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Dynamics of poly(ethylene oxide)/Li^+ complexes confined in 1nm slits GEORGIOS POLIZOS, Penn State University, VIKRAM KUPPA, Massachusetts Institute of Technology, ANDREAS SCHÖNHALS, Federal Institute of Materials Research and Testing, Berlin, Germany, EVANGELOS MANIAS, Materials Science and Engineering, Penn State University, University Park, PA — Poly(ethylene oxide) (PEO)/Li^+ complexes were nanoscopically confined in 1nm slit pores between inorganic solids of controlled Li^+ charge surface density (*cf.* varied cation exchange capacity Li^+ montmorillonites). The experimental systems were prepared by direct melt intercalation and investigated by dielectric relaxation spectroscopy over broad frequency and temperature ranges. Ionic conductivity/diffusion effects and the interfacial polarization relaxation process (due to the motion of the Li^+ ions in the slits) are systematically explored and analyzed. We present their dependences on frequency, temperature, Li^+ surface density, and PEO/Li^+ interactions. The above results are discussed in the context of previous Molecular Dynamics computer simulations, and mechanisms associated with the existence of water in the slit are thus identified.

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