

Electronic Supplementary Information

Temperature-dependent circular conversion dichroism from the chiral metasurfaces patterned in Dirac semimetal Cd_3As_2

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As a 3D Dirac semimetal, Cd_3As_2 has the complex permittivity that includes contributions from both the intraband and interband processes. The intraband conductivity is described by a Drude-like form

$$\varepsilon_D(\omega) = \varepsilon_\infty - \frac{\omega_p^2}{\omega^2 + i\Gamma\omega} \quad (\text{S1})$$

where ω , ε_∞ , ω_p and Γ are the angular frequency, effective background dielectric constant, plasma frequency, and collision frequency, respectively. The plasma frequency becomes larger with increasing the temperature, implying an enhanced Drude response with raising the temperature [1-3]. The Dirac cone interband transition contribution produces an imaginary component of the permittivity with [4]

$$\varepsilon_{\text{inter}}^I(\omega) = \frac{e^2 N_d}{12\hbar v_f} \Theta(\hbar\omega - 2\mu) \quad (\text{S2})$$

where e , $\hbar$ and v_f are the electron charge, Planck constant and Fermi velocity, respectively, N_d

is the degeneracy of the Dirac cone, $\hbar$ is the reduced Planck constant, Θ is a scattering-broadened Heaviside function, and μ is the electrochemical potential [1,5]. Then the real component of the interband permittivity can be derived from a Kramers-Kronig transformation

$$\varepsilon_{\text{inter}}^{\text{R}}(\omega) = -\frac{1}{\pi} P \int_{-\infty}^{\infty} \frac{\varepsilon_{\text{inter}}^{\text{I}}(\omega')}{\omega' - \omega} d\omega' \quad (\text{S3})$$

Chorsi et al systematically measured the physical parameters including v_f , ω_p , Γ and μ of Dirac semimetal Cd_3As_2 at temperatures ranging from 80 to 400 K. They found that all of them are dependent upon the temperature [1]. By utilizing these measured parameters and taking the intraband and interband terms together, i.e., $\varepsilon_{\text{Cd}_3\text{As}_2}(\omega) = \varepsilon_D(\omega) + \varepsilon_{\text{inter}}^{\text{R}}(\omega) + i\varepsilon_{\text{inter}}^{\text{I}}(\omega)$, the complex permittivity spectra of Dirac semimetal Cd_3As_2 at different temperatures are derived, as shown in **Fig. 1** in the main text and **Table S1**.

Table S1. Complex permittivities of Dirac semimetal Cd_3As_2 at different temperatures. For brevity, the wavelength spacing is 100 nm in this table. In actual simulations, the step width of wavelength was set as 10 nm.

Wavelength (μm)	80 K		100 K		180 K		220 K	
	Real part	Imaginary part	Real part	Imaginary part	Real part	Imaginary part	Real part	Imaginary part
2.0	16.66104	2.14292	16.7536	2.16499	17.07677	2.24377	17.25279	2.42024
2.1	16.73152	2.14158	16.82356	2.16366	17.14667	2.24246	17.32197	2.41894
2.2	16.79895	2.14021	16.89045	2.16232	17.21327	2.24113	17.38769	2.41763
2.3	16.86359	2.13882	16.95453	2.16094	17.27689	2.23978	17.45026	2.41631
2.4	16.92572	2.1374	17.01605	2.15954	17.33776	2.23841	17.50991	2.41498
2.5	16.98553	2.13594	17.07524	2.15812	17.39611	2.23702	17.56689	2.41363
2.6	17.04323	2.13446	17.13228	2.15666	17.45214	2.23561	17.62139	2.41228
2.7	17.09898	2.13294	17.18735	2.15517	17.50601	2.23417	17.67358	2.41091
2.8	17.15294	2.13139	17.2406	2.15365	17.5579	2.23271	17.72362	2.40953
2.9	17.20525	2.1298	17.29217	2.15209	17.60792	2.23122	17.77166	2.40814
3.0	17.25602	2.12817	17.34217	2.1505	17.65622	2.2297	17.81781	2.40674
3.1	17.30538	2.1265	17.39073	2.14888	17.70289	2.22816	17.86219	2.40532
3.2	17.35343	2.12479	17.43793	2.14721	17.74804	2.22659	17.9049	2.40389
3.3	17.40024	2.12304	17.48389	2.14551	17.79177	2.22499	17.94604	2.40243
3.4	17.44592	2.12124	17.52867	2.14376	17.83415	2.22335	17.98567	2.40096
3.5	17.49054	2.1194	17.57235	2.14197	17.87526	2.22168	18.02389	2.39947
3.6	17.53417	2.1175	17.61501	2.14013	17.91516	2.21997	18.06075	2.39796
3.7	17.57687	2.11555	17.65671	2.13824	17.95393	2.21822	18.09632	2.39643
3.8	17.61872	2.11354	17.69751	2.1363	17.99162	2.21643	18.13066	2.39487
3.9	17.65975	2.11147	17.73747	2.1343	18.02828	2.2146	18.16382	2.39329
4.0	17.70004	2.10934	17.77664	2.13225	18.06396	2.21272	18.19584	2.39167
4.1	17.73962	2.10715	17.81507	2.13013	18.09871	2.21078	18.22676	2.39002
4.2	17.77854	2.10488	17.8528	2.12795	18.13256	2.2088	18.25663	2.38834

