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**Effects of temperature and dissolved $LiClO_4$ on the viscoelastic and dynamic properties of poly(ethylene oxide), (PEO) melts** RADOSLAV BOGOSLOVOV, JAMES C. SELSER, SHUFU PENG, GREG PIET, Department of Physics, University of Nevada, Las Vegas — The physical properties of poly(ethylene oxide) (PEO) melts and PEO/$LiClO_4$ complexes are of major importance for understanding the mechanism and dynamics of lithium-ion transport in polymer electrolytes. We used a fiber-optic coupled triple-pass Fabry-Perot interferometer to study the Brillouin light scattering spectra of PEO melts and PEO melt/$LiClO_4$ solutions for various salt concentrations and in the temperature range from the melting point up to 180°C. We report the measured Brillouin line-shifts and line-widths. A relaxation process was identified in the gigahertz frequency range and was studied in detail. The "mapping" of the relaxation in the frequency–temperature–concentration parameter space yields important information about the local segment dynamics of the polymer chain, which has a direct effect on the transport of the charge carriers in the polymer electrolyte.

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