Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Electronic Supporting Information

Scalable synthesis of $CuInS_2$ nanocrystal inks for photovoltaic applications

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1. TEM analyses of $CuInS_2$ samples obtained after different reaction times

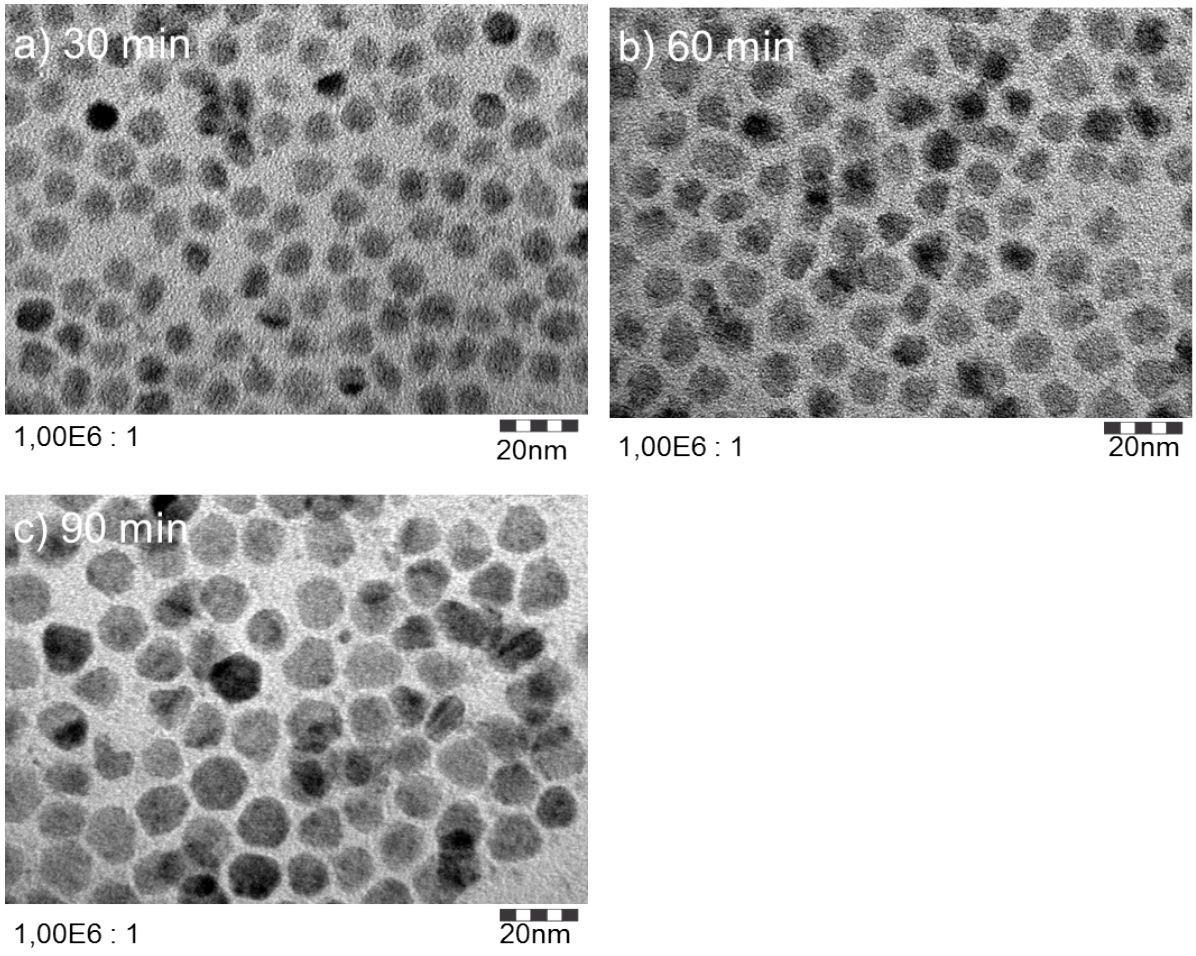


Figure S1: TEM analyses of samples obtained after different reaction times (a: 30 min, b: 60 min, c: 90 min; see main article for related TEM images taken after 1, 5 and 15 min reaction time).

