

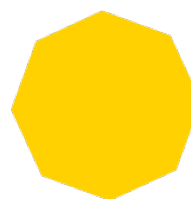


THE 2022 CABOT MICROELECTRONICS CORP. LECTURE



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A new era in solar energy conversion and optoelectronics enabled by the humble halide perovskites?

Abstract: Three- and Two-dimensional (3D and 2D) halide perovskites are a larger class of organic-inorganic compounds that in the last decade have emerged as outstanding semiconducting materials thanks to their superior carrier lifetime and structural diversity. These materials have demonstrated record-breaking efficiencies in solar cell performance, light-emitting devices, and radiation detection. They have defined a new and ever-growing field of optoelectronic device research which requires a systematic understanding of the effects of the spacer on the structure, properties, and device performance. This presentation will focus on the current knowledge of structure-property relationships and discuss guidelines on successfully choosing organic and incorporating them into crystalline materials and optoelectronic devices. Useful insights are emerging on what kind of organic spacer cations can stabilize various perovskites.