Electronic Supplementary Material (ESI) for Nanoscale

Supplementary Information

Bandgap engineering of $Cd_xZn_{1-x}Te$ nanowires

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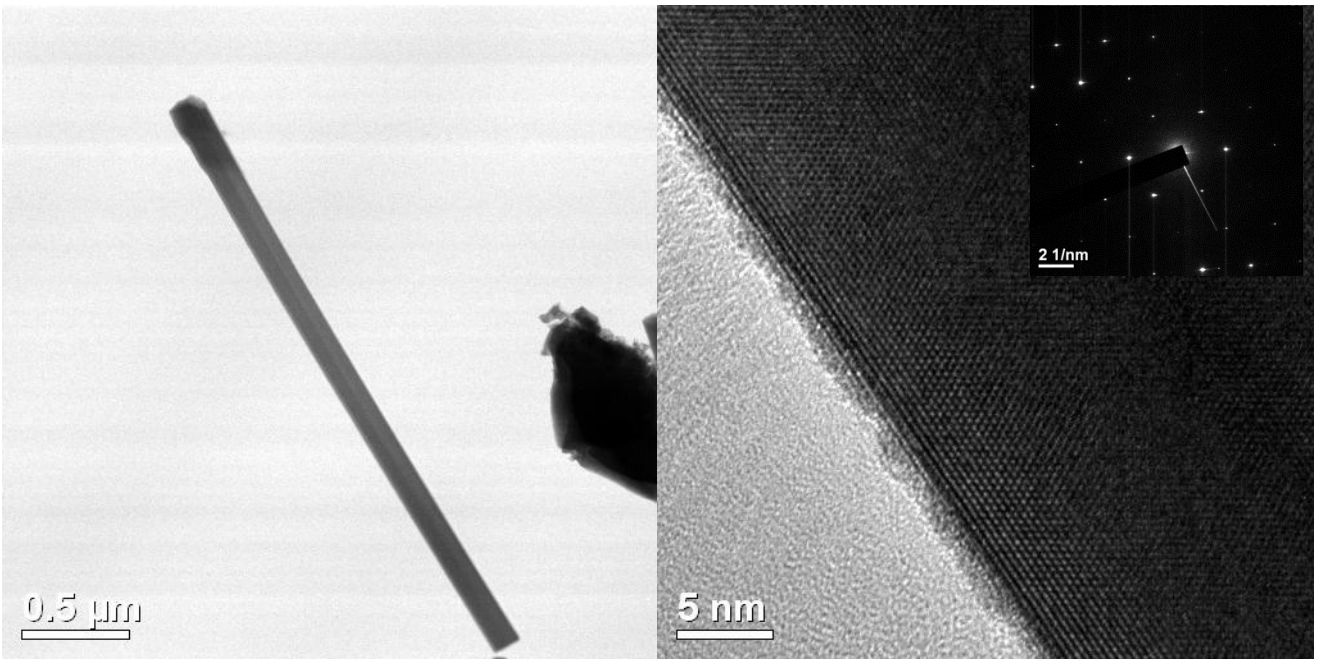
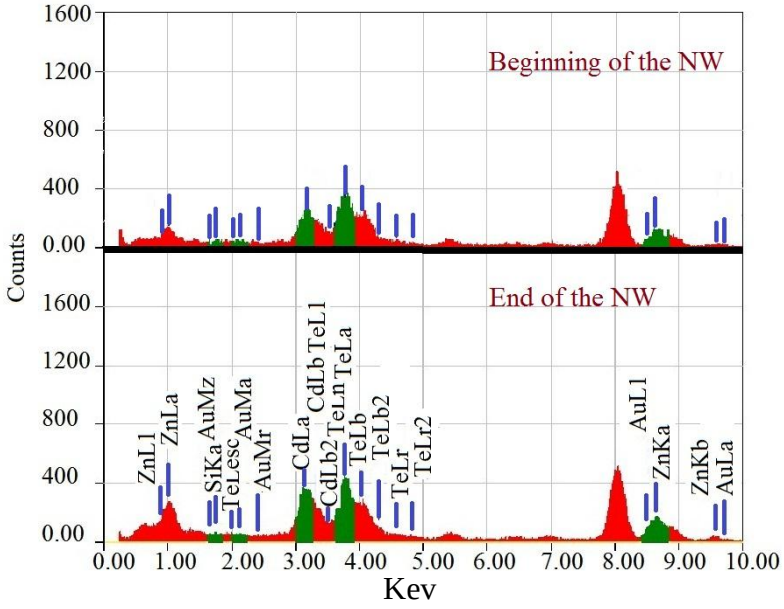


(a) (b)



(c)

Fig. S1 (a) A TEM image of a single nanowire, (b) HRTEM image and the diffraction pattern, (c) EDX results for segments in the beginning and end of the nanowire. Substrate temperature Tsu= 400°C.

