

Abstract Submitted
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EPR study of Frontally Polymerized Multifunctional Acrylates¹

ASHUTOSH DAHAL, AAYUSH REGMI, ANNA THOMA, ALECIA VALENCIA, William Jewell College, VERONIKA VINER, RAFAEL CUETO, Louisiana State University, D. BLANE BAKER, William Jewell College, JOHN POJMAN, Louisiana State University, PATRICK BUNTON, William Jewell College — Electron Paramagnetic Resonance(EPR) study of frontally polymerized Trimethylpropane Trimethacrylate(TMPTMA), Trimethylpropane Triacrylate(TMPTA), 1,6-Hexanidiol Diacrylate(HDODA) and Pentaerythritol Tetracrylate(PETA) was done to determine the absolute radical concentration. Higher radical concentrations were found in the frontally polymerized samples compared to the bulk polymerized samples for TMTPMA and PETA. The concentration of radicals was highest in TMPTMA frontal sample at 8.74×10^{-3} moles/kg. The lowest measurable concentration was in the HDODA bulk samples at 0.0266×10^{-3} moles/kg. For all frontally polymerized samples high radical concentrations were observed at the point of initiation after which the signal intensity decreased to steady state within a few centimeters down the front. An exponential growth in the radical signal was observed in the mixture of TMPTMA and TMPTA when the concentration of the TMPTMA was increased.

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