Preparation and characterization of Sb$_2$S$_3$ nanorods and nano particles via hydrothermal condition.

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Single-crystalline antimony trisulfide (Sb$_2$S$_3$) nano materials with nano particle and rod-like morphologies were successfully synthesized via hydrothermal method by the reaction of antimony trichloride (SbCl$_3$) and carbon disulfide with high yield in 24h at 180 °C. The powder X-ray diffraction pattern shows the Sb$_2$S$_3$ crystals belong to the orthorhombic phase with calculated lattice parameters a=1.120nm, b=1.128nm and c=0.383nm. The quantification of energy dispersive X-ray spectrometry analysis peaks give an atomic ratio of 2:3 for Sb:S. Scanning electron microscopy (SEM) images show that diameter of Sb$_2$S$_3$ nano particles is around 80-150nm, and rod-like Sb$_2$S$_3$ possess a diameter around 70-140nm and length up to 3µm, respectively. X-ray powder diffraction, scanning electron microscopy, atomic force microscopy, optical measurements, UV-Vis analyses were used to characterize the products. UV-Vis analysis and emission spectra indicates that band gap of Sb$_2$S$_3$ is around 70-140nm and length up to 3µm, respectively. X-ray powder diffraction, scanning electron microscopy, atomic force microscopy, optical measurements, UV-Vis analyses were used to characterize the products. UV-Vis analysis and emission spectra indicates that band gap of Sb$_2$S$_3$ is around 70-140nm and length up to 3µm, respectively.

Keywords: antimony sulfide, nanorods, nano particles, Hydrothermal

Synthesis of nanocrystalline intermediate phase between cancrinite and sodalite. Corinna Grader*, Lars Robben*, Josef-Christian Buhl†, "Institut für Mineralogie, Universität Hannover; Callinstr. 3, D-30167 Hannover, Germany
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Syntheses in the system Na$_2$O-SiO$_2$-Al$_2$O$_3$-Na$_2$CO$_3$-H$_2$O were carried out under various experimental conditions with the aim to synthesize nanocrystalline cancrinite, a mineral with zeolite-like behaviour. After synthesis of a cancrinite reference from the educt mixture of Na$_2$CO$_3$, Na$_2$O and SiO$_2$ at 80°C for 24h a two-phase state transforms then into one-phase state in 3 days. This two-phase state transforms then into one-phase state in 3 days. The two-phase state transforms then into one-phase state in 3 days. Therefore the material was treated in water at 80°C for times up to 24h. The products were analysed by FTIR-spectroscopy, X-ray powder diffraction and scanning electron microscopy.

Keywords: nanocrystallites, intermediate zeolite, hydrothermal stability