4.3	17.81686	2.10254	17.88987	2.1257	18.16555	2.20675	18.28549	2.38662
4.4	17.8546	2.10012	17.92633	2.12337	18.19772	2.20465	18.31335	2.38485
4.5	17.89181	2.09761	17.96221	2.12097	18.22909	2.20248	18.34026	2.38304
4.6	17.92852	2.09502	17.99754	2.11848	18.2597	2.20023	18.36623	2.38118
4.7	17.96477	2.09233	18.03237	2.1159	18.28957	2.19791	18.39129	2.37926
4.8	18.0006	2.08954	18.06671	2.11323	18.31873	2.19551	18.41547	2.37728
4.9	18.03602	2.08664	18.1006	2.11046	18.34719	2.19302	18.43878	2.37524
5.0	18.07109	2.08363	18.13408	2.10758	18.37497	2.19044	18.46123	2.37312
5.1	18.10581	2.08049	18.16715	2.10458	18.40209	2.18776	18.48284	2.37092
5.2	18.14023	2.07722	18.19985	2.10146	18.42857	2.18496	18.50363	2.36864
5.3	18.17436	2.07381	18.2322	2.09821	18.45441	2.18205	18.5236	2.36627
5.4	18.20824	2.07025	18.26423	2.09481	18.47963	2.17902	18.54276	2.36379
5.5	18.24188	2.06654	18.29595	2.09127	18.50424	2.17584	18.56112	2.3612
5.6	18.27531	2.06264	18.32738	2.08756	18.52824	2.17252	18.57868	2.35849
5.7	18.30856	2.05856	18.35854	2.08368	18.55164	2.16904	18.59545	2.35564
5.8	18.34164	2.05429	18.38946	2.07961	18.57443	2.16539	18.61143	2.35265
5.9	18.37458	2.04979	18.42013	2.07533	18.59663	2.16155	18.62662	2.3495
6.0	18.4074	2.04507	18.45058	2.07084	18.61823	2.15752	18.64102	2.34618
6.1	18.44012	2.0401	18.48082	2.06611	18.63922	2.15326	18.65463	2.34266
6.2	18.47274	2.03485	18.51087	2.06113	18.65961	2.14877	18.66743	2.33894
6.3	18.50531	2.02932	18.54072	2.05587	18.67938	2.14402	18.67944	2.335
6.4	18.53782	2.02347	18.5704	2.05032	18.69854	2.13899	18.69064	2.33081
6.5	18.57029	2.01727	18.5999	2.04444	18.71706	2.13367	18.70104	2.32635
6.6	18.60274	2.01071	18.62922	2.03822	18.73494	2.12801	18.71061	2.32159
6.7	18.63519	2.00374	18.65838	2.03161	18.75216	2.12199	18.71936	2.31651
6.8	18.66763	1.99633	18.68737	2.02459	18.76872	2.11559	18.72728	2.31108
6.9	18.70008	1.98844	18.71618	2.01712	18.78459	2.10876	18.73435	2.30526
7.0	18.73254	1.98003	18.74481	2.00916	18.79976	2.10147	18.74059	2.29902
7.1	18.76503	1.97105	18.77325	2.00067	18.81422	2.09367	18.74596	2.29232
7.2	18.79752	1.96144	18.80148	1.99159	18.82793	2.08531	18.75048	2.2851
7.3	18.83003	1.95115	18.82948	1.98187	18.84089	2.07635	18.75413	2.27733
7.4	18.86253	1.9401	18.85723	1.97145	18.85307	2.06672	18.7569	2.26895
7.5	18.89502	1.92823	18.8847	1.96027	18.86446	2.05636	18.7588	2.2599
7.6	18.92747	1.91545	18.91185	1.94824	18.87503	2.0452	18.75981	2.25012
7.7	18.95985	1.90167	18.93863	1.93528	18.88476	2.03317	18.75993	2.23952
7.8	18.99211	1.88679	18.965	1.92131	18.89365	2.02017	18.75917	2.22805
7.9	19.02422	1.8707	18.9909	1.90622	18.90166	2.00611	18.75751	2.21559
8.0	19.05609	1.85327	19.01626	1.8899	18.90879	1.99089	18.75497	2.20207
8.1	19.08766	1.83436	19.04101	1.87223	18.91501	1.9744	18.75154	2.18739
8.2	19.11882	1.81384	19.06507	1.85308	18.92032	1.95652	18.74722	2.17142
8.3	19.14947	1.79154	19.08833	1.83232	18.92472	1.93711	18.74203	2.15406
8.4	19.17947	1.76729	19.11071	1.80978	18.92818	1.91604	18.73597	2.13519
8.5	19.20867	1.74092	19.1321	1.78531	18.93071	1.89317	18.72905	2.11466
8.6	19.2369	1.71225	19.15238	1.75877	18.9323	1.86835	18.72127	2.09236
8.7	19.26397	1.68111	19.17145	1.72998	18.93296	1.84145	18.71266	2.06814
8.8	19.28968	1.64735	19.18918	1.69883	18.9327	1.81233	18.70322	2.0419
8.9	19.31379	1.61084	19.20547	1.66518	18.93151	1.78089	18.69297	2.01352

