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TiO_2-SEO Block Copolymer Nanocomposites as Solid-State Electrolytes for Lithium Metal Batteries INNA GUREVITCH, RAFFAELLA BUONSANTI, ALEXANDER TERAN, JORDI CABANA, NITASH BALSARA, None — Replacing the liquid electrolyte in lithium batteries by a solid has been a long-standing goal of the battery industry due to the promise of better safety and the potential to produce batteries with higher energy densities. Recently, symmetric polystyrene-block-poly(ethylene oxide) (SEO) copolymers/LiX salt mixtures with high ionic conductivity and high shear modulus were developed as solid electrolytes. For an enhancement in mechanical properties and its effect on the dendrite growth from lithium metal electrodes, we study the effect of adding TiO_2 nanoparticles to the SEO/LiX mixtures. We find that TiO_2/SEO/LiX nanocomposite electrolytes have stable performance against the lithium metal electrodes. There appears to be a correlation between the stability of the electrolytes, morphology, and mechanical properties.

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None

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