

Abstract Submitted  
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**Importance of liquid fragility for energy applications of ionic liquids**<sup>1</sup> PIT SIPPEL, PETER LUNKENHEIMER, STEPHAN KROHNS, ERIK THOMS, ALOIS LOIDL, Experimental Physics V, Center for Electronic Correlations and Magnetism, University of Augsburg, Augsburg, Germany — Ionic liquids (ILs) are salts that are liquid at ambient temperatures. The strong electrostatic forces between their molecular ions result, e.g., in low volatility and high stability for many members of this huge material class [1]. For this reason they bear a high potential for new advancements in applications, e.g., as electrolytes in energy-storage devices such as supercapacitors or batteries, where the ionic conductivity is an essential figure of merit.

Most ILs show dynamic properties typical for glassy matter, which dominate many of their physical properties. An important method to study these dynamical glass-properties is dielectric spectroscopy that can access relaxation times of dynamic processes and the conductivity in a broad frequency and temperature range. In the present contribution, we present results on a large variety of ionic liquids showing that the conductivity of ILs depends in a systematic way not only on their glass temperature but also on the so-called fragility, characterizing the non-canonical super-Arrhenius temperature dependence of their ionic mobility [2].

[1] D. R. MacFarlane, *et al.*, *Energy Environ. Sci.* **7**, 232250 (2014).

[2] P. Sippel *et al.*, *Sci. Rep.* **5**, 13922 (2015).

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