9.0	19.3361	1.57151	19.22021	1.62896	18.92942	1.74705	18.68192	1.98292
9.1	19.35638	1.52935	19.23331	1.59014	18.92643	1.71079	18.6701	1.95004
9.2	19.37441	1.48444	19.24467	1.54879	18.92256	1.67213	18.65751	1.91489
9.3	19.39	1.437	19.25425	1.50503	18.91784	1.63118	18.64418	1.87753
9.4	19.40302	1.38734	19.26199	1.45912	18.91228	1.58816	18.63013	1.83808
9.5	19.41334	1.33593	19.26787	1.41142	18.90591	1.54335	18.61538	1.79676
9.6	19.4209	1.28334	19.27189	1.3624	18.89875	1.49716	18.59994	1.75388
9.7	19.42572	1.23023	19.27407	1.31261	18.89084	1.45007	18.58385	1.70982
9.8	19.42784	1.17732	19.27447	1.26268	18.88219	1.40264	18.56711	1.66504
9.9	19.42737	1.12528	19.27315	1.21321	18.87284	1.35542	18.54975	1.62005
10.0	19.42446	1.07475	19.27019	1.16482	18.86282	1.30898	18.53179	1.57537
10.1	19.4193	1.02627	19.26569	1.11803	18.85216	1.26385	18.51326	1.53152
10.2	19.41211	0.98023	19.25978	1.07328	18.84089	1.22047	18.49417	1.48898
10.3	19.40312	0.93692	19.25255	1.03088	18.82904	1.1792	18.47454	1.44816
10.4	19.39255	0.89649	19.24414	0.99104	18.81663	1.14027	18.45439	1.40938
10.5	19.38064	0.85898	19.23466	0.95388	18.8037	1.10386	18.43374	1.3729
10.6	19.36759	0.82435	19.22423	0.91941	18.79028	1.07004	18.41261	1.33886
10.7	19.35361	0.79252	19.21297	0.88759	18.77639	1.0388	18.39101	1.30736
10.8	19.33889	0.76333	19.20099	0.85833	18.76206	1.01009	18.36897	1.2784
10.9	19.32357	0.73664	19.18838	0.8315	18.74731	0.98383	18.3465	1.25196
11.0	19.3078	0.71225	19.17524	0.80695	18.73216	0.95988	18.32362	1.22794
11.1	19.29171	0.69001	19.16165	0.78454	18.71665	0.93811	18.30034	1.20626
11.2	19.2754	0.66972	19.14769	0.76409	18.70079	0.91839	18.27667	1.1868
11.3	19.25895	0.65124	19.13343	0.74546	18.6846	0.90056	18.25263	1.16942
11.4	19.24245	0.6344	19.11892	0.7285	18.6681	0.8845	18.22823	1.15399
11.5	19.22595	0.61906	19.10422	0.71308	18.65131	0.87006	18.20349	1.1404
11.6	19.20951	0.6051	19.08937	0.69906	18.63425	0.85712	18.17841	1.1285
11.7	19.19316	0.59239	19.07442	0.68634	18.61692	0.84556	18.15301	1.11818
11.8	19.17694	0.58082	19.0594	0.67479	18.59936	0.83527	18.1273	1.10933
11.9	19.16087	0.5703	19.04434	0.66434	18.58156	0.82617	18.10129	1.10184
12.0	19.14497	0.56074	19.02926	0.65487	18.56355	0.81815	18.07499	1.09562
12.1	19.12927	0.55206	19.01419	0.64633	18.54533	0.81113	18.0484	1.09057
12.2	19.11376	0.54419	18.99914	0.63863	18.52691	0.80504	18.02153	1.08663
12.3	19.09845	0.53707	18.98414	0.63171	18.50831	0.79981	17.9944	1.0837
12.4	19.08336	0.53064	18.96919	0.62551	18.48954	0.79538	17.96701	1.08173
12.5	19.06848	0.52484	18.95429	0.61997	18.4706	0.7917	17.93936	1.08066
12.6	19.05382	0.51963	18.93947	0.61506	18.4515	0.78871	17.91147	1.08042
12.7	19.03937	0.51498	18.92473	0.61072	18.43224	0.78637	17.88333	1.08096
12.8	19.02513	0.51083	18.91007	0.60692	18.41285	0.78464	17.85497	1.08225
12.9	19.0111	0.50716	18.89549	0.60362	18.39331	0.78348	17.82637	1.08424
13.0	18.99727	0.50393	18.881	0.6008	18.37364	0.78285	17.79754	1.08688
13.1	18.98365	0.50112	18.86661	0.59841	18.35384	0.78274	17.7685	1.09016
13.2	18.97022	0.4987	18.8523	0.59643	18.33392	0.78309	17.73924	1.09402
13.3	18.95698	0.49665	18.83809	0.59484	18.31388	0.7839	17.70977	1.09845
13.4	18.94392	0.49494	18.82396	0.59362	18.29373	0.78514	17.6801	1.10343
13.5	18.93105	0.49357	18.80993	0.59275	18.27346	0.78679	17.65022	1.10891
13.6	18.91834	0.4925	18.79598	0.59221	18.25308	0.78883	17.62014	1.11489

