

Fig. S1 Voltage change as a function of time ($V-t$ plots) for $\text{CdTe}/\text{Bi}_2\text{Te}_3$ single cell illuminated using xenon light source at (a) 8 mW/cm^2 ; (b) 25 mW/cm^2 ; (c) 50 mW/cm^2 ; and using halogen light source at (d) 8 mW/cm^2 ; (e) 25 mW/cm^2 . The light was turned on at 0 s and turned off at approximately 60 s. The first point is the background voltage generated by ambient light. The device was illuminated from the Bi_2Te_3 side.

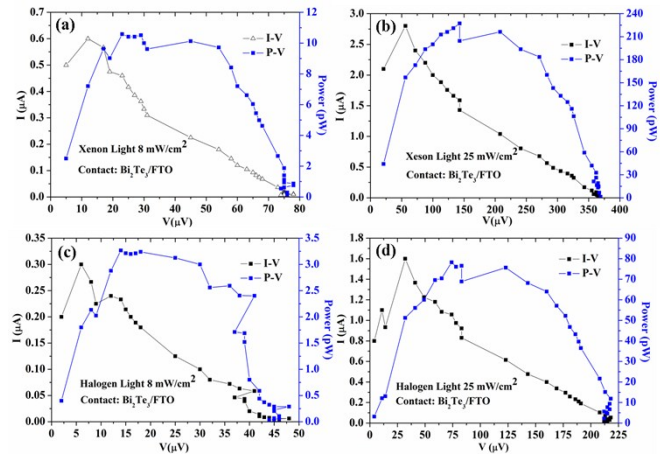


Fig. S2 (a) I-V and P-V curve of CdTe/Bi₂Te₃ single cell illuminated using xenon light source at (a) 8 mW/cm²; (b) 25 mW/cm²; and using halogen light source at (d) 8 mW/cm²; (e) 25 mW/cm². The device was illuminated from the conductive substrate side.

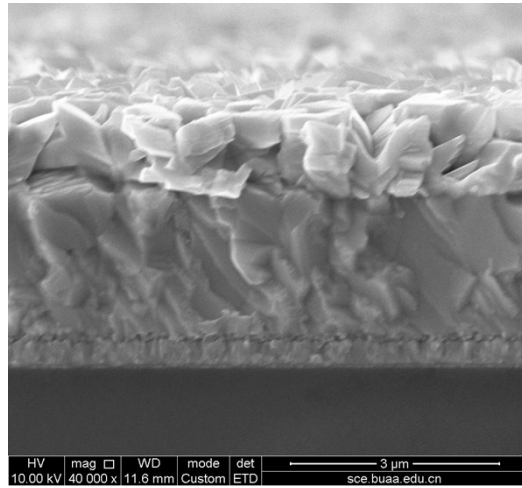


Fig. S3 SEM cross-sectional image of the FTO/CdS/CdTe/Bi₂Te₃ cell

Tab. S1 The original data of ΔT collected from the cool and hot side

$T_{\text{cool}} (^{\circ}\text{C})$	$T_{\text{hot}} (^{\circ}\text{C})$	ΔT (K)
23.8	76	52.2
24	79.5	55.5
24.1	80.5	56.4
24.2	81.7	57.5
24.2	83.4	59.2
24.3	84.5	60.2
24.6	87.4	62.8