

Supporting Information

Low threshold lasing from novel thulium incorporated $\text{C}(\text{NH}_2)_3\text{PbI}_3$ perovskite thin films in Fabry-Pérot resonator

Gowri Manohari Arumugam, Chunxiang Xu, Santhosh Kumar Karunakaran, Zengliang Shi, FeifeiQin, Can Zhu, and Feng Chen*

^aState Key Laboratory of Bioelectronics, School of Biological Science & Medical Engineering, Southeast University, Nanjing 210096, PR China.

^bJoint International Research Laboratory of Information Display and Visualization, School of Electronic Science & Engineering, Southeast University, Nanjing 210096, PR China.

**E-mail: xcxseu@seu.edu.cn*

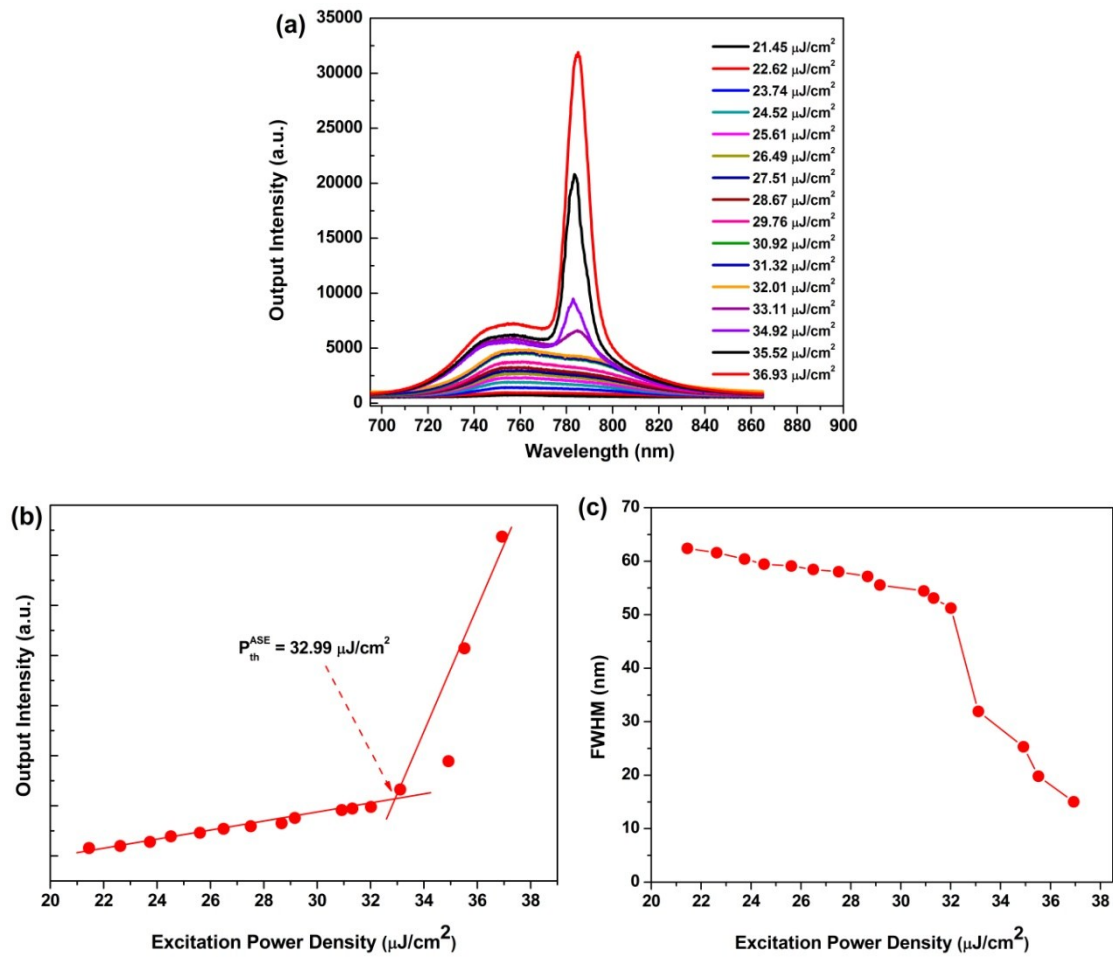


Fig. S1 (a) ASE spectra for pure GAPbI₃ thin films on glass substrate with various excitation power densities under an excitation wavelength of 532 nm, (b) Variations in output intensities and (c) Variations in FWHM values with respect to excitation power densities.

