

Thesis Title	Characterization of Antimony Sulfide Nanostructures Synthesized Using Cyclic Microwave Radiation
Author	Miss Jutarat Kavinchan
Degree	Master of Science (Chemistry)
Thesis Advisor	Assoc. Prof. Titipun Thongtem

ABSTRACT

Nanostructured antimony sulfide (Sb_2S_3) with different morphologies was synthesized from antimony chloride (SbCl_3) and different sulfur sources (sodium sulfide, thiosemicarbazide, thioacetamide and sodiumthiosulfate) in ethylene glycol (EG), propylene glycol (PG), deionized water, and polyethylene glycol (PEG200) containing polyvinylpyrrolidone (PVP) and cetyltrimethyl ammonium bromide (CTAB) with different masses as surfactants, under cyclic microwave radiation at different powers and lengths of time. By using X-ray powder diffraction (XRD), and scanning and transmission electron microscopic (SEM and TEM) techniques, the products were proved to be orthorhombic Sb_2S_3 nanoparticles, nanorods growing along the [001] direction and dumb-bells, influenced by the microwave powers, reactants, liquid media, reaction times and masses of surfactants. In the present research, emission and absorption properties were also studied to determine the wavelength and energy gap.

