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**Morphology and conductivity of PEO-based polymers having various end functional groups** HA YOUNG JUNG, PRITHWIRAJ MANDAL, MOON JEONG PARK, Pohang Univ of Sci Tech — Poly(ethylene oxide) (PEO)-based polymers have been considered most promising candidates of polymer electrolytes for lithium batteries owing to the high ionic conductivity of PEO/lithium salt complexes. This positive aspect prompted researchers to investigate PEO-containing block copolymers prepared by linking mechanically robust block to PEO covalently. Given that the microphase separation of block copolymers can affect both mechanical properties and ion transport properties, various strategies have been reported to tune the morphology of PEO-containing block copolymers. In the present study, we describe a simple means for modulating the morphologies of PEO-based block copolymers with an aim to improve ion transport properties. By varying terminal groups of PEO in block copolymers, the disordered morphology can be readily transformed into ordered lamellae or gyroid phases, depending on the type and number density of end group. In particular, the existence of terminal groups resulted in a large reduction in crystallinity of PEO chains and thereby increasing room temperature ionic conductivity.

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