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

Tatiana Kulova¹, Dmitri Gryzlov¹, Alexander Skundin¹, Ilia Gavrilin¹,², Yulia Kudryashova¹, Nicolai Pokryshkin³

¹ Frumkin Institute of Physical Chemistry and Electrochemistry of the RAS, 31-4 Leninskii ave., 119071 Moscow, Russia
² National Research University of Electronic Technology (MIET), Bld. 1, Shokin Square, Zelenograd, 124498, Moscow Russia
³ National Research Nuclear University (MEPHI), 31, Kashirskoe ave., 115409, Moscow Russia
*E-mail: askundin@mail.ru

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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 $10^{-14}$ cm$^2$/s, respectively.

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

FULL TEXT

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