

Poster Presentation

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XRD Studies of Synthesized Bi₂S₃ Crystalline Materials

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Bismuth sulfide preparation and its x-ray diffraction studies are reported in this paper. The author have synthesized Bi₂S_x (x = 3.15, 3.45) compound material with different sulfur content by conventional high temperature solid state solvothermal reaction of bismuth and sulfur which conforms that the (121) preferred orientation with crystallite size ~30 nm and splitting of peaks due to orthorhombic structure matches well with the standard data and demonstrate good crystalline quality and structural homogeneity of synthesized powder. This paper also describes the synthesis and x-ray diffraction studies of bismuth sulfide powder via versatile precipitation technique. Bismuth sulfide powder was synthesized using thiourea and sodium dodecyl sulfate or in absence of any surfactant maintained at 80° C for 12 h keeping pH of solution constant at 1.4. Synthesized powder was characterized by x-ray diffraction technique which indicates that surfactants play major role in synthesis of bismuth sulfide that conforms the crystallite size ~35 nm. The employed solid state solvothermal technique played an important role to progress the homogeneous reaction and preparation of pure and fine bismuth sulfide powder. The possible application of this material in photovoltaic devices is suggested.

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