

SUPPLEMENTARY INFORMATION

Hierarchical Superstructure of Alkylamine-Coated ZnS Nanoparticle Assemblies

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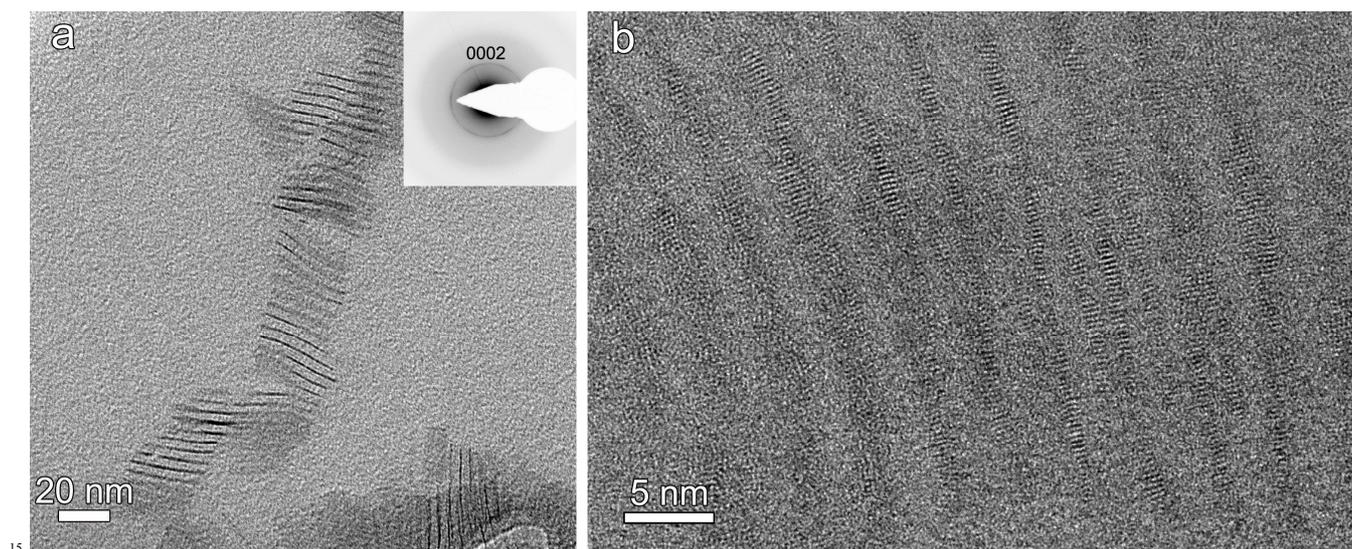


Figure S1. (a) BF TEM image and ED pattern (inset) of ODA-coated ZnS nanowires. (b) HRTEM image of ZnS nanowires. The nanowires were synthesized using pure ODA surfactant (not exposed to CO₂) under the same synthesis conditions (temperature and duration) as described in the Experimental Section for nanorod formation.

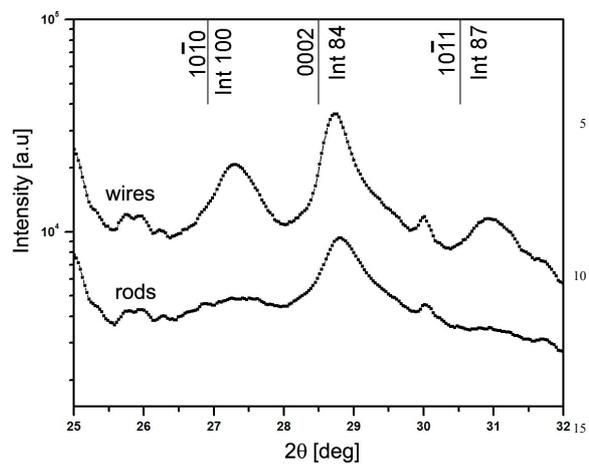


Figure S2. A part of powder XRD patterns of ODA-coated ZnS nanorods and nanowires (Figure 2a) and the expected peak positions and intensities of wurtzite ZnS based on JCPDS # 36-1450.

Diffraction Data Tables

Below we present diffraction data tables for the different nanoparticle morphologies described in the main text, including peak position in 2θ and corresponding d -spacings for $(h k)$ planes calculated from the unit cell lattice constants (see Table 1 in main text). Peak positions observed experimentally in the diffractograms are marked in **bold**. X-ray source in all cases was Cu K_{α} ($\lambda=1.54 \text{ \AA}$).

Table S2. Crystallographic data for ODA-coated wires and rods corresponding to the diffractograms shown in Fig. 2a.

