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Li conductivity in siloxane-based polymer electrolytes ERIC STACY, Department of Physics and Astronomy, University of Tennessee, Knoxville, Tennessee 37996, United States, FEI FAN, HONGBO FENG, CATALIN GAINARU, JIMMY MAYS[1], ALEXEI SOKOLOV [2], Department of Chemistry, University of Tennessee, Knoxville, Tennessee 37996, United States — Polymer electrolytes containing lithium ions are ideal candidates for electrochemical devices and energy storage applications. Understanding their ionic transport mechanism is the key for rational designing of highly conductive polymer matrices. Complementing dielectric spectroscopy investigations by results from rheology and differential scanning calorimetry we focused on the interplay between dynamics of lithium ions and the polymer matrix based on polysiloxane backbone. Our results demonstrate that the conductivity and the degree of decoupling between ion dynamics and structural relaxation depend strongly not only on the ions concentration, but also on the polarity and size of the polymeric side-groups.

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