13.7	18.90581	0.49172	18.78213	0.59198	18.2326	0.79124	17.58986	1.12134
13.8	18.89344	0.49122	18.76836	0.59205	18.21202	0.794	17.55939	1.12825
13.9	18.88122	0.49099	18.75467	0.5924	18.19133	0.7971	17.52872	1.13559
14.0	18.86916	0.49101	18.74107	0.59301	18.17055	0.80052	17.49787	1.14336
14.1	18.85724	0.49127	18.72755	0.59389	18.14968	0.80426	17.46684	1.15153
14.2	18.84546	0.49176	18.7141	0.59501	18.12871	0.80831	17.43562	1.16011
14.3	18.83382	0.49248	18.70073	0.59637	18.10764	0.81264	17.40421	1.16906
14.4	18.82231	0.4934	18.68743	0.59796	18.08649	0.81725	17.37263	1.17839
14.5	18.81092	0.49453	18.67421	0.59977	18.06525	0.82214	17.34088	1.18808
14.6	18.79966	0.49585	18.66105	0.60179	18.04391	0.82729	17.30894	1.19813
14.7	18.7885	0.49736	18.64795	0.60401	18.0225	0.8327	17.27684	1.20852
14.8	18.77747	0.49905	18.63492	0.60643	18.00099	0.83836	17.24456	1.21924
14.9	18.76653	0.50092	18.62195	0.60904	17.97941	0.84425	17.21211	1.2303
15.0	18.7557	0.50296	18.60903	0.61183	17.95773	0.85039	17.1795	1.24168
15.1	18.74497	0.50517	18.59618	0.61481	17.93598	0.85676	17.14671	1.25337
15.2	18.73433	0.50753	18.58337	0.61795	17.91414	0.86335	17.11376	1.26538
15.3	18.72379	0.51005	18.57061	0.62127	17.89222	0.87017	17.08065	1.27769
15.4	18.71333	0.51272	18.55791	0.62475	17.87022	0.8772	17.04737	1.29031
15.5	18.70295	0.51554	18.54525	0.6284	17.84814	0.88444	17.01393	1.30322
15.6	18.69266	0.51851	18.53263	0.6322	17.82598	0.89189	16.98034	1.31642
15.7	18.68244	0.52161	18.52005	0.63615	17.80374	0.89955	16.94658	1.32991
15.8	18.67229	0.52485	18.50752	0.64026	17.78142	0.9074	16.91266	1.34368
15.9	18.66222	0.52822	18.49502	0.64451	17.75902	0.91546	16.87858	1.35774
16.0	18.65221	0.53173	18.48255	0.64891	17.73654	0.92371	16.84435	1.37207
16.1	18.64227	0.53536	18.47012	0.65345	17.71398	0.93215	16.80996	1.38668
16.2	18.63239	0.53912	18.45773	0.65812	17.69135	0.94078	16.77542	1.40156
16.3	18.62257	0.54301	18.44536	0.66294	17.66863	0.9496	16.74073	1.41671
16.4	18.6128	0.54701	18.43302	0.66789	17.64584	0.95861	16.70588	1.43213
16.5	18.6031	0.55114	18.4207	0.67297	17.62297	0.9678	16.67088	1.44781
16.6	18.59344	0.55538	18.40841	0.67818	17.60003	0.97717	16.63572	1.46376
16.7	18.58383	0.55974	18.39614	0.68352	17.577	0.98672	16.60042	1.47997
16.8	18.57427	0.56421	18.3839	0.68899	17.5539	0.99645	16.56497	1.49644
16.9	18.56476	0.5688	18.37167	0.69458	17.53073	1.00635	16.52937	1.51316
17.0	18.55529	0.5735	18.35947	0.7003	17.50747	1.01643	16.49362	1.53015
17.1	18.54586	0.5783	18.34728	0.70614	17.48414	1.02668	16.45772	1.54738
17.2	18.53647	0.58322	18.3351	0.7121	17.46074	1.0371	16.42167	1.56488
17.3	18.52712	0.58824	18.32294	0.71818	17.43725	1.0477	16.38548	1.58262
17.4	18.5178	0.59337	18.3108	0.72438	17.41369	1.05847	16.34915	1.60062
17.5	18.50852	0.59861	18.29866	0.7307	17.39006	1.0694	16.31267	1.61887
17.6	18.49927	0.60394	18.28654	0.73714	17.36634	1.0805	16.27604	1.63737
17.7	18.49006	0.60938	18.27442	0.74369	17.34256	1.09177	16.23927	1.65612
17.8	18.48087	0.61493	18.26232	0.75035	17.31869	1.1032	16.20236	1.67511
17.9	18.47171	0.62057	18.25022	0.75713	17.29475	1.1148	16.16531	1.69436
18.0	18.46258	0.62631	18.23813	0.76402	17.27074	1.12657	16.12811	1.71385
18.1	18.45348	0.63216	18.22604	0.77102	17.24665	1.1385	16.09078	1.73359
18.2	18.4444	0.6381	18.21396	0.77814	17.22248	1.15059	16.0533	1.75357
18.3	18.43534	0.64414	18.20188	0.78536	17.19824	1.16284	16.01568	1.7738

