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The Hydrodynamic Properties of Micelles Formed by Block Copolymers of Isoprene and tert-Butylacrylate in n-Octane

Halil İbrahim ÜNAL¹, Colin PRICE²

¹Gazi University, Science and Arts Faculty, Chemistry Department,
06500 Teknikokullar Ankara-TURKEY

²Manchester University, Chemistry Department, Manchester M13 9PL-ENGLAND
e-mail: hiunal@gazi.edu.tr

 [Keywords](#)
 [Authors](#)



chem@tubitak.gov.tr

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Abstract: The hydrodynamic properties of micelles formed by 2 block copolymers of isoprene and tert-butylacrylate in n-octane were investigated by dynamic light scattering (DLS) over a range of temperatures and concentrations using both the cumulants and histogram methods. By means of the histogram method it was possible to determine the average hydrodynamic diameters of both micelles and unassociated-chains in the same solution. It was also used to determine the z-average fraction of unassociated-chains at a particular concentration and temperature, and it provided an alternative route when combined with static light scattering (SLS) for determining the thermodynamics of micellisation. The overall-average diffusion coefficient, \overline{D}_z , values and the average hydrodynamic diameters, $(\overline{d_h^{-1}})_z^{-1}$, of the 2 block copolymers were determined by means of the cumulants method.

Key Words: Block copolymers, hydrodynamic properties, micellisation

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