Supporting Information for

CdTe nanoflake arrays on conductive substrate: template synthesis and photoresponse property

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1. Characterization of the raw Cd nanoflakes

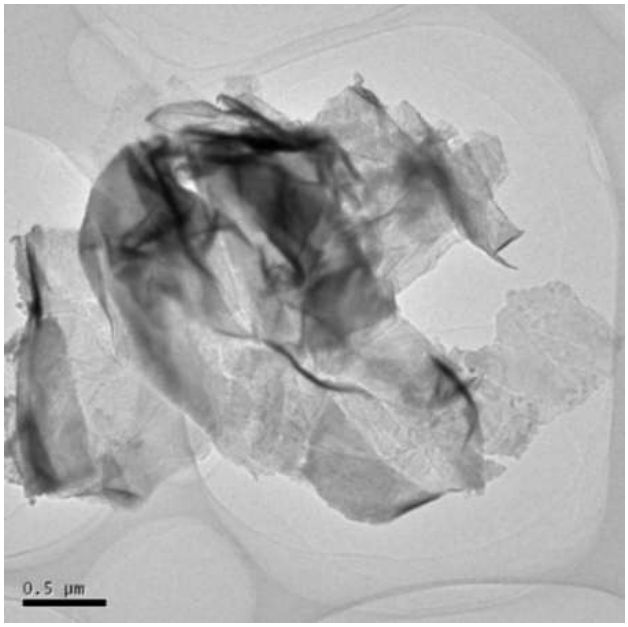

Figure S1. TEM image of a big Cd nanoflake.

2. Characterization of the products obtained by different heating treatments

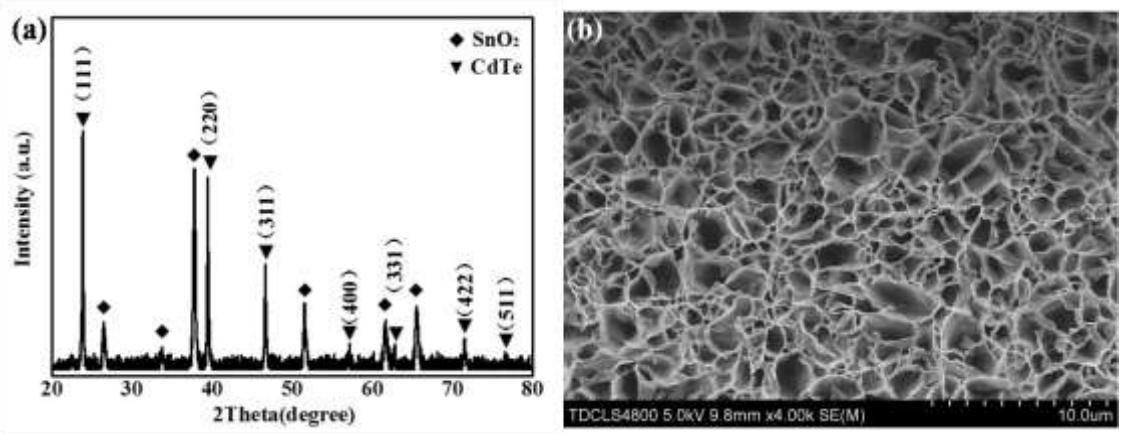

Figure S2. **(a)** XRD pattern and (b) SEM image of CdTe nanoflakes obtained by PIH at 420 °C for 5 min.

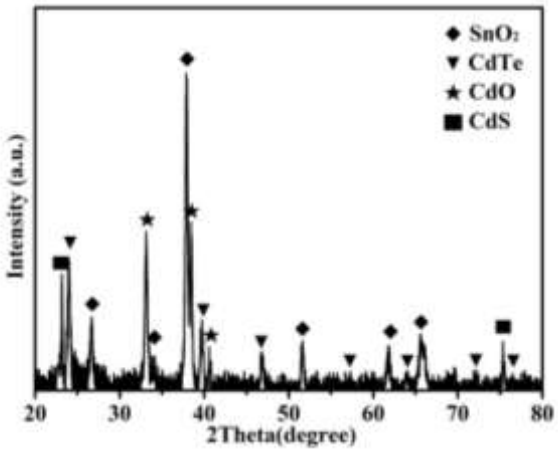

Figure S3. XRD pattern of the product obtained by PIH at 420 °C but without KOH pretreatment.

