Title:	Synthesis of 2D Layered Perovskite Cs 4 CuSb 2 Cl 12 Nanocrystal and Their Sunlight Driven Photocatalysis Reaction
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Abstract:	Perovskite nanocrystals have emerged as a potential candidate in the field of heterogeneous catalysis as photocatalysts as well as in a plethora of optoelectronic applications. In recent years, lead-based halide perovskites have been developed with excellent electrical and optical properties; however, concerns about their stability and toxicity have motivated the search for alternatives. The research is pioneered to synthesize lead-free halide double perovskites to overcome both issues simultaneously. The synthesis of 2D layered Cs 4 CuSb 2 Cl 12 NCs using a simple hot injection synthetic method is carried out. The material is thereafter characterized using various techniques like UV-Vis spectroscopy, PXRD, UPS, EPR, TGA, DSC, AFM, TEM, etc. The layered perovskites show a promising bandgap for photocatalytic activity. For the first time, the productive photocatalytic behaviour of these Pb-free NCs against metal- centered ferricyanide redox and Congo red dye degradation reactions is demonstrated. Additionally, research on copper doping in 2D (BA) 2 PbCl 4 and their application in photocatalysis is carried out. Characterizing studies (PXRD, UV-Vis spectroscopy, DRS, UPS, TGA, DSC) are undertaken to reveal the formation and properties of the doped materials. Subsequently, a variety of photocatalytic reactions is carried out using scavengers.
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