

# Copolymers of phenoxyethyl methacrylate with glycidyl methacrylate: Synthesis, characterization and reactivity ratios

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The free radical copolymerization of phenoxyethyl methacrylate (POEMA) and glycidyl methacrylate (GMA) was carried out using azobisisobutyronitrile (AIBN) in 2-butanone solution at 333K. The copolymers were characterized by FTIR,  $^1\text{H-NMR}$  and  $^{13}\text{C-NMR}$  spectroscopic methods. Thermal properties of the copolymers were also studied by thermogravimetric analysis (TGA). The compositions of the copolymers were established by  $^1\text{H-NMR}$  analysis. The monomer reactivity ratios were computed using the Fineman-Ross (F-R) and Kelen-Tdos (K-T) methods. These parameters were also estimated using a nonlinear computational fitting procedure, known as reactivity ratios error in variable model (RREVM). The mean sequence lengths determination indicates that the copolymers obtained are random in nature. Differences in the reactivity ratios obtained by the classical methods and RREVM were observed. GMA is more reactive than POEMA and although the copolymers are random, some tendency to GMA small block formati