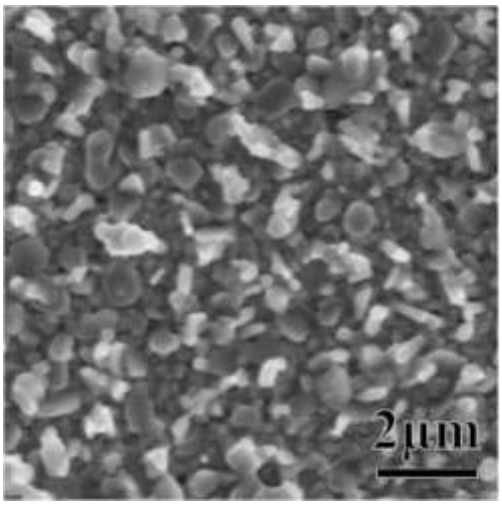

Figure S4. SEM image of the product obtained by NH at 420 °C.

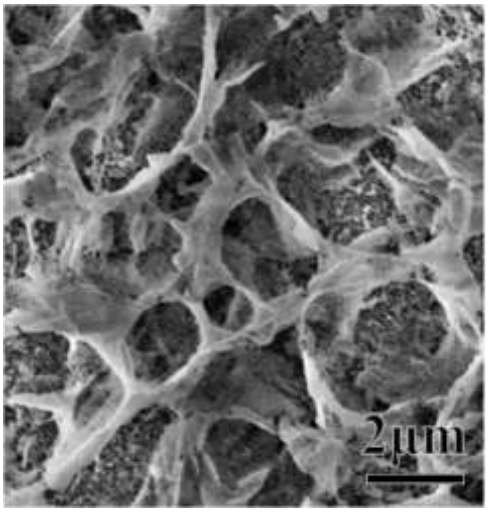

Figure S5. SEM image of the product obtained by PIH at 350 °C .