18.4	18.4263	0.65028	18.1898	0.7927	17.17392	1.17526	15.97793	1.79428
18.5	18.41729	0.65652	18.17773	0.80014	17.14953	1.18784	15.94004	1.815
18.6	18.40829	0.66285	18.16565	0.8077	17.12507	1.20058	15.902	1.83596
18.7	18.39931	0.66928	18.15358	0.81536	17.10052	1.21348	15.86384	1.85717
18.8	18.39035	0.6758	18.1415	0.82313	17.07591	1.22654	15.82553	1.87862
18.9	18.38141	0.68242	18.12942	0.83101	17.05122	1.23976	15.78709	1.90031
19.0	18.37248	0.68913	18.11734	0.839	17.02645	1.25314	15.74851	1.92225
19.1	18.36357	0.69594	18.10526	0.84709	17.00161	1.26668	15.7098	1.94443
19.2	18.35467	0.70284	18.09318	0.85529	16.9767	1.28038	15.67096	1.96686
19.3	18.34578	0.70983	18.08109	0.86359	16.95171	1.29424	15.63198	1.98952
19.4	18.33691	0.71692	18.06899	0.872	16.92665	1.30825	15.59287	2.01243
19.5	18.32805	0.72409	18.05689	0.88052	16.90152	1.32242	15.55362	2.03558
19.6	18.31919	0.73137	18.04478	0.88914	16.87631	1.33676	15.51425	2.05898
19.7	18.31035	0.73873	18.03267	0.89786	16.85102	1.35125	15.47474	2.08262
19.8	18.30152	0.74618	18.02055	0.90669	16.82567	1.36589	15.4351	2.1065
19.9	18.29269	0.75373	18.00842	0.91563	16.80024	1.3807	15.39534	2.13062
20.0	18.28387	0.76137	17.99628	0.92466	16.77474	1.39566	15.35544	2.15498

