

Supporting Information for

Controllable Vapor Growth of Large Area Aligned CdS_xSe_{1-x} Nanowires for Visible Range Integratable Photodetectors

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Supplementary Figures and Table

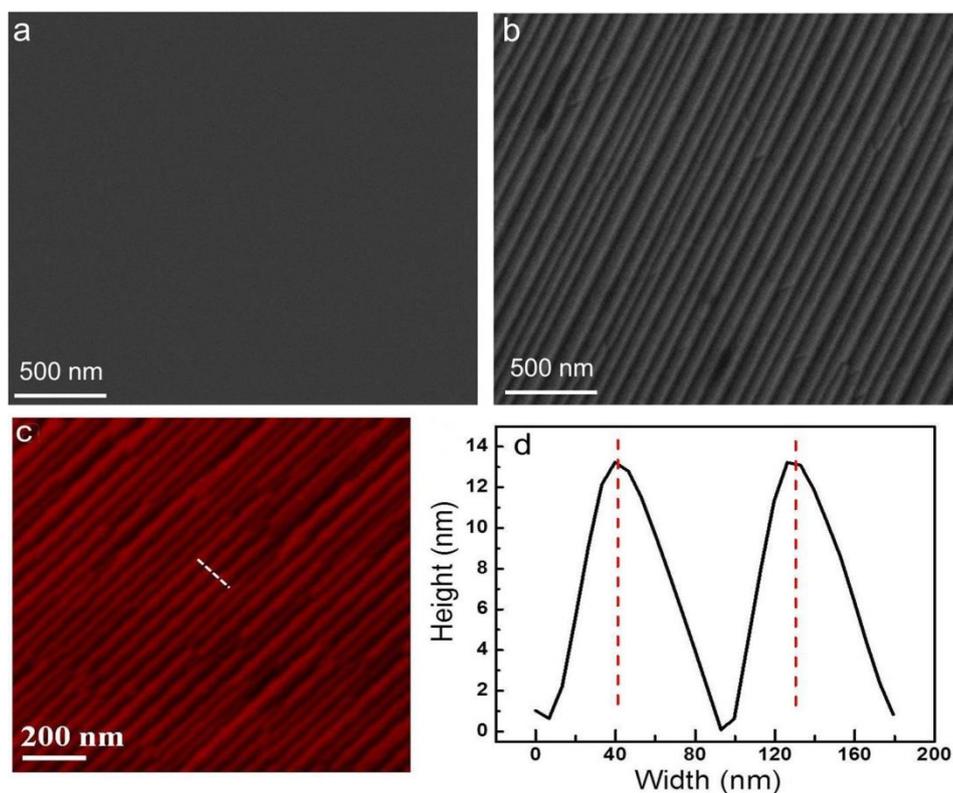


Fig. S1 Morphology characterization of the directional CdS_xSe_{1-x} NWs. **a** SEM image for the flat surface of the M-plane. **b** Realization of the faceted M-plane surface after high temperature annealing. **c** AFM image for the faceted M-plane substrate. **d** Height and width profile of the nanogrooves represents the dashed line marked position in **c**.

