

Abstract Submitted  
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**Temperature dependence of ionic association of lithium triflate in acetate solutions** DHARSHANI BOPEGE, Department of Physics and Astronomy, University of Oklahoma, Norman, OK 73019, USA, MATT PETROWSKY, ROGER FRECH, Department of Chemistry and Biochemistry, University of Oklahoma, 101 Stephenson Parkway, Norman, OK, 73019, USA, J.M. FURNEAUX, Department of Physics and Astronomy, University of Oklahoma, Norman, OK 73019, USA — Ion transport is studied in polymer and organic liquid electrolytes due to the importance of these systems in rechargeable battery applications. We have used Fourier Transform Infrared Spectroscopy (FTIR) to study the temperature dependence of ionic association in solutions of lithium trifluoromethanesulfonate ( $\text{LiCF}_3\text{SO}_3$ , LiTf) dissolved in propyl, hexyl, octyl, and decyl acetates. The IR Spectra were recorded for three salt concentrations (0.1, 0.2, 0.5 mol  $\text{kg}^{-1}$ ) from 0 °C to 80 °C. Two spectral bands were analyzed at each temperature: the  $\text{CF}_3$  symmetric bend ( $\delta_s$ ) in the 740-780  $\text{cm}^{-1}$  region and the carbonyl stretch in the 1660-1800  $\text{cm}^{-1}$  region. Relative intensities of these bands were calculated by a curve fitting procedure. Three different LiTf ionic species were observed in the  $\delta_s(\text{CF}_3)$  region. The carbonyl band due to coordination with Li ion appears at a lower frequency (1714  $\text{cm}^{-1}$ ) than the pure carbonyl band (1744  $\text{cm}^{-1}$ ).

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