Wavelength (μm)	260 K		300 K		360 K		400 K	
	Real part	Imaginary part	Real part	Imaginary part	Real part	Imaginary part	Real part	Imaginary part
2.0	17.42819	2.57354	17.77147	2.83516	17.91376	3.04202	18.0682	3.14031
2.1	17.49659	2.57239	17.84135	2.83424	17.98337	3.04125	18.13256	3.13967
2.2	17.56136	2.57125	17.90718	2.83335	18.04864	3.04052	18.19258	3.13908
2.3	17.6228	2.5701	17.96928	2.83249	18.10988	3.03984	18.2486	3.13854
2.4	17.68116	2.56897	18.02793	2.83165	18.16738	3.0392	18.30087	3.13807
2.5	17.73669	2.56783	18.08337	2.83085	18.22141	3.03861	18.34965	3.13766
2.6	17.78957	2.56671	18.13582	2.83008	18.27218	3.03806	18.39516	3.13732
2.7	17.83998	2.56558	18.18546	2.82934	18.31989	3.03757	18.43757	3.13705
2.8	17.88809	2.56447	18.23246	2.82864	18.3647	3.03713	18.47705	3.13685
2.9	17.93404	2.56336	18.27698	2.82798	18.40679	3.03675	18.51376	3.13673
3.0	17.97795	2.56225	18.31915	2.82735	18.44627	3.03643	18.54783	3.13669
3.1	18.01993	2.56115	18.35909	2.82676	18.48329	3.03616	18.57937	3.13672
3.2	18.06009	2.56006	18.3969	2.82621	18.51794	3.03596	18.6085	3.13684
3.3	18.09851	2.55897	18.43268	2.82571	18.55033	3.03582	18.63531	3.13705
3.4	18.13529	2.55788	18.46653	2.82524	18.58055	3.03574	18.6599	3.13734
3.5	18.17049	2.5568	18.49852	2.82482	18.60869	3.03573	18.68232	3.13772
3.6	18.20418	2.55572	18.52872	2.82444	18.63481	3.03579	18.70268	3.1382
3.7	18.23643	2.55464	18.5572	2.8241	18.65899	3.03592	18.72101	3.13877
3.8	18.26728	2.55356	18.58402	2.8238	18.68129	3.03612	18.7374	3.13944
3.9	18.2968	2.55248	18.60923	2.82355	18.70175	3.03639	18.75189	3.1402
4.0	18.32502	2.5514	18.63288	2.82335	18.72045	3.03673	18.76453	3.14107
4.1	18.35199	2.55031	18.65502	2.82318	18.73741	3.03714	18.77537	3.14204
4.2	18.37774	2.54922	18.67569	2.82306	18.7527	3.03763	18.78446	3.14311
4.3	18.40232	2.54811	18.69492	2.82298	18.76633	3.03819	18.79183	3.14428
4.4	18.42574	2.54699	18.71274	2.82294	18.77836	3.03883	18.79752	3.14557
4.5	18.44804	2.54586	18.7292	2.82295	18.78882	3.03954	18.80157	3.14695