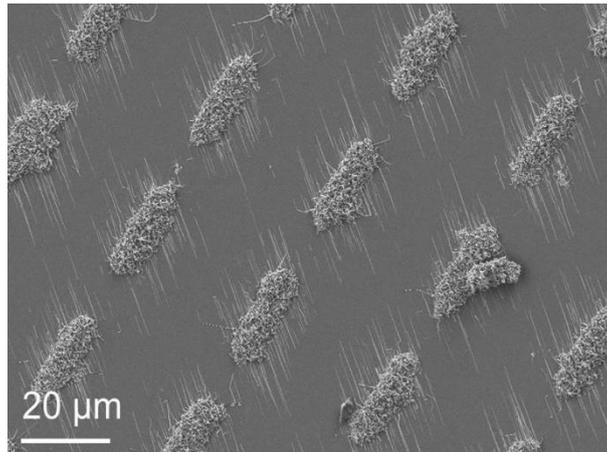


Fig. S2 Morphology characterization of the directional CdS_xSe_{1-x} NWs

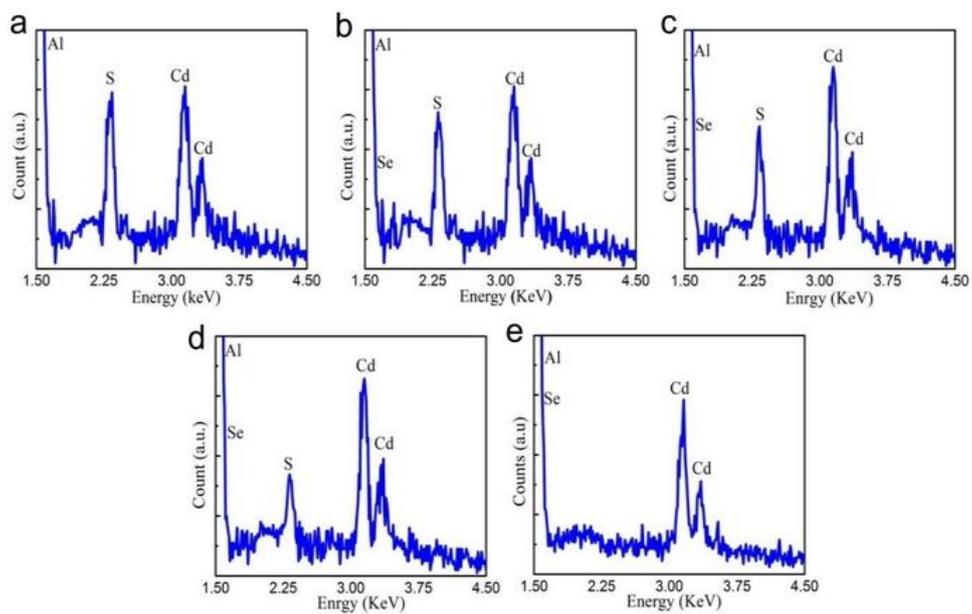


Fig. S3 EDS analysis of the CdS_xSe_{1-x} directional nanowires. **a-e** Elemental composition analysis from CdS to CdSe nanowires

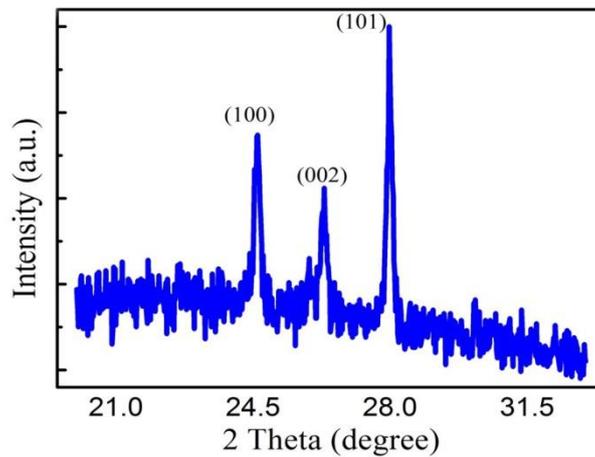


Fig. S4 XRD analysis of the CdS directional nanowires. **a** Wurtzite crystal structure graph for the directional pure CdS nanowires