ODA-coated wires			ODA-coated rods		
$(h k)$	2θ [deg]	d [\AA]	$(h k)$	2θ [deg]	d [\AA]
(1 0)	1.63	54.04	(1 0)	1.61	54.75
(0 1)	1.86	47.5	(0 1)	1.86	47.49
(1 1)	2.47	35.677	(1 1)	2.46	35.875
(2 0)	3.27	27.02	(2 0)	3.22	27.375
(0 2)	3.72	23.75	(0 2)	3.72	23.745
(2 1)	3.76	23.486	(2 1)	3.72	23.717
(1 2)	4.06	21.743	(1 2)	4.05	21.785
(3 0)	4.9	18.013	(3 0)	4.84	18.25
(2 2)	4.95	17.838	(2 2)	4.92	17.937
(3 1)	5.24	16.843	(3 1)	5.18	17.035
(0 3)	5.58	15.833	(0 3)	5.58	15.83
(1 3)	5.81	15.195	(1 3)	5.81	15.207
(3 2)	6.15	14.352	(3 2)	6.1	14.47
(2 3)	6.46	13.661	(2 3)	6.44	13.704
(4 0)	6.54	13.51	(4 0)	6.45	13.688
(4 1)	6.8	12.995	(4 1)	6.72	13.152
(3 3)	7.43	11.892	(3 3)	7.39	11.958
(0 4)	7.44	11.875	(0 4)	7.44	11.873
(4 2)	7.52	11.743	(4 2)	7.45	11.858
(1 4)	7.62	11.598	(1 4)	7.61	11.603
(2 4)	8.13	10.871	(5 0)	8.07	10.95
(5 0)	8.17	10.808	(2 4)	8.11	10.892
(5 1)	8.38	10.539	(5 1)	8.28	10.67
(4 3)	8.6	10.277	(4 3)	8.53	10.354
(3 4)	8.91	9.914	(3 4)	8.88	9.952
(5 2)	8.98	9.837	(5 2)	8.89	9.944
(0 5)	9.3	9.5	(0 5)	9.3	9.498
(1 5)	9.44	9.357	(1 5)	9.44	9.358
(6 0)	9.81	9.007	(6 0)	9.68	9.125
(2 5)	9.86	8.962	(5 3)	9.81	9.005
(5 3)	9.9	8.927	(2 5)	9.85	8.973
(4 4)	9.91	8.919	(4 4)	9.85	8.969
(6 1)	9.99	8.849	(6 1)	9.86	8.961
(6 2)	10.5	8.421	(6 2)	10.38	8.518
(3 5)	10.52	8.403	(3 5)	10.49	8.425
(5 4)	11.06	7.993	(5 4)	10.98	8.049
(0 6)	11.17	7.917	(0 6)	11.17	7.915
(1 6)	11.29	7.833	(6 3)	11.18	7.906
(6 3)	11.29	7.829	(1 6)	11.29	7.834
(4 5)	11.38	7.771	(7 0)	11.3	7.821
(7 0)	11.45	7.72	(4 5)	11.33	7.803
(7 1)	11.6	7.62	(7 1)	11.46	7.717
(2 6)	11.64	7.597	(2 6)	11.63	7.604
(7 2)	12.04	7.342	(7 2)	11.9	7.429
(3 6)	12.2	7.248	(3 6)	12.18	7.262
(6 4)	12.32	7.176	(6 4)	12.22	7.235
(5 5)	12.39	7.135	(5 5)	12.33	7.175
(7 3)	12.75	6.939	(7 3)	12.61	7.012
(4 6)	12.95	6.83	(4 6)	12.91	6.852
(0 7)	13.04	6.786	(8 0)	12.92	6.844
(8 0)	13.1	6.755	(0 7)	13.04	6.784
(1 7)	13.14	6.733	(8 1)	13.06	6.774
(8 1)	13.23	6.688	(1 7)	13.14	6.733
(2 7)	13.44	6.581	(2 7)	13.43	6.585
(6 5)	13.54	6.536	(6 5)	13.44	6.58
(8 2)	13.62	6.497	(8 2)	13.45	6.576
(7 4)	13.67	6.472	(7 4)	13.55	6.532
(5 6)	13.85	6.387	(5 6)	13.79	6.415
(3 7)	13.93	6.35	(3 7)	13.91	6.359
(8 3)	14.24	6.213	(8 3)	14.09	6.282
(4 7)	14.6	6.064	(9 0)	14.55	6.083
(9 0)	14.74	6.004	(4 7)	14.56	6.079
(7 5)	14.77	5.991	(7 5)	14.66	6.038
(9 1)	14.86	5.957	(9 1)	14.67	6.034
(6 6)	14.89	5.946	(6 6)	14.8	5.979
(0 8)	14.91	5.938	(0 8)	14.91	5.936

(1 8)	15	5.902	(8 4)	14.93	5.929
(8 4)	15.08	5.872	(1 8)	15	5.902
(9 2)	15.21	5.821	(9 2)	15.02	5.893
(2 8)	15.27	5.799	(2 8)	15.26	5.801
(5 7)	15.41	5.747	(5 7)	15.35	5.767
(3 8)	15.7	5.639	(9 3)	15.59	5.678
(9 3)	15.77	5.614	(3 8)	15.68	5.645
(7 6)	16.02	5.527	(7 6)	15.92	5.563
(8 5)	16.09	5.505	(8 5)	15.95	5.553
(4 8)	16.29	5.436	(10 0)	16.18	5.475
(6 7)	16.34	5.42	(4 8)	16.26	5.446
(10 0)	16.39	5.404	(6 7)	16.27	5.444
(10 1)	16.5	5.369	(10 1)	16.28	5.439
(9 4)	16.53	5.358	(9 4)	16.36	5.414
(0 9)	16.78	5.278	(10 2)	16.6	5.335
			(0 9)	16.79	5.277

Table S2. Crystallographic data for ODA molecules adsorbed on ZnS nanoparticle surface as derived from powder XRD measurements (Fig. 2a).

	(hk)	2θ [deg]	d [Å]
	$(1\bar{1})$	18.92	4.68
ODA-coated wires	(01)	19.29	4.60
	(10)	19.83	4.47
	$(1\bar{1})$	18.95	4.68
ODA-coated rods	(01)	19.30	4.59
	(10)	19.85	4.47