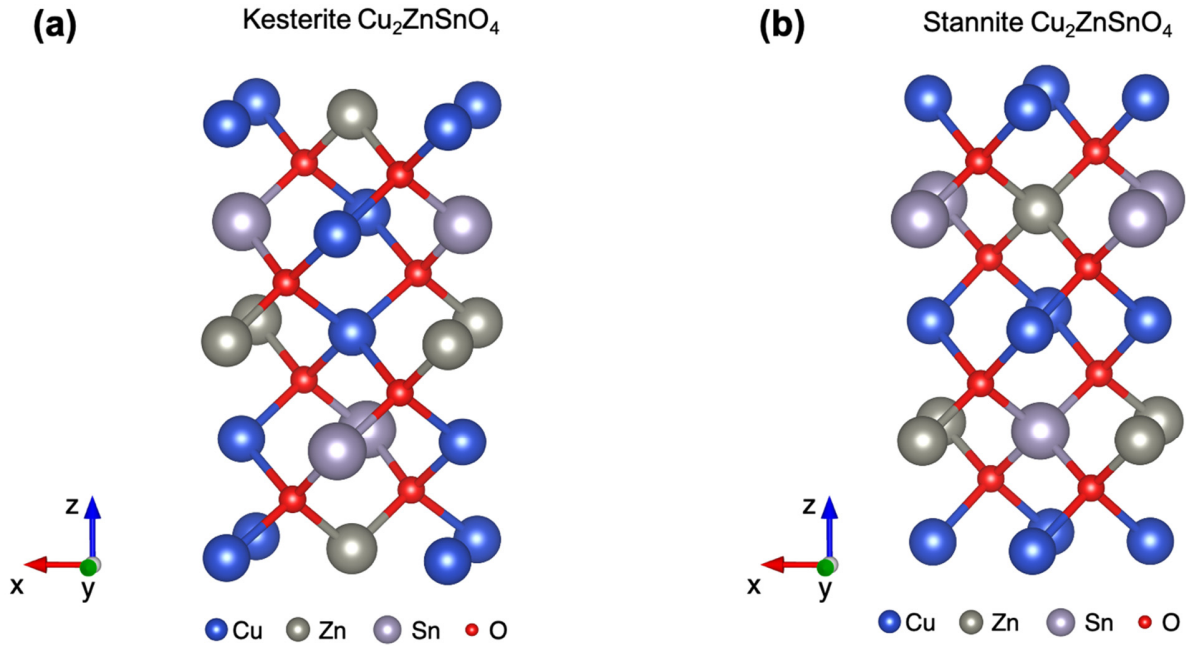
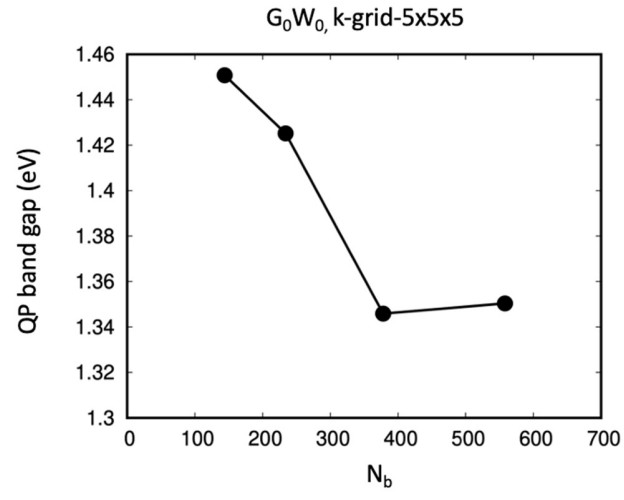


**Figure S1.** X-ray diffraction (XRD)  $2\theta$  scan of a synthesized bulk specimen. High-temperature sintering using an alumina crucible is utilized in this work (dark yellow). Four binary and ternary oxides,  $\text{Zn}_2\text{SnO}_4$ ,  $\text{SnO}_2$ ,  $\text{Cu}_2\text{O}$ , and  $\text{CuO}$ , are formed instead of CZTO. For reference, the simulated powder XRD pattern of delafossite-CZTO (dodger blue) and the experimental powder XRD pattern of  $\text{Zn}_2\text{SnO}_4$  (purple),  $\text{SnO}_2$  (teal),  $\text{Cu}_2\text{O}$  (dark red), and  $\text{CuO}$  (red), are listed in the figure.



**Figure S2.** Crystal structure of zincblende-derived  $\text{Cu}_2\text{ZnSnO}_4$  (CZTO) (a) Kesterite and (b) stannite structure of CZTO. For reference, kesterite and stannite structures are the stable structures for CIGS and CZTS.



**Figure S3.** The convergence of the quasiparticle band gap with respect to the number of bands on a 5×5×5 k-grid on Cu<sub>2</sub>ZnSnO<sub>4</sub> (CZTO).