2. HRTEM analysis of $CuInS_2$ nanoparticles

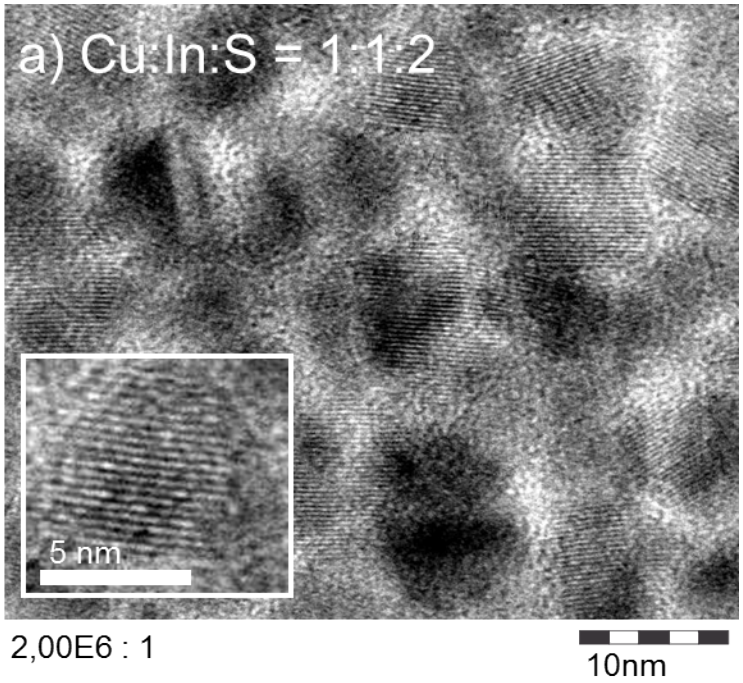
