

ANION HOSTS AS EFFICIENT TOOLS FOR ENHANCING ION-PAIR EXTRACTION

Konstantinos Kavallieratos,¹ Jeffrey C. Bryan,¹ Melissa A. Kelly,¹

Gary J. Van Berkel,¹ Richard A. Sachleben,¹ Bruce A. Moyer,^{1*}

Andrew M. Danby² and Kristin Bowman-James.²

¹*Oak Ridge National Laboratory, Oak Ridge, TN 37831-6119.*

²*Department of Chemistry, University of Kansas, Lawrence, KS 66045.*

As part of a new host-guest strategy in overcoming the unfavorable anion dehydration-resolution energetics in ion-pair extraction, we designed, synthesized and studied specific anion complexants for use in combination with cation receptors. Anion complexation via hydrogen bonding by multidentate amide and sulfonamide hosts was demonstrated by NMR and ES-MS experiments. In addition, it was possible to directly apply these compounds in cesium nitrate extraction by tetrabenzo-24-crown-8, obtaining significant enhancements. Recent advancements toward understanding the mechanism of this synergistic effect in the molecular level will be presented.

