

Supplementary Information

Ultra-high nonlinear absorption coefficients based on multiphoton-excited self-trapped excitons in perovskite-inspired copper halides

Maolan Peng,^a Xiaoming Mo,^{*a} Liu Tan,^a Xiaoma Tao,^a Yifang Ouyang,^a Yulu Zhou,^a Yi Liang,^a and Jialong Zhao^a

^a Center on Nanoenergy Research, Guangxi Key Laboratory for Relativistic Astrophysics, School of Physical Science and Technology, Guangxi University, Nanning 530004, People's Republic of China.

E-mail: Prof. X. Mo, xmmo@gxu.edu.cn.

Keywords: Nonlinear optical property; Upconversion luminescence; Multiphoton absorption; Self-trapped exciton; Copper halide.

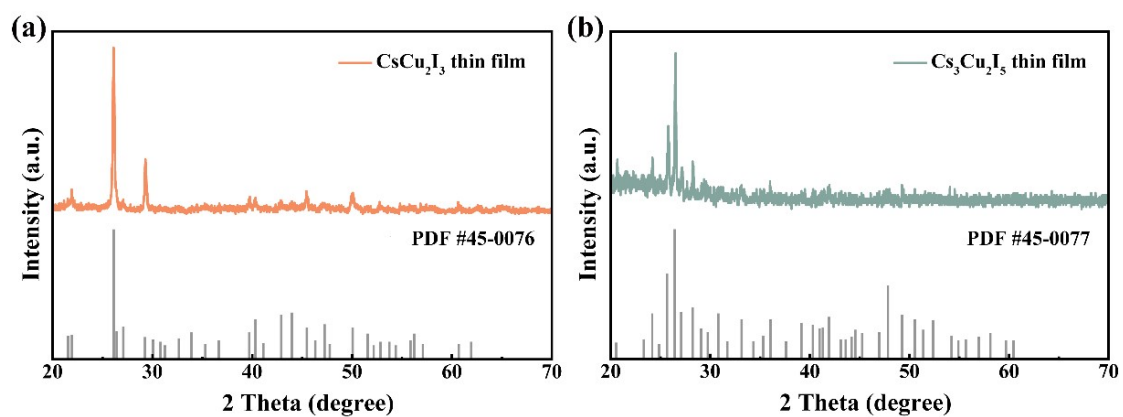


Fig. S1 (a) XRD pattern of thermal-evaporated CsCu_2I_3 thin film. (b) XRD pattern of thermal-evaporated $\text{Cs}_3\text{Cu}_2\text{I}_5$ thin film.

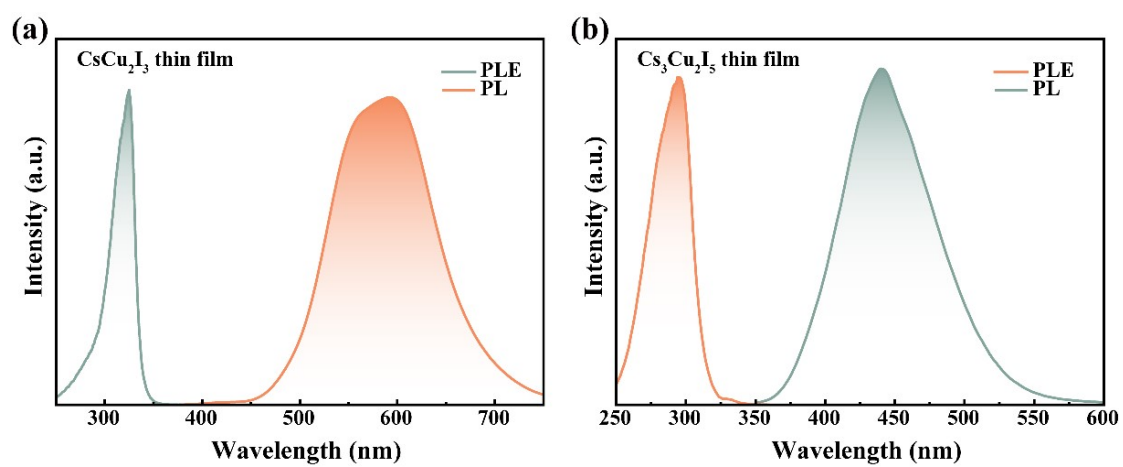


Fig. S2 (a) PL and PLE spectra for thermal-evaporated CsCu_2I_3 thin film. (b) PL and PLE spectra for thermal-evaporated $\text{Cs}_3\text{Cu}_2\text{I}_5$ thin film.

