Abstract Submitted for the MAR09 Meeting of The American Physical Society

Charge transport mechanism of ionic liquids at metallic interfaces ANATOLI SERGHEI, University of Massachusetts Amherst, MARTIN TRESS, JOSHUA RUME, FRIEDRICH KREMER, University of Leipzig, Germany — A quantitative description is suggested for electrode polarization, an ubiquitous phenomenon which takes place at the interface between a metallic and an ionic conductor. Based on the fact that, due to Coulombic interactions, the ion mobility is drastically slowed down at the interfaces, this approach quantitatively describes the experimentally observed scaling laws and enables one to deduce — by use of a novel formula — the bulk conductivity of the ionic charge carriers under study. It allows furthermore a quantitative determination of the conductivity function of the ionic liquids in the interfacial regions and opens, by that, multiple perspectives in understanding the mechanisms of charge transport at interfaces.

Anatoli Serghei University of Massachusetts Amherst

Date submitted: 21 Nov 2008 Electronic form version 1.4