

Copolymerization of Sulfur Dioxide with Some Alkenoic Acids

Prof. SHAIKH ASROF ALI

**Dept. of Chemistry , College of Science ,
King Fahd University of Petroleum & Minerals**

<http://www.kfupm.edu.s>

ABSTRACT

The copolymn. of SO₂ with acrylic, 3-butenic, 4-pentenoic, and 10-undecenoic acid was carried out using org. and aq. media in the presence of (CH₃)₃COOH/SO₂ redox system. Elemental analyses, IR, and ¹³C-NMR revealed that the copolymers synthesized from the acrylic acid/SO₂ 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/SO₂ systems always gave polysulfone copolymers of alternating structure regardless of the exptl. conditions employed. Thermal analyses (TGA and DTA) of selected samples gave T_g 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 SO₂ with the C:C part of all alkenoic acids is low.