

**Copolymerization of sulfur dioxide with some alkenoic acids.** Tsonis, C. P.; Ali, S. A.; Wazeer, M. I. M.; Abdennabi, A. M. Chem. Dep., King Fahd Univ. Pet. Miner., Dhahran, Saudi Arabia. *Journal of Applied Polymer Science* (1989), 38(10), 1899-911.

### **Abstract**

The copolymn. of SO<sub>2</sub> with acrylic, 3-butenoic, 4-pentenoic, and 10-undecenoic acid was carried out using org. and aq. media in the presence of (CH<sub>3</sub>)<sub>3</sub>COOH/SO<sub>2</sub> redox system. Elemental analyses, IR, and <sup>13</sup>C-NMR revealed that the copolymers synthesized from the acrylic acid/SO<sub>2</sub> system were of variable compn. in org. media, but only poly(acrylic acid) was formed in the presence of water. The other three alkenoic acid/SO<sub>2</sub> systems always gave polysulfone copolymers of alternating structure regardless of the exptl. conditions employed. Thermal analyses (TGA and DTA) of selected samples gave T<sub>g</sub> in the 73-101°C range, m.p. between 160 and 228°, and the total wt. loss in air from 31 to 97%. Flammability decreased as the S:C mole ratio increased. NMR showed that the complexation of SO<sub>2</sub> with the C:C part of all alkenoic acids is low.