

555a Polymerization Sequence and Dilution Effects on Ipn Formation

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The polymerization of a free radical acrylate and cationic epoxy system has been studied using DSC and ATR-FTIR. Initial investigations focused on the polymerization of one monomer and the effect of dilution by the other component at different temperatures. Polymerization of the interpenetrating polymer network (IPN) is also investigated. An additional variable in the IPN polymerization is the sequence of monomer polymerization. The acrylate polymerization is a photo-initiated free radical reaction, while the epoxy polymerization is a thermally activated cationic reaction. The reaction sequence can be controlled during IPN formation. The effects of these variables are described with the aim to provide insights into network formation and the resulting polymer microstructure, both of which have a significant effect on the final properties.