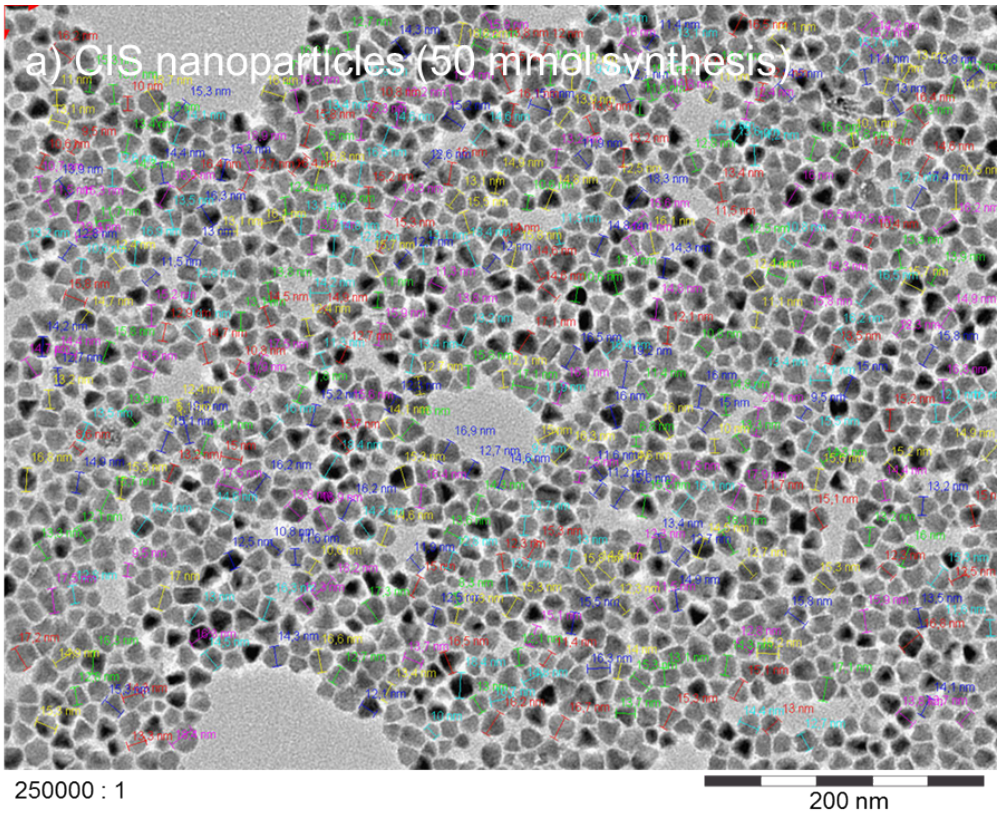
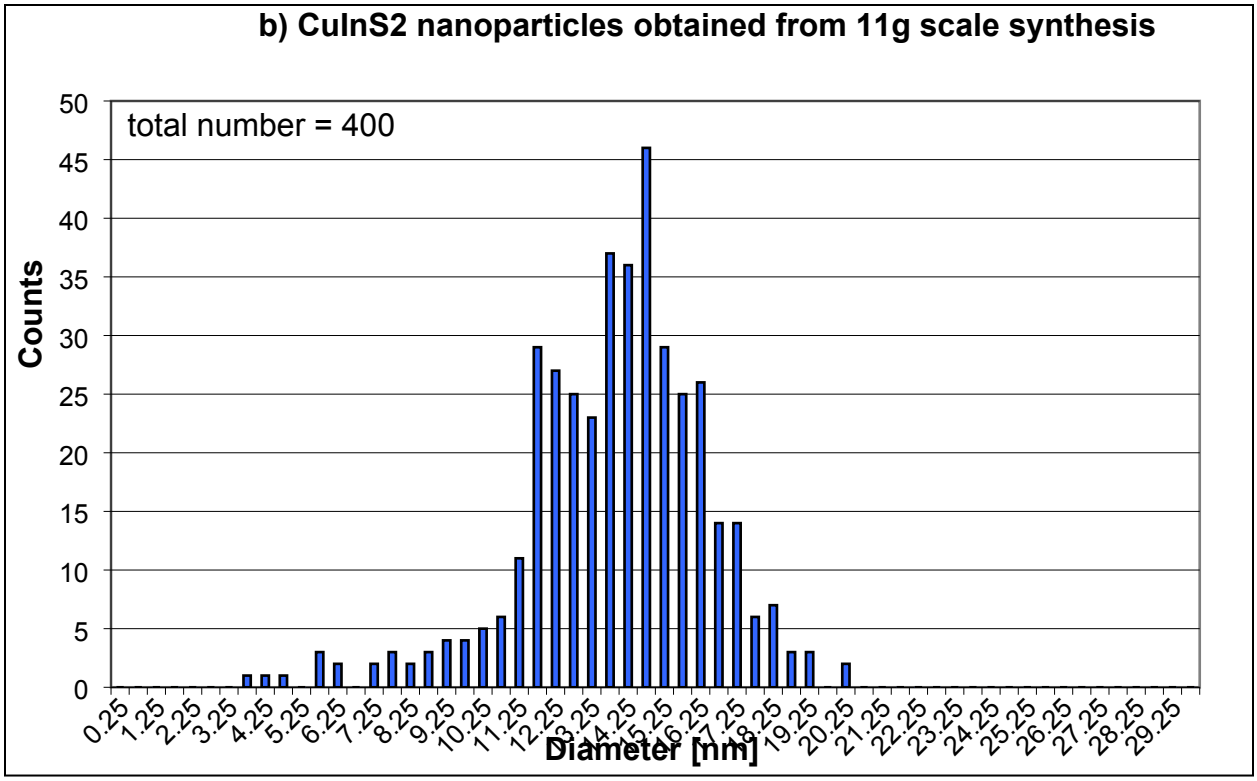


