

Abstract Submitted
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Tunable exciton-polariton lasing in perovskite microcrystal cavities ANDREW SCHLAUS, Columbia University, YONGPING FU, SONG JIN, Univeristy of Wisconsin-Madison, LOUIS BRUS, TYLER EVANS, XIAOYANG ZHU, Columbia University — Strong light-matter interactions have recently been discovered in lead halide perovskites. The resulting polariton quasiparticles undergo spontaneous condensation, leading to the emission of coherent light. Here we demonstrate ultra-low-power, wavelength-tunable coherent light emission from polariton condensates in perovskite nanowires and microplates. Through halide alloying and optical cavity engineering, we control the polariton dispersion and the color of broadly tunable coherent light emission. These results reveal yet another surprise in the excellent optoelectronic properties of lead halide perovskites and suggest that this material system may be excellent models for exciton-polariton physics and devices.

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