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Interfacial Stability of Solid Block Copolymer Electrolytes for Rechargeable Lithium Metal Batteries GREG STONE, SCOTT MULLIN, NITASH BALSARA, University of California at Berkeley — Solid electrolytes that can resist dendrite growth from the lithium surface and adhere to the electrode surface are needed for the development of rechargeable batteries with lithium metal anodes. We show that self-assembled block copolymer electrolytes are inherently more stable against lithium metal anodes than homogeneous homopolymers. This is due to an unusual combination of solid-like properties in the bulk to resist dendrite growth, arising from a randomly oriented granular structure, and the liquid-like properties of perpendicularly oriented lamellae that are formed at the lithium-electrolyte interface providing adhesion to the electrode.

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