

Cl-ATOM AND OH-RADICAL INITIATED OXIDATION OF UNSATURATED ESTERS: TEMPERATURE DEPENDENT STUDIES UNDER ATMOSPHERIC CONDITIONS

Ian Barnes, Iustinian Bejan and Peter Wiesen

University of Wuppertal, FB-C - Physikalische Chemie, Gauß Straße 20, 42119 Wuppertal, Germany.

María B. Blanco and Mariano A. Teruel

Instituto de Investigaciones en Fisicoquímica de Córdoba (I.N.F.I.Q.C.), Dpto. de Fisicoquímica, Facultad de Ciencias Químicas, Universidad Nacional de Córdoba. Ciudad Universitaria, 5000 Córdoba, Argentina.

The kinetics of the reactions of chlorine atoms and OH radicals with acrylates have been studied by the relative kinetic method over the temperature range 283-313K at atmospheric pressure in a large volume photoreactor using in situ FTIR analysis to monitor the decay of the organics and the reference compounds.

The results of the kinetic measurements will be presented and discussed in terms of structure activity relationships

Product analyses are still ongoing. Preliminary observations will be presented. Preferential addition of Cl and OH to the less substituted carbon atom of the double bond is expected. The observations for the Cl reactions indicate that the main fate of the initially formed 1, 2-chloroalkoxy radicals is not decomposition but rather formation of compounds of the form $-\text{CH}(\text{Cl})-\text{C}(\text{O})-\text{C}(\text{O})\text{OR}$.

Reaction mechanisms will be presented for the Cl initiated oxidation, which can be used to construct mechanisms for the analogous more atmospherically important OH radical reactions.