Figure S2: HRTEM analysis of $CuIn_2$ sample prepared with Cu:In:S = 1:1:2 precursor ratio. The observed spacing d = 3.2 Å corresponds to the (112) lattice planes of tetragonal (chalcopyrite) $CuInS_2$.

3. Size distribution of $CuInS_2$ nanoparticles obtained at 11g scale





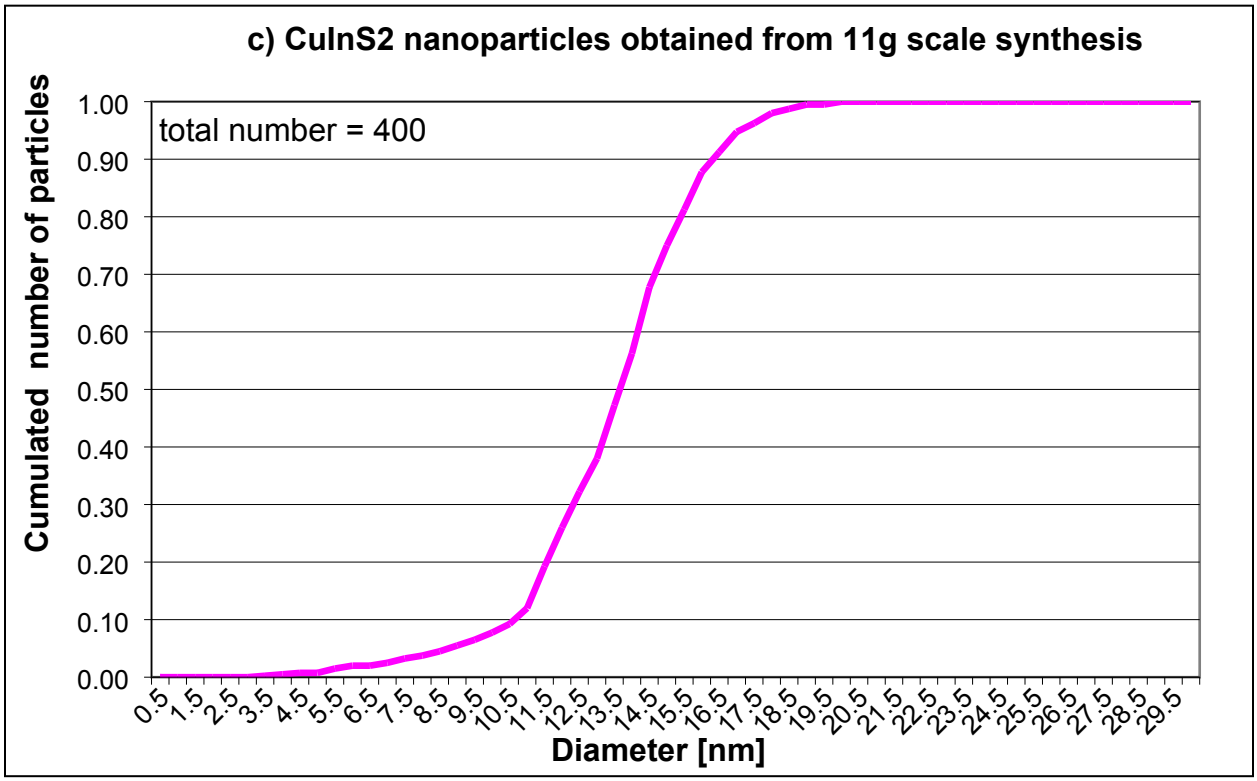


Figure S3: Size distribution of CIS nanoparticles obtained at 11g scale (see also Figure 3 in main article). a) TEM image showing the typical particle shapes and sizes, b) distribution of the diameter, and c) cumulated number of particles at different diameters.

4. Effect of surface ligand exchange from oleylamine to pyridine:

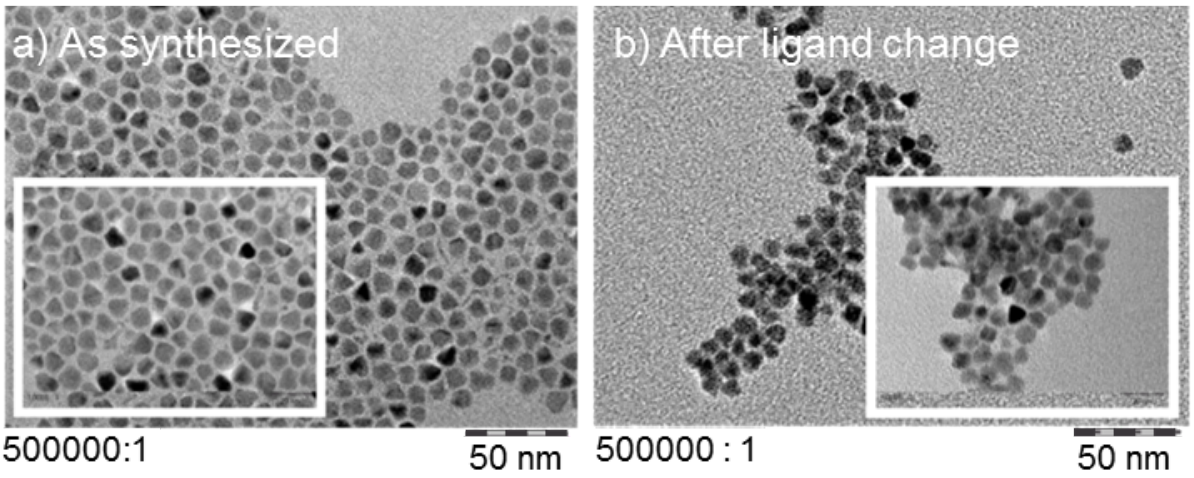


Figure S4: TEM analyses of samples obtained directly after synthesis (a) and after ligand exchange (b) from oleylamine to pyridine. The nanoparticles are in closer contact after surface modification, which hints at a successful exchange of long chain oleylamine surface ligand by pyridine.