

Ionic Conductivity Enhancement in Li_2SO_4 based Binary Systems by composite Effect

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Ionic conductivity of the $\text{Li}_2\text{SO}_4\text{-Li}_2\text{CO}_3$, $\text{Li}_2\text{SO}_4\text{-CaSO}_4$, $\text{Li}_2\text{SO}_4\text{-MgSO}_4$ and $\text{Li}_2\text{SO}_4\text{-Li}_2\text{WO}_4$ binary salt systems has been measured below 500°C using the complex impedance technique. Ionic conductivity in the two-phase regions of all four systems shows a significant enhancement evidently caused by the composite effect, arising from the grain boundary contribution to the conductivity. In each of the systems, the eutectic composition, having the smallest grain size and the maximum interfacial area between grains, exhibits the maximum conductivity enhancement observed in the two-phase region.