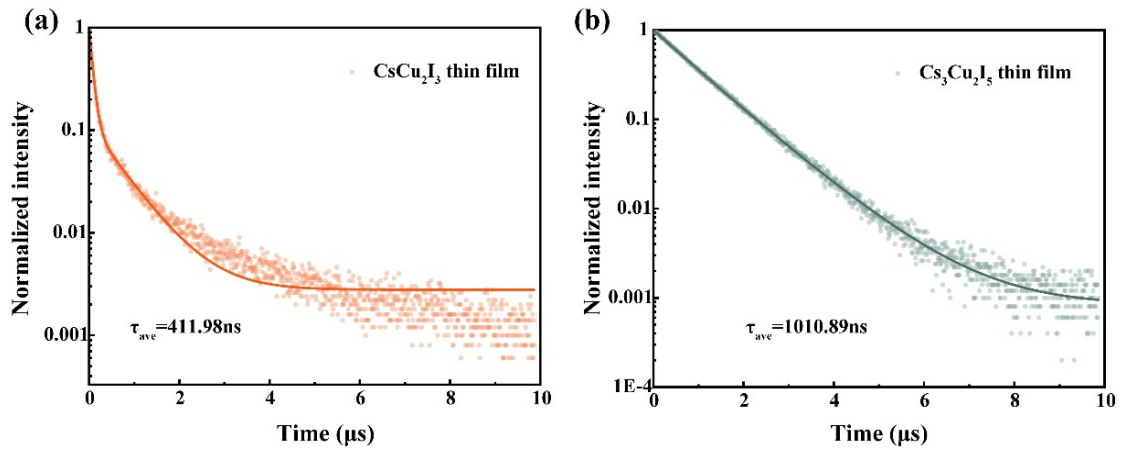


Fig. S3 (a) TRPL decay spectra for thermal-evaporated CsCu₂I₃ thin film. (b) TRPL decay spectra for thermal-evaporated Cs₃Cu₂I₅ thin film.

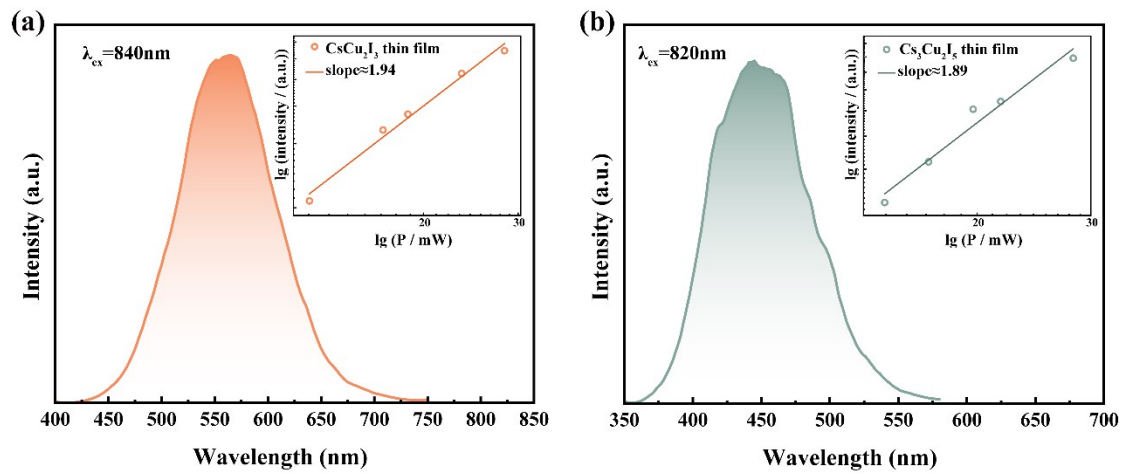


Fig. S4 (a) Upconversion PL spectra excited by 840 nm laser for the thermal-evaporated CsCu₂I₃ thin film. Inset is dependence of the upconversion PL intensity on the laser pulse energy for the CsCu₂I₃ thin film. (b) upconversion PL spectra excited by 820 nm laser for the thermal-evaporated Cs₃Cu₂I₅ thin film. Inset is dependence of the upconversion PL intensity on the laser pulse energy for the Cs₃Cu₂I₅ thin film.