Supplementary Information

Sol-gel Nanocasting Synthesis of Kesterite Cu$_2$ZnSnS$_4$ Nanorods

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**Fig. S1** Small-angle XRD patterns. (a) Parent SBA-15. Well-resolved diffraction peaks at (100), (110) and (200) display a well-ordered structure. (b) SBA-15 containing CZTS.

**Fig. S2** (a) TEM image of parent SBA-15, (b) TEM image of SBA-15 containing CZTS, (c) TEM image of CZTS with SBA-15 template removed.

**Fig. S3** The tyndall effect observed in the precursor solution.
**Fig. S4** TEM image of sample prepared by adding dry silica template into the precursor solution.

**Fig. S5** Absorbance spectrum of CZTS nanorods from 300 nm to 2000 nm. The spike at ~ 850 nm is a noise from the instrument.
Fig. S6 TEM image of sample prepared with the use of solution A.

Fig. S7 Wide-angle XRD of the sample prepared using solution A in Table 2.