Cu3SbS3 as Anode Material for Sodium Batteries

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Abstract : Cu₃SbS₃ (CAS) was synthesized by direct solid-state reaction from elementary Cu, Sb, & S and hydrothermal reaction using thioacetamide (TAM). Crystal structure and morphology for the prepared phases of Cu₃SbS₃ were studied via X-ray diffraction (XRD) and field emission scanning electron microscope (FESEM). The band gap energies are 2 and 2.2 eV for the prepared samples. The two samples are as anode for Na ion storage. They show high initial capacity to 490 mAh/g. Na cell prepared from TAM sample shows 280 mAh/g after 25 cycles vs. 60 mAh/g for elemental sample.

Keywords : Cu3SbS3, sodium batteries, thioacetamide, sulphur sources

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