4.6	18.46925	2.5447	18.74431	2.82299	18.79774	3.04033	18.804	3.14845
4.7	18.48938	2.54353	18.75811	2.82307	18.80514	3.04119	18.80485	3.15006
4.8	18.50846	2.54233	18.77061	2.82319	18.81105	3.04213	18.80415	3.15177
4.9	18.52649	2.54109	18.78184	2.82334	18.81551	3.04314	18.80191	3.15359
5.0	18.54351	2.53982	18.79182	2.82352	18.81853	3.04422	18.79818	3.15553
5.1	18.55952	2.53851	18.80056	2.82373	18.82013	3.04538	18.79296	3.15757
5.2	18.57453	2.53714	18.80808	2.82396	18.82033	3.04661	18.78629	3.15972
5.3	18.58856	2.53573	18.8144	2.82422	18.81917	3.0479	18.77818	3.16198
5.4	18.60161	2.53425	18.81953	2.8245	18.81664	3.04926	18.76866	3.16435
5.5	18.61369	2.5327	18.82347	2.82479	18.81278	3.05069	18.75775	3.16682
5.6	18.62481	2.53107	18.82625	2.8251	18.80759	3.05218	18.74546	3.1694
5.7	18.63497	2.52935	18.82788	2.8254	18.8011	3.05372	18.73181	3.17208
5.8	18.64418	2.52753	18.82835	2.8257	18.79332	3.05533	18.71683	3.17486
5.9	18.65243	2.5256	18.82769	2.826	18.78426	3.05698	18.70052	3.17774
6.0	18.65974	2.52355	18.82589	2.82628	18.77395	3.05868	18.68292	3.18071
6.1	18.66609	2.52135	18.82298	2.82653	18.76239	3.06042	18.66403	3.18377
6.2	18.6715	2.51901	18.81895	2.82676	18.7496	3.0622	18.64386	3.18692
6.3	18.67597	2.51649	18.81381	2.82694	18.73559	3.06401	18.62245	3.19016
6.4	18.67948	2.51378	18.80758	2.82707	18.72038	3.06585	18.5998	3.19347
6.5	18.68205	2.51086	18.80025	2.82713	18.70398	3.06769	18.57593	3.19685
6.6	18.68368	2.50772	18.79184	2.82712	18.68641	3.06955	18.55086	3.20029
6.7	18.68436	2.50431	18.78236	2.82701	18.66767	3.07141	18.5246	3.2038
6.8	18.6841	2.50062	18.7718	2.8268	18.64779	3.07325	18.49717	3.20735
6.9	18.68289	2.49662	18.76018	2.82647	18.62677	3.07508	18.46858	3.21095
7.0	18.68074	2.49228	18.74751	2.82599	18.60464	3.07687	18.43885	3.21457
7.1	18.67764	2.48755	18.7338	2.82535	18.58139	3.07861	18.40799	3.21822
7.2	18.67361	2.4824	18.71904	2.82453	18.55706	3.08029	18.37603	3.22188
7.3	18.66864	2.47679	18.70327	2.82351	18.53165	3.08189	18.34297	3.22553
7.4	18.66274	2.47067	18.68647	2.82224	18.50518	3.0834	18.30882	3.22916
7.5	18.65591	2.46398	18.66866	2.82072	18.47765	3.0848	18.27361	3.23277
7.6	18.64816	2.45667	18.64986	2.8189	18.44909	3.08606	18.23736	3.23632
7.7	18.6395	2.44868	18.63007	2.81676	18.41951	3.08717	18.20006	3.23981
7.8	18.62992	2.43994	18.60931	2.81425	18.38893	3.08811	18.16174	3.24321
7.9	18.61945	2.43037	18.58758	2.81134	18.35735	3.08883	18.12242	3.2465
8.0	18.60808	2.4199	18.5649	2.80798	18.32479	3.08933	18.0821	3.24966
8.1	18.59583	2.40842	18.54128	2.80412	18.29127	3.08956	18.0408	3.25266
8.2	18.58272	2.39586	18.51674	2.79972	18.25679	3.08949	17.99853	3.25548
8.3	18.56874	2.38211	18.49127	2.79472	18.22138	3.08909	17.95531	3.25809
8.4	18.55392	2.36705	18.46491	2.78906	18.18505	3.08833	17.91115	3.26045
8.5	18.53828	2.35059	18.43766	2.78268	18.14781	3.08715	17.86607	3.26253
8.6	18.52181	2.3326	18.40954	2.77551	18.10967	3.08552	17.82007	3.2643
8.7	18.50454	2.31298	18.38056	2.76748	18.07065	3.08339	17.77316	3.26572
8.8	18.48649	2.29162	18.35073	2.75852	18.03076	3.08071	17.72537	3.26675
8.9	18.46766	2.26842	18.32007	2.74856	17.99002	3.07743	17.6767	3.26734
9.0	18.44808	2.2433	18.28859	2.73753	17.94843	3.0735	17.62716	3.26745
9.1	18.42777	2.2162	18.25631	2.72534	17.90601	3.06886	17.57677	3.26703
9.2	18.40673	2.18711	18.22324	2.71194	17.86278	3.06346	17.52554	3.26604

