
Seminar Title	: Bi/Sb Based Halide Perovskite Like Compounds: Effect of Substitution on Structural, Optical and Electronic Properties
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Abstract	: Halide Perovskites are a class of compounds having general formula ABX_3 (A, B are cations and X is halogen). These materials are emerging as potential materials for harvesting renewable solar energy, due to their extraordinary optoelectronic properties like small band gap, high absorption coefficient, long diffusion length, high defect tolerance and excellent charge carrier life time. Particularly, the lead based halide perovskites show enhanced power conversion efficiency for solar cell applications. However, the poor stability of these perovskites towards moisture, light and heat and toxic nature of lead hinders these materials for large scale applications. This motivates the scientific community to search for lead free metal halide perovskites (LFMHPs) with greater stability and efficiency for practical PV applications. Bi^{3+}/Sb^{3+} are electronically similar to the Pb^{2+} and hence may be considered as alternative to lead. In this thesis, several lead free Sb/Bi-based halide perovskite like compounds with A site cations varying from inorganic (Cs) to organic (methyl ammonium, ethyl ammonium, propyl ammonium etc.) and the halides from Cl^- to I^- are synthesized and their structural stability as well as the optoelectronic properties are studied. Efforts have been made to understand the effect of substitution at various crystallographic sites on the structure and optical properties in these compounds.