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Solvent, Temperature and Concentration Effects on the Adsorption of Poly(n-Butyl Methacrylate) on Alumina from Solutions

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Abstract: Adsorption of poly(n-butyl methacrylate) (PnBMA) on alumina from solution was studied by UV and FT-IR Photoacoustic Spectroscopy techniques. The effects of the solvent, temperature, concentration, and molecular weight of the polymer on adsorption were investigated. Three solvents, cyclohexane, carbon tetrachloride and benzene, were employed. The adsorption was dependent on molecular weight and much more polymer was adsorbed in cyclohexane than in other solvents on the alumina surface. A decrease in adsorption was observed with increasing temperature. The results are in conformity with Langmuir's isotherm. The differences observed in Langmuir parameters were explained by polymer-polymer, polymer-solvent, polymer-adsorbent, and solvent-adsorbent interactions.

Key Words: poly(n-butyl methacrylate), solubility parameter, alumina, adsorption, solvent

Keywords
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