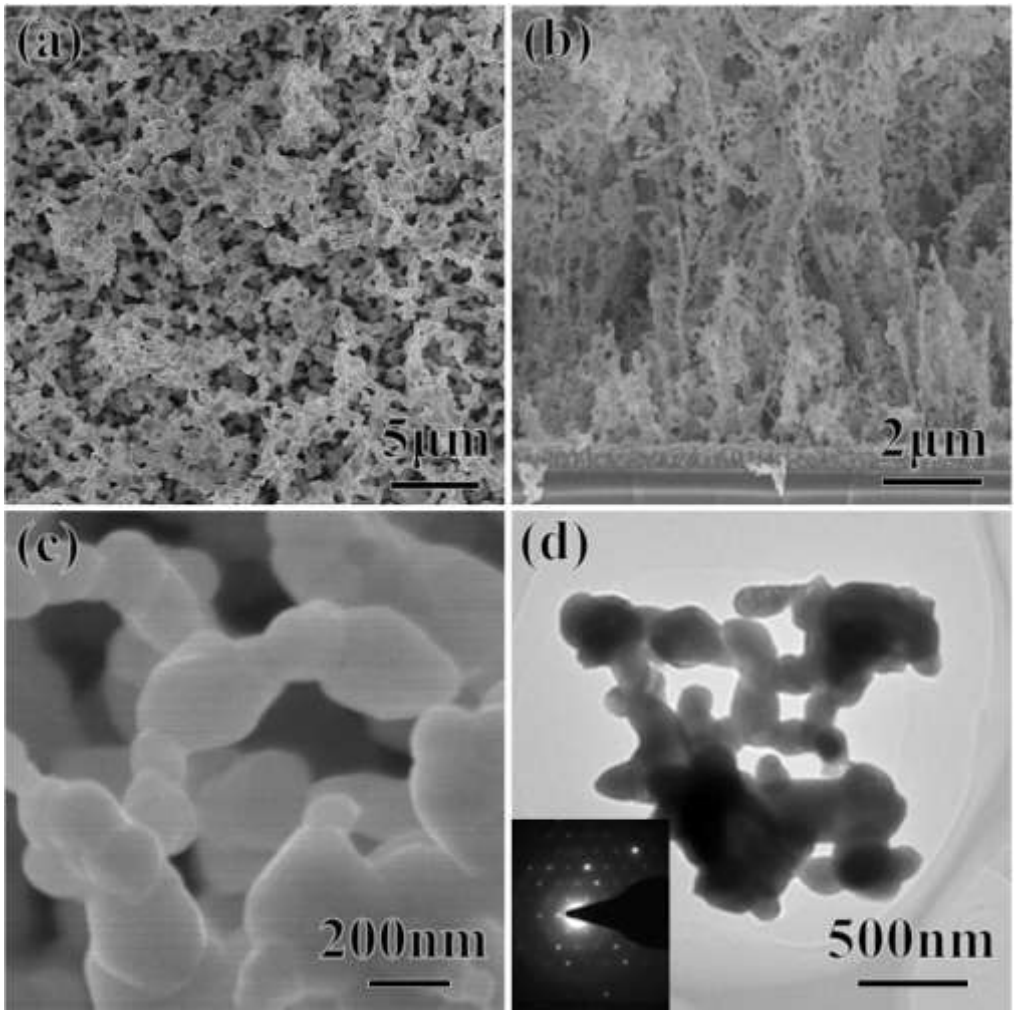

Figure S6. Characterizations of the product obtained by PIH at 450 °C. (a) Top-down, (b) cross-section , and (c) high magnification SEM images, (d) TEM image, inset is the SAED pattern.

3. Temperature change data in NH and PIH processes

Table S1 : Temperature changes in NH and PIH processes measured by thermocouple

Normal Heating			Put-in Heating		
Time (min)	Te powder (°C)	Cd NFAs (°C)	Time (min)	Te powder (°C)	Cd NFAs (°C)
0	20	20	0	20	20
3	51	35	0.5	79	60
6	81	52	1	160	115
9	112	66	1.5	234	168
12	141	86	2	302	219
15	172	110	2.5	366	269
18	201	139	3	398	297
21	233	165	3.5	418	325
24	262	194	4	424	338
27	292	228	4.5	422	344
30	323	259	5	421	348
33	352	286	5.5	420	350
36	383	310	6	420	350
39	412	332	6.5	420	350
42	419	346	7	420	350
45	420	350			
48	420	350			
51	420	350			
54	420	350			

