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Polymer electrolytes for solid-state sodium batteries

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The extensive availability of sodium motivates the development of low cost sodium batteries for large scale applications such as powering an electric road vehicle or stationary storage of electric power generated by variable wind or solar energy. However, the use of flammable liquid electrolytes has safety issues, especially in large-scale batteries. The ability to plate/strip a sodium anode reversibly makes possible a safe, low cost rechargeable battery provided a suitable sodium ion electrolyte interphase between the solid electrolyte and a solid insertion compound cathode host can be developed. Gel polymer and plastic crystal sodium ion electrolytes are shown to provide the needed electrolyte/cathode interface to provide all solid state cells of long cycle life and adequate rates at 60 °C.

Biography

Hongcai Gao has completed his PhD from Nanyang Technological University and started his Postdoctoral studies in 2013 at the University of Texas at Austin with Prof. John B. Goodenough. His research is focused on the synthesis of polymer electrolytes for solid-state rechargeable batteries. He has published more than 20 papers in reputed journals.

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