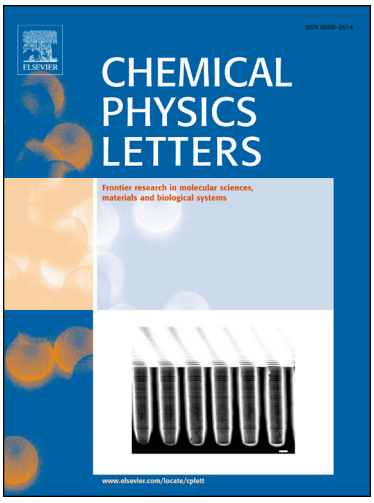

Frontiers article

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Supra-molecular inclusion complexation of ionic liquid 1-butyl-3-methylimidazolium octylsulphate with α- and β-cyclodextrins

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ABSTRACT:

Host-guest complexation between ionic liquid (IL) 1-butyl-3-methylimidazolium octylsulphate [Bmim][OS] and cyclodextrins (α- and β- CDs) have been studied. Surface tension, conductivity measurements revealed the formation of 1:1M stoichiometry for inclusion complexes (ICs) and further confirmed by UV-Visible and FT-IR results. The nature of the complexes has been established using interfacial and thermodynamic parameters. The aggregation number, Stern-Volmer constants, association constants were obtained from fluorescence quenching and Benesi-Hildebrand methods. The critical micelle concentration (cmc) and association constants of [Bmim][OS] are higher for β-CD as compared to α-CD. FT-IR spectra indicated that CDs and [Bmim][OS] could from ICs with stoichiometry (1:1M).

Keywords: Ionic liquid, Cyclodextrins, Inclusion complexes, Association constants, Physicochemical properties, Spectroscopic analysis.

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