

Isothermal Cure Kinetics of Epoxy Resins Initiated by Thermal Latent Cationic Initiators

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In this work, the latent thermal cationic initiators, such as N-benzylpyrazinium hexafluoroantimonate (BPH) and N-benzylpyrazinium hexafluorophosphate (BPHP), were synthesized and characterized with FT IR, ¹H NMR, and ³¹P NMR spectroscopy. Latent properties of diglycidylether of bisphenol A (DGEBA) initiated by both BPH and BPHP were investigated by measuring the conversion as a function of cure temperature using a dynamic DSC. As experimental results, DGEBA/BPHP showed a higher curing temperature than that of the DGEBA/BPH. This could be interpreted in terms of the slow thermal diffusion rate and nucleophilicity of the counteranion in BPHP. The cure activation energy obtained from Kissinger method was higher in DGEBA/BPHP than in DGEBA/BPH, resulting in the different reactivities between epoxide groups within DGEBA and nucleophilicity of the counteranion in BPHP.