

Abstract Submitted
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Ion mobility and mobile ion concentration in PEO-based polyurethane ionomers¹ DANIEL FRAGIADAKIS, SHICHEN DOU, RALPH COLBY, JAMES RUNT, Penn State University — The conductivity of a series of single-ion conducting polyurethane ionomers, based on poly(ethylene oxide) (PEO) segments and containing Li⁺ and Na⁺ cations, was studied using dielectric spectroscopy. The application of a physical model of electrode polarization allows the separate determination of the ion mobility and the mobile ion concentration as a function of temperature. The influence of temperature, type of mobile cation, and water content on the parameters determining the ionic conductivity was investigated, in order to contribute to the understanding of the mechanisms of ion conduction. The conductivity is also discussed in relation to the glass transition and dielectric relaxation processes of the materials. The results are compared to those of previous studies on PEO-based polyester ionomers having a closely related chemical structure.

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