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## Measurements of OH and HO<sub>2</sub> yields from the gas phase ozonolysis of isoprene

T. L. Malkin, A. Goddard, D. E. Heard, and P. W. Seakins  
School of Chemistry, University of Leeds, Leeds, LS2 9JT, UK

**Abstract.** The reactions of ozone with alkenes are an important source of hydroxyl (OH) radicals; however, quantification of their importance is hindered by uncertainties in the absolute OH yield. Hydroxyl radical yields for the gas-phase ozonolysis of isoprene are determined in this paper by four different methods: (1) The use of cyclohexane as an OH scavenger, and the production of cyclohexanone, (2) The use of 1,3,5-trimethylbenzene as an OH tracer, and the diminution in its concentration, (3) A kinetic method in which the OH yield was obtained by performing a series of pseudo-first-order experiments in the presence or absence of an OH scavenger (cyclohexane), (4) The OH and HO<sub>2</sub> yields were determined by fitting the temporal OH and HO<sub>2</sub> profiles following direct detection of absolute OH and HO<sub>2</sub> concentrations by laser induced fluorescence at low pressure (Fluorescence Assay by Gas Expansion- FAGE). The following OH yields for the ozonolysis of isoprene were obtained, relative to alkene consumed, for each method: (1) Scavenger (0.25±0.04), (2) Tracer (0.25±0.03), (3) Kinetic study (0.27±0.02), and (4) Direct observation (0.26±0.02), the error being one standard deviation. An averaged OH yield of 0.26±0.02 is recommended at room temperature and atmospheric pressure and this result is compared with recent literature determinations. The HO<sub>2</sub> yield was directly determined for the first time using FAGE to be 0.26±0.03.

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