

Superior Conductive Solid-like Electrolytes: Nanoconfining Liquids within the Hollow Structures

Disclosure Number

201503486

Technology Summary

A novel method based on nanoconfining conductive liquids within the hollow structure is developed for the fabrication of a class of solid electrolytes with liquid-like room-temperature ionic conductivities (above 1 mS cm⁻¹). The high flexibility and compatibility of this synthetic strategy enables broad tunability to choose desired hollow architectures or liquid-state conductive media for the fabrication of solid electrolytes. For example, we can employ hollow silica spheres or semiconductive polymeric spheres with accessible inner space as the building block for the construction of mechanics-robust scaffolds for liquid-state medium loading; Or, using desirable liquids containing Li⁺, Na⁺, Mg²⁺ or Al³⁺ as the conductive media for the solid electrolyte fabrication.

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