Title:	Lead-free two-dimensional halide perovskite: Synthesis, characterization and ultrafast charge carrier dynamics
Authors:	R, Goutham
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Abstract:	Perovskite solar cells have recently emerged as highly promising within the field of photovoltaic technology. Over the past decade, their efficiency has seen a remarkable increase from a mere 3.8% to exceeding 26.1%, firmly establishing them as formidable contenders against traditional crystalline solar cells in terms of both cost-effectiveness and performance. These cells boast straightforward synthesis methods, an adjustable bandgap, and demonstrate significant potential to supplant silicon solar cells. However, despite unparalleled progress, lead halide perovskites encounter several stability issues when exposed to heat, oxygen, moisture, and toxicity concerns due to their inclusion of toxic lead. This has prompted researchers to explore alternative non-toxic and more stable substitutes for lead halide perovskites in perovskite solar cells. In this regard, 2D CS 2 AgBiBr 6 (CABB) perovskite has shown superior stability and less toxicity, making it a potential material for perovskite solar cells. Here we have synthesized 2D CABB nanoplatelets of varying thickness controlled by the growth temperature and studied their charge carrier dynamics using femtosecond transient absorption spectroscopy.
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