectrometry and gas chromatography, the unsaturated 1,4-dicarbonyls were observed and quantified. The measured unsaturated 1,4-dicarbonyl formation yields ranged from $8 \pm 2\%$ from OH + 2,3-dimethylfuran to $75 \pm 5\%$ from OH + furan. Other products were also formed. These data will be presented and discussed and, time permitting, a brief discussion of *in situ* nitro-aromatic and nitro-PAH formation from the atmospheric degradations of aromatic hydrocarbons and PAHs will also be presented.

Live cast on the link below:

<http://www.fin.ucar.edu/it/mms/fl-live.htm>

A recording will be available on ACD's website for viewing at a later date.

Tuesday, November 19th,

3:15 p.m. Refreshments

3:30 p.m. – Seminar

FL2- 1022, Large Auditorium