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**REACTION KINETICS OF TERNARY SYSTEMS BASED ON
BENZOXAZINE, EPOXY, AND PHENOLIC RESINS
USING FTIR TECHNIQUE**

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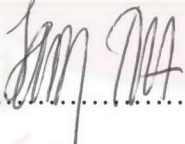
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A new polymeric system based on ternary mixture of benzoxazine, epoxy, and phenolic novolac resins was synthesized. These new materials exhibit promising properties suitable for microelectronic application, particularly in the underfilling encapsulation and the highly filled systems. The properties include high thermal stability, high glass transition temperature, and low melt viscosity. These properties vary to great extent depending on the composition of monomers in the mixture. Curing behavior of these ternary mixtures was investigated by differential scanning calorimetry (DSC) and Fourier transform infrared (FT-IR) spectroscopy. At the initial reaction, the ring-opening reaction of benzoxazine with phenolic novolac resins occurred. Phenolic novolac resin acts as an initiator for this ternary system by reducing the curing temperature. Then, copolymerization of benzoxazine with epoxy resins, and polybenzoxazine homopolymerization occurred.

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LIST OF ABBREVIATIONS

DSC	: Differential Scanning Carolimetry
FT-IR	: Fourier Transform Infrared
T_g	: Glass Transition Temperature
E_a	: Activation Energy

LIST OF SYMBOLS

A	: Absorbance
I_o	: Intensity of the incident beam
I	: Intensity of the infrared beam
ϵ	: Absorption Coefficient
c	: Concentration
l	: path length of sample
T	: Transmittance

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