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**Role of Constituent Hard Polymer in Enhancing Lithium Transference Number of Lithium Salt-Polymer Complexes** GYUHA JO, MOON JEONG PARK, Pohang Univ of Sci & Tech — Lithium polymer batteries have been projected as promising energy storage systems, owing to their unique advantages such as long cycle life, high specific capacity, and high cell potential. While the polymer electrolytes such as poly(ethylene oxide) (PEO) employed in lithium polymer batteries have high ionic conductivity and low volatility, the PEO-lithium salt complexes indicated immense shortcomings of concentration polarization, ascribed to the motion of free anions within PEO. This has limited charge/discharge rate of lithium batteries. In this study, we present a new methodology for improving the ionic conductivity and lithium transference number of PEO, by block copolymerization with a hard polymer, namely poly(dithiooxamide) (PDTOA). Compared to a simple PEO/PDTOA blend, lithium-salt doped PEO-b-PDTOA block copolymers exhibited significantly improved ionic conductivity values. Further, lithium transference numbers as high as 0.66 were observed, which are much higher than the corresponding values for conventional PEO-salt electrolytes ( $\sim 0.25$ ).

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