Anode Material Synthesized from Red Phosphorus and Germanium Nanowires for Lithium-Ion and Sodium-Ion Batteries

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Received: 26 August 2021 / Accepted: 28 September 2021 / Published: 10 November 2021

Germanium phosphide (GeP) is synthesized by red phosphorus evaporation-condensation on the surface of germanium nanowires pre-grown on a titanium substrate. The synthesized GeP was found to be capable of reversibly inserting lithium and sodium. The effective diffusion coefficients of lithium and sodium in germanium phosphide are distinguished by 2 orders of magnitude and amounted to 10^{-12} and 10^{-14} cm²/s, respectively.

Keywords: germanium, germanium phosphide, lithium and sodium diffusion coefficient, lithium-ion battery, sodium-ion battery.

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