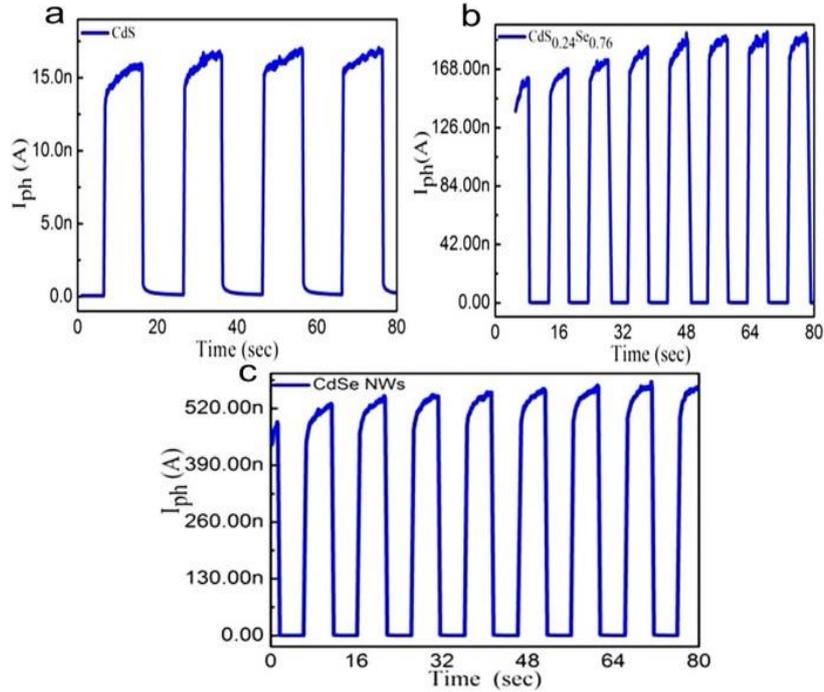


Fig. S5 Time resolved response of the photodetectors. **a-c** On/off photocurrent response of the corresponding CdS, CdS_{0.24}Se_{0.76} and pure CdSe directional nanowire respectively, under excitation of 405 nm with the power intensity of 9.69 Mw cm⁻²

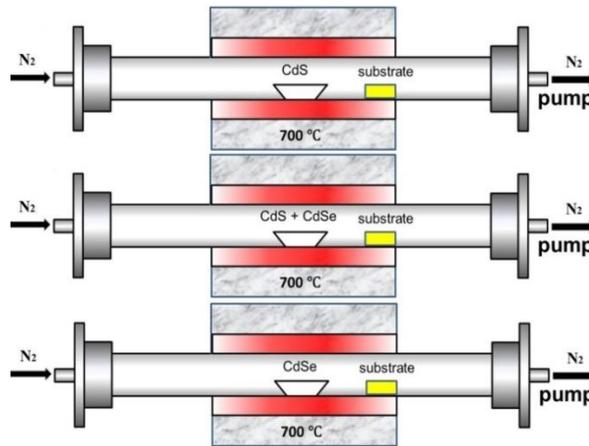


Fig. S6 Schematic setup for the growth of directional CdSSe NWs

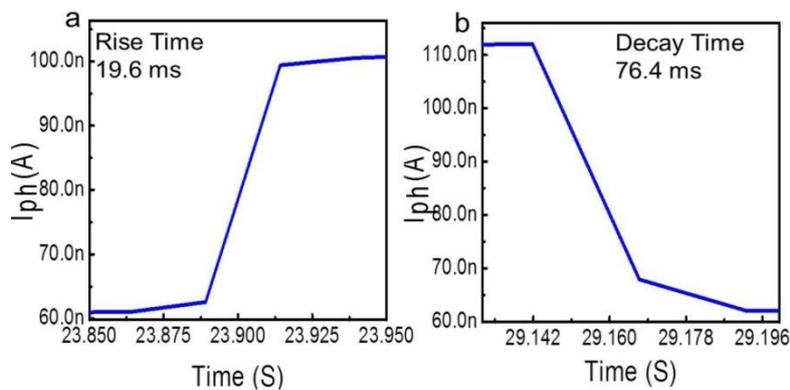


Fig. S7 Time resolved response of the photodetectors. **a** Rise time graph, **b** Decay time graph

Table 1 The detailed properties comparison of the photodetectors in our work with the reported literatures

Photodetectors	<i>EQE</i> %	Responsivity (A W ⁻¹)	Rise Time (msec)	Decay Time (msec)	Ref.
CdS WA/CdSe SCS heterostructures	3.25×10 ³	13.1	1.4	2	1
Graded CdSSe NWs	-	-	-	240	2
CdS Nanobelts	-	-	1000	3000	3
Graded CdSSe NWs	-	1	-	-	4
CdS Nanobelt	2×10 ²	5.2×10 ²	0.137	0.379	5
CdSe NWs		0.3			6
CdSSe NWs	2×10 ⁵	670	19.6	76.4	Our work

References

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