4. Optical properties of CdTe nanoflake arrays.

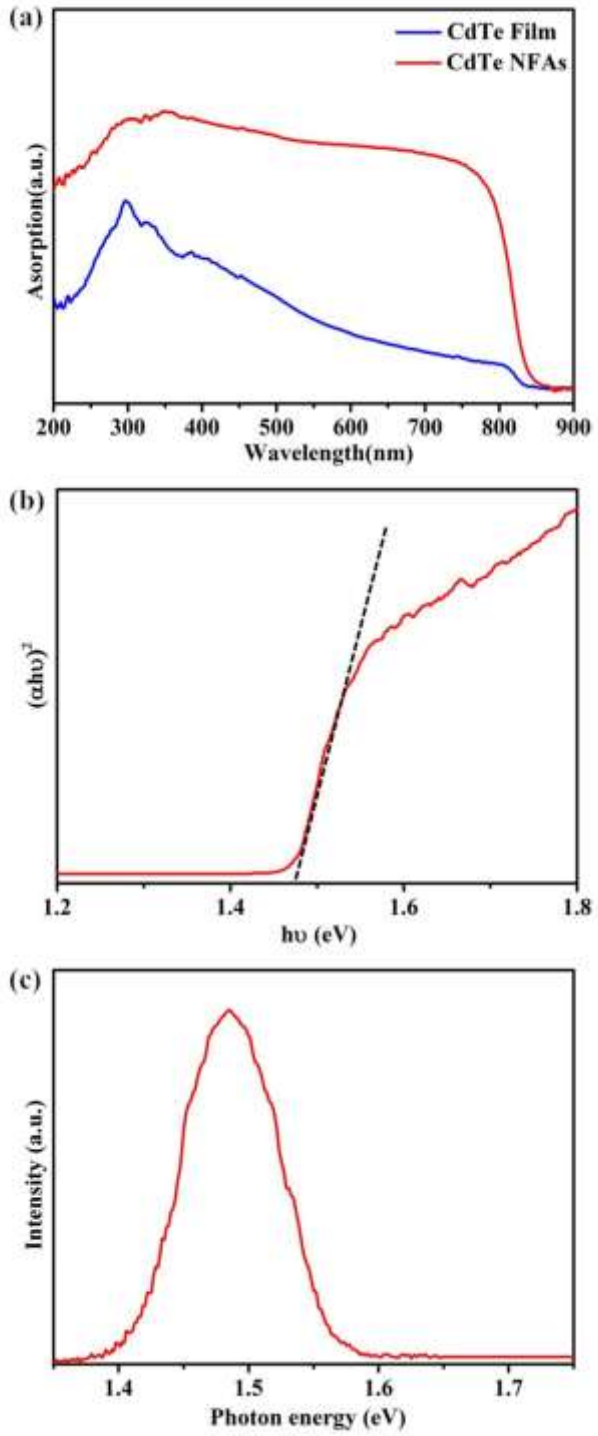

Figure S7. (a) Absorption spectra of CdTe film and NFAs obtained by PIH at 350 and 420 °C, respectively. (b) $(\alpha h\nu)^2$-$h\nu$ plot according to the absorption spectrum of NFAs in (a), extrapolation of the linear part till its intersection with the $h\nu$-axis gives the value band gap. (c) PL spectrum of the CdTe NFAs on FTO substrate.

5. Photoresponse properties of porous CdTe arrays on FTO substrate.

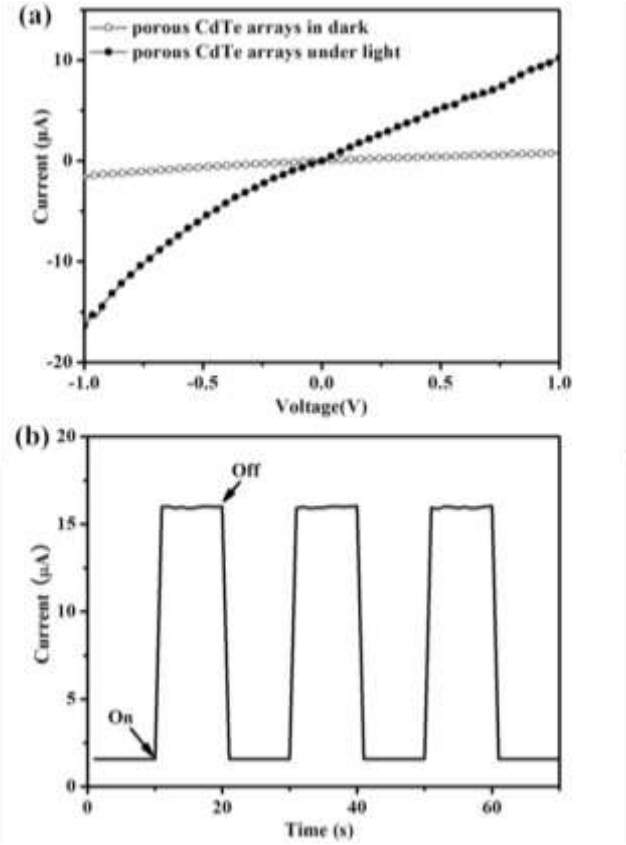

Figure S8. Photoresponse of porous CdTe arrays on FTO substrate. (a) I-V curves measured in dark and under white light illumination, respectively. (b) On-off cycles at a constant bias of -1.0 V.