

Supporting information

Radiative Emission from $\text{Cu}_2\text{ZnSnS}_4/\text{ZnSn}$ Core/Shell Nanocrystals

A. Irkhina,^a S. Levchenko,^a L. Xie,^b K. Leifer,^b and T. Unold^a

^aDepartment Structure and Dynamics of Energy Materials, Helmholtz-Zentrum Berlin für Materialien und Energie, Hahn-Meitner-Platz 1, 14109 Berlin, Germany

^bThe Ångström Laboratory, Department of Engineering Sciences, Uppsala University, Lägerhyddsvägen 1 Box 534, 75121 Uppsala, Sweden

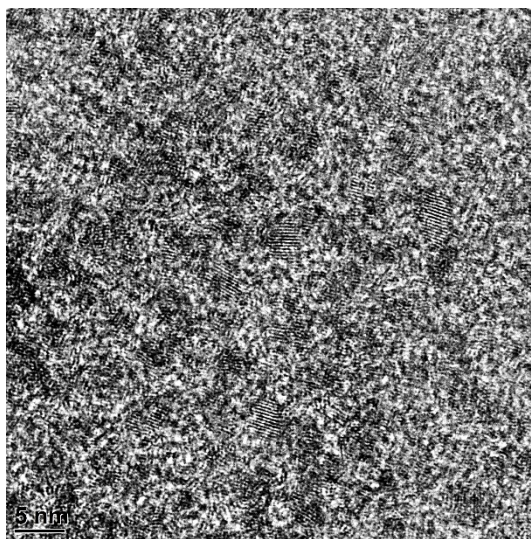


Figure S1. TEM image of CZTS core after 40 minutes of growth at 225 °C

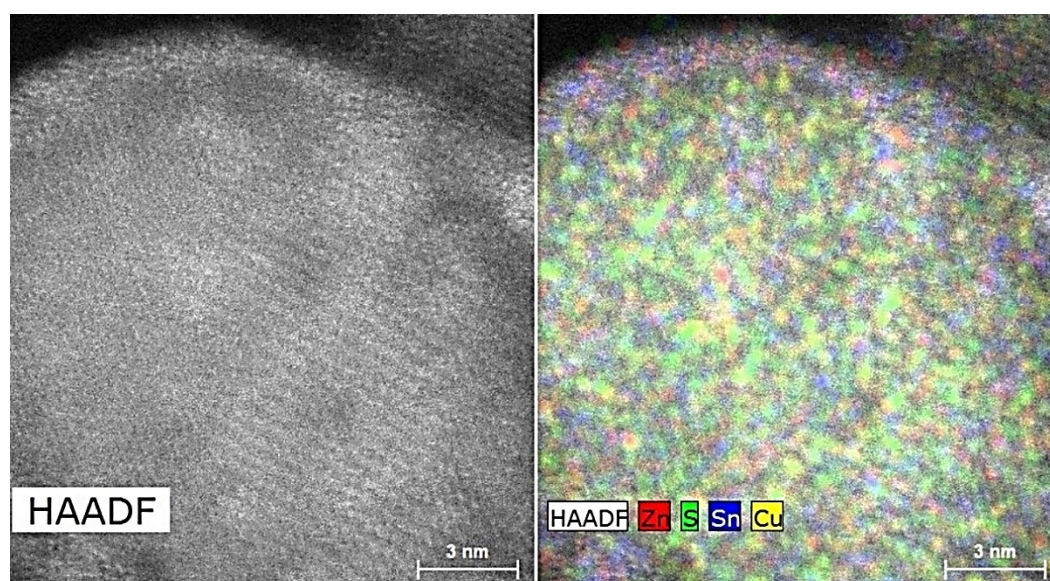


Figure S2. STEM-HAADF image and STEM-EDX elemental maps of CZTS/ZnSn core/shell NCs obtained at 160 °C and maximum $\text{Zn}_{\text{shell}}/\text{Cu}$ feeding molar ration of 4.5.

Table S1. Standart reaction potential at 25 °C.

Half-reaction	$E^0(\text{V})$
$\text{Sn}^{4+} + 2\text{e}^- \rightarrow \text{Sn}^{2+}$	0.13
$\text{Sn}^{2+} + 2\text{e}^- \rightarrow \text{Sn}^0$	-0.14
$\text{Zn}^{2+} + 2\text{e}^- \rightarrow \text{Zn}^0$	-0.76

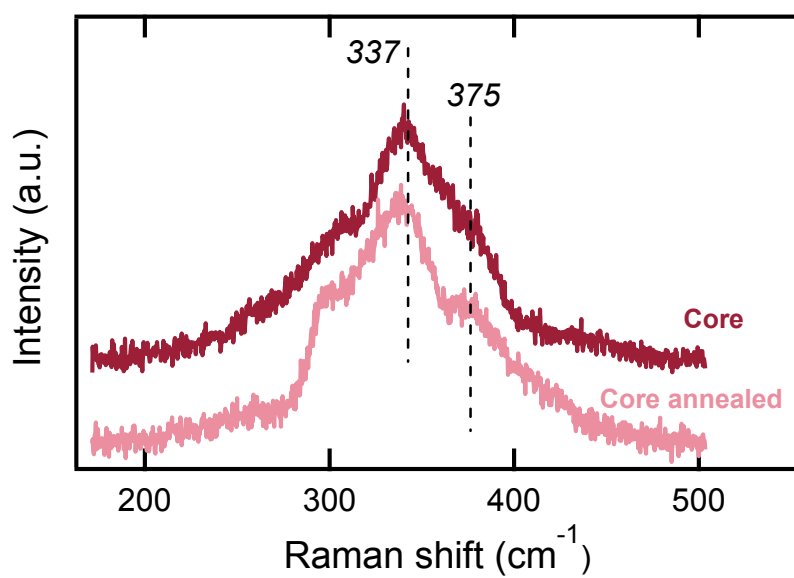


Figure S3. Raman spectra of core CZTS nanocrystals obtained at 225°C and additionally annealed with Zn oleate NCs (core annealed).