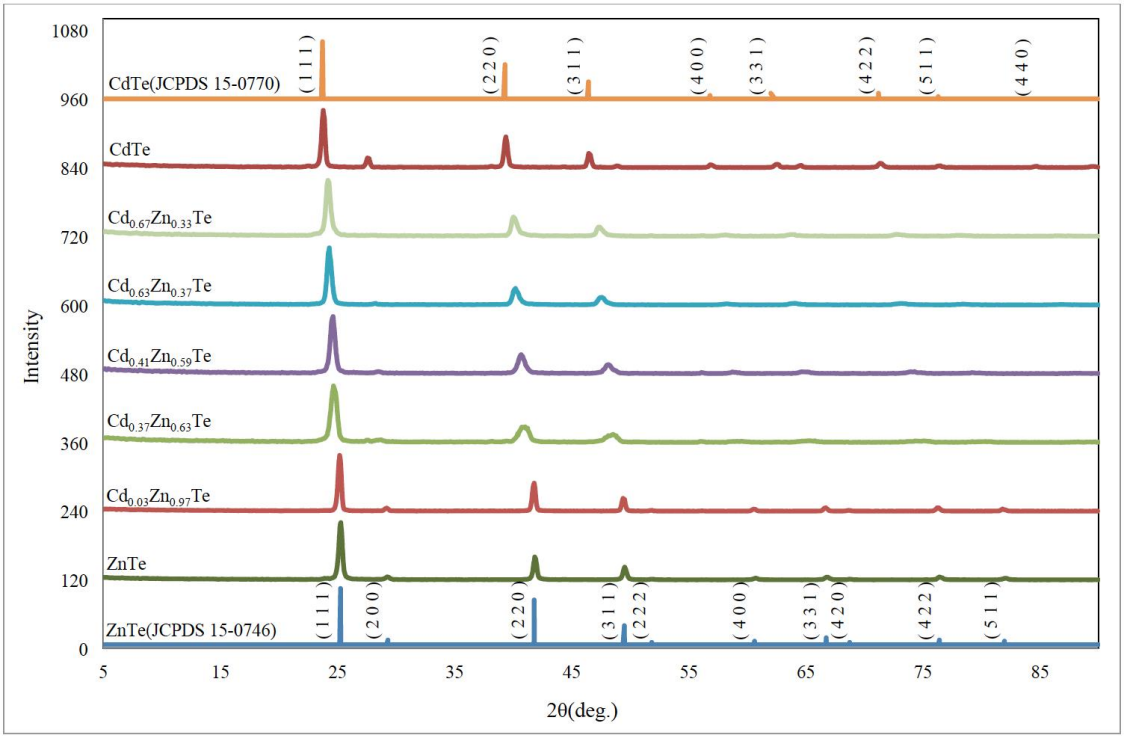


Fig. S2. XRD pattern of alloy nanowires with different compositions.

