

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Comparative Study of the Intermolecular Dynamics of Benzene/Ionic Liquid Mixtures and Benzyl Functionalized Ionic Liquids: Femtosecond OKE Spectroscopic Measurements¹ EDWARD QUITEVIS, LIANJIE XUE, GEORGE TAMAS, Department of Chemistry & Biochemistry, Texas Tech University. Lubbock, TX 79409 — Ionic liquids (ILs) are salts with melting points below 100 °C that are comprised of an organic cation and an inorganic or organic anion. There is great interest in obtaining a molecular level understanding of their unique physical and chemical properties, of which one of them is their ability, despite being inherently polar liquids, to dissolve large quantities of nonpolar aromatic compounds. In order to understand further the solvation of aromatic molecules in ILs, we have performed optical effect (OKE) spectroscopic measurements on 1-benzyl-3-methylimidazolium bistriflate, 1,3-dibenzylimidazolium bistriflate and the corresponding 1:1 and 2:1 benzene/1,3-dimethylimidazolium bistriflate (C_6H_6/C_1C_1) mixtures. In contrast to being free in benzene/IL mixtures, the benzene rings are tethered to the imidazolium ring via methylene linkages in the case of first two ILs. The intermolecular Kerr spectra indicate that the motion of the benzene rings becomes increasingly more restricted in going from neat benzene to benzene dissolved in 1,3-dimethylimidazolium bistriflate to benzene rings tethered to the imidazolium ring. This restriction causes the Kerr spectra effectively to shift to higher frequency in going from neat liquid benzene to C_6H_6/C_1C_1 mixtures to benzylimidazolium ILs.

¹This work was supported by NSF Grant CHE-1153077.

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Date submitted: 15 Nov 2013

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