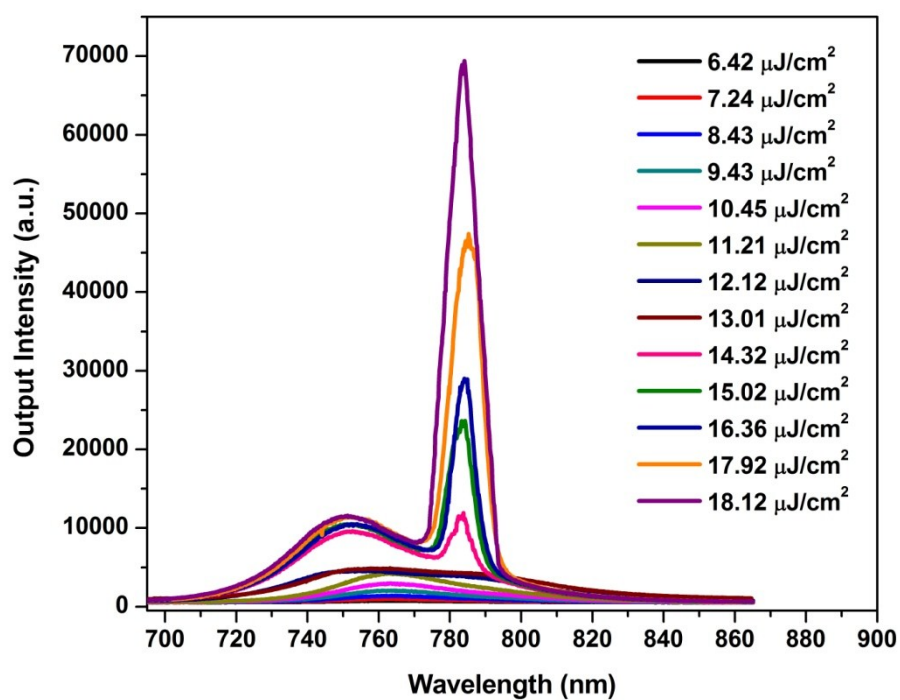


Fig. S2 (a) ASE spectra for glass/GAPbI₃:Tm/P3HT with various excitation power densities under an excitation wavelength of 532 nm.

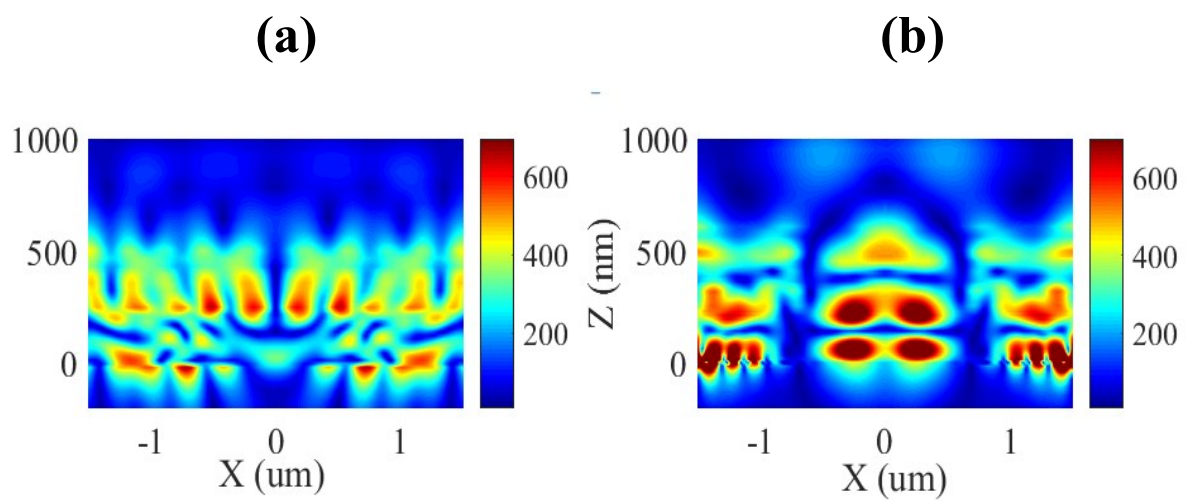


Fig. S3 Electronic field distributions of F-P resonator with (a) absence and (b) presence of CLC and the intensity has been normalized to 620.