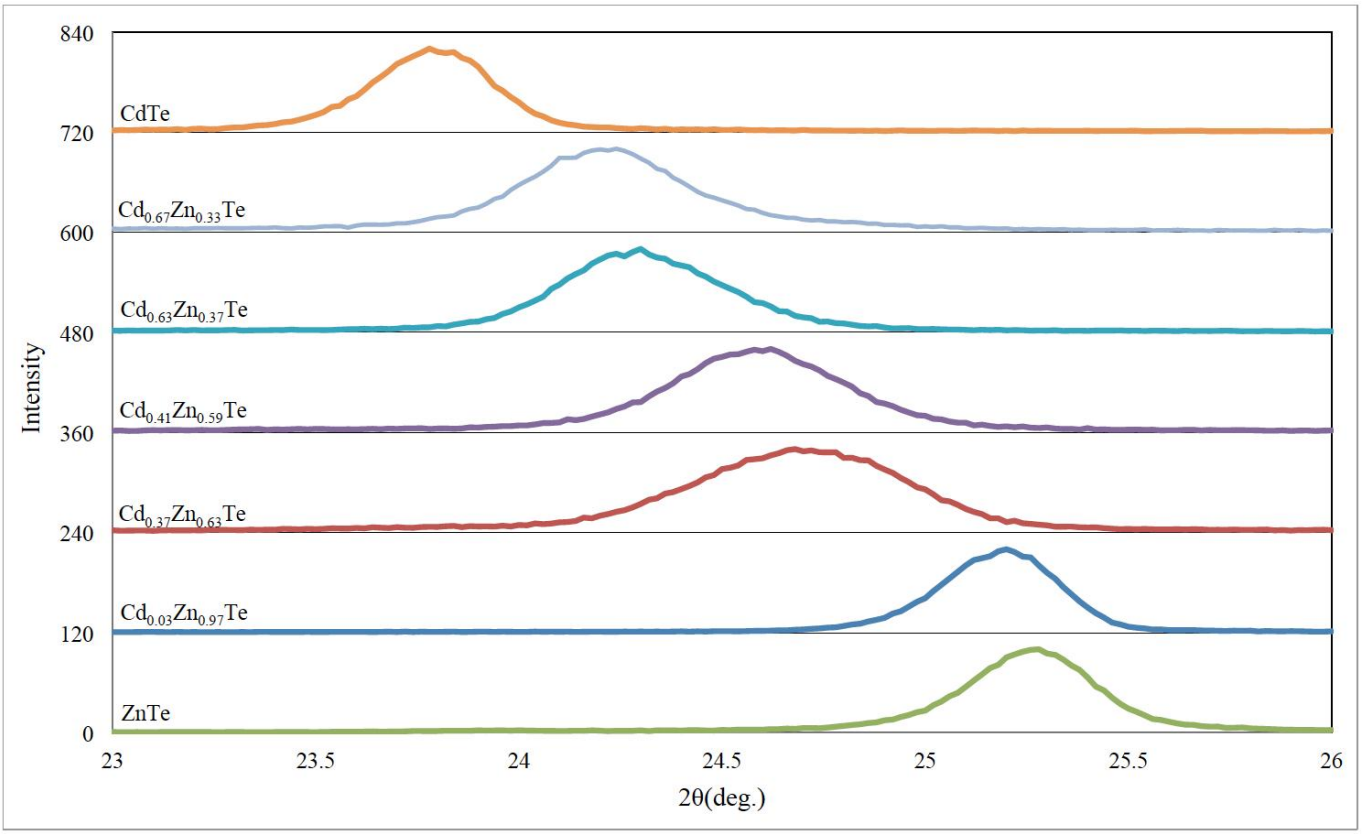


Fig. S3. Shift of (111) Bragg's peak for $Cd_xZn_{1-x}Te$ nanowires with different ratios of Cd

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Sample No.	Position of (111)	Lattice Space	Lattice Constant	Phase

	Peak 2θ (degree)	**(nm)**	**(nm)**	
ZnTe	25.26	0.35230	0.6102	Zincblende (Cubic)
$Cd_{0.03}Zn_{0.97}Te$	25.20	0.35312	0.6116	Zincblende (Cubic)
$Cd_{0.37}Zn_{0.63}Te$	24.68	0.36043	0.6242	Zincblende (Cubic)
$Cd_{0.41}Zn_{0.59}Te$	24.62	0.36131	0.6258	Zincblende (Cubic)
$Cd_{0.63}Zn_{0.37}Te$	24.30	0.36599	0.6339	Zincblende (Cubic)
$Cd_{0.67}Zn_{0.33}Te$	24.24	0.36688	0.6354	Zincblende (Cubic)
CdTe	23.76	0.37420	0.6475	Zincblende (Cubic)

Table S1. The compositions and lattice parameters of $Cd_xZn_{1-x}Te$ nanowires.

Sample	Formula	α (Å)	x (Based on Vegard's Law)	Cd A% based on the EDS	x (Calculated based on the EDS

				result	result)
1	ZnTe	0.6106	0	0	0
2	$Cd_{0.03}Zn_{0.97}Te$	0.6116	0.03	2.25	0.03
3	$Cd_{0.2}Zn_{0.8}Te$	0.6183	0.2	9	0.18
3	$Cd_{0.37}Zn_{0.63}Te$	0.6242	0.37	17	0.32
4	$Cd_{0.41}Zn_{0.59}Te$	0.6258	0.41	23	0.42
5	$Cd_{0.63}Zn_{0.37}Te$	0.6339	0.48	27	0.44
6	$Cd_{0.67}Zn_{0.33}Te$	0.6354	0.67	37	0.67
7	CdTe	0.6475	1	50	1

Table S2. Chemical formula based on Vegard's law for different alloy nanowires, maximum Cd percentage of different compositions based on the EDX results, and x values based on the EDX results.