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Interfacial Polarization and Field Induced Orientation in Self Assembled Nanostructured Soft Ion Conductors THOMAS THURN-ALBRECHT, PETER KOHN, KLAUS SCHRÖTER, Martin-Luther-University Halle-Wittenberg, Germany — We report about the effects of interfacial polarization in and upon a self assembled nanostructured ion conductor, consisting of an ordered, lamellar block copolymer with a Lithium salt dissolved selectively in one component. Impedance spectroscopy in combination with frequency dependent orientation experiments enable a quantitative analysis of ionic polarization and a direct demonstration of its aligning effect on the interfaces. The transition time from the fast dielectric to the slow ionic interfacial polarization is much longer than expected from classical Maxwell-Wagner-Sillars theory and attributed to the formation of diffuse double layers at the internal interfaces. The much stronger orientation effect of ionic as compared to dielectric polarization offers a new route to align microdomains and therewith the ion conducting paths of the polymer.

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