9.3	18.38499	2.15605	18.18939	2.69726	17.81873	3.05724	17.47347	3.26442
9.4	18.36256	2.12312	18.15478	2.68126	17.7739	3.05015	17.42059	3.26214
9.5	18.33946	2.08846	18.11942	2.66389	17.72828	3.04214	17.36689	3.25914
9.6	18.31571	2.05231	18.08333	2.64515	17.68189	3.03317	17.31239	3.25538
9.7	18.29133	2.01494	18.04652	2.62506	17.63475	3.0232	17.25709	3.25082
9.8	18.26632	1.97675	18.009	2.60364	17.58685	3.0122	17.20102	3.24542
9.9	18.24071	1.93813	17.97079	2.581	17.53822	3.00017	17.14417	3.23917
10.0	18.21451	1.89954	17.9319	2.55724	17.48886	2.9871	17.08656	3.23204
10.1	18.18775	1.86144	17.89233	2.53255	17.43878	2.97303	17.0282	3.22404
10.2	18.16042	1.82427	17.85211	2.50711	17.388	2.95802	16.96909	3.21519
10.3	18.13255	1.78845	17.81125	2.48119	17.33651	2.94213	16.90924	3.20553
10.4	18.10416	1.75431	17.76975	2.45506	17.28434	2.92548	16.84866	3.19511
10.5	18.07525	1.72212	17.72763	2.42901	17.23149	2.90821	16.78737	3.18401
10.6	18.04585	1.6921	17.68489	2.40336	17.17797	2.89049	16.72536	3.17235
10.7	18.01596	1.66438	17.64156	2.3784	17.12379	2.87251	16.66264	3.16027
10.8	17.98559	1.63901	17.59764	2.35441	17.06896	2.85448	16.59922	3.14791
10.9	17.95477	1.61602	17.55314	2.33167	17.01348	2.83664	16.53511	3.13547
11.0	17.92349	1.59537	17.50806	2.31038	16.95736	2.81921	16.47032	3.12312
11.1	17.89177	1.577	17.46243	2.29073	16.90061	2.80244	16.40485	3.11109
11.2	17.85963	1.56082	17.41625	2.27285	16.84324	2.78653	16.33871	3.09957
11.3	17.82707	1.54674	17.36952	2.25683	16.78526	2.7717	16.2719	3.08878
11.4	17.7941	1.53464	17.32226	2.24274	16.72667	2.75812	16.20444	3.07891
11.5	17.76073	1.52441	17.27447	2.23059	16.66747	2.74594	16.13632	3.07015
11.6	17.72698	1.51593	17.22616	2.22038	16.60768	2.73529	16.06755	3.06264
11.7	17.69284	1.5091	17.17735	2.21208	16.5473	2.72626	15.99814	3.05653
11.8	17.65833	1.50381	17.12803	2.20565	16.48634	2.71892	15.9281	3.05194
11.9	17.62345	1.49997	17.07821	2.20102	16.4248	2.7133	15.85742	3.04894
12.0	17.58822	1.49747	17.02791	2.19814	16.3627	2.70941	15.78612	3.0476
12.1	17.55264	1.49623	16.97712	2.19692	16.30002	2.70726	15.71421	3.04796
12.2	17.51671	1.49618	16.92586	2.1973	16.23679	2.70682	15.64167	3.05003
12.3	17.48044	1.49724	16.87413	2.19921	16.17301	2.70806	15.56853	3.05383
12.4	17.44384	1.49933	16.82193	2.20256	16.10867	2.71094	15.49478	3.05933
12.5	17.40692	1.50241	16.76928	2.20729	16.04379	2.71541	15.42043	3.06651
12.6	17.36967	1.50642	16.71617	2.21333	15.97837	2.72143	15.34548	3.07534
12.7	17.33211	1.5113	16.66261	2.22062	15.91242	2.72892	15.26994	3.08578
12.8	17.29424	1.517	16.60862	2.22909	15.84594	2.73785	15.19381	3.09779
12.9	17.25607	1.52349	16.55418	2.23869	15.77893	2.74814	15.1171	3.11132
13.0	17.21759	1.53073	16.49931	2.24937	15.7114	2.75976	15.03982	3.12631
13.1	17.17882	1.53868	16.44402	2.26108	15.64336	2.77264	14.96195	3.14273
13.2	17.13975	1.5473	16.3883	2.27377	15.5748	2.78674	14.88352	3.16052
13.3	17.1004	1.55658	16.33216	2.2874	15.50574	2.80201	14.80452	3.17964
13.4	17.06076	1.56648	16.2756	2.30194	15.43617	2.8184	14.72495	3.20004
13.5	17.02083	1.57698	16.21864	2.31734	15.3661	2.83587	14.64483	3.22167
13.6	16.98063	1.58805	16.16126	2.33358	15.29553	2.85438	14.56415	3.2445
13.7	16.94016	1.59969	16.10349	2.35062	15.22447	2.8739	14.48292	3.26848
13.8	16.89941	1.61186	16.04531	2.36843	15.15293	2.89438	14.40114	3.29358
13.9	16.85839	1.62455	15.98674	2.387	15.08089	2.9158	14.31882	3.31977

14.0	16.8171	1.63774	15.92777	2.4063	15.00838	2.93812	14.23595	3.34701
14.1	16.77556	1.65143	15.86841	2.42631	14.93538	2.96133	14.15255	3.37527
14.2	16.73375	1.6656	15.80867	2.447	14.86191	2.98538	14.06861	3.40452
14.3	16.69168	1.68023	15.74855	2.46836	14.78797	3.01027	13.98414	3.43473
14.4	16.64936	1.69532	15.68804	2.49037	14.71356	3.03596	13.89915	3.46589
14.5	16.60678	1.71085	15.62716	2.51302	14.63868	3.06244	13.81363	3.49797
14.6	16.56395	1.72682	15.5659	2.53629	14.56334	3.08968	13.72758	3.53094
14.7	16.52087	1.74321	15.50427	2.56018	14.48754	3.11768	13.64102	3.56479
14.8	16.47754	1.76003	15.44227	2.58466	14.41128	3.14641	13.55395	3.59951
14.9	16.43397	1.77725	15.37991	2.60973	14.33458	3.17587	13.46636	3.63506
15.0	16.39015	1.79488	15.31718	2.63538	14.25741	3.20603	13.37826	3.67145
15.1	16.34609	1.81292	15.25409	2.6616	14.17981	3.23688	13.28965	3.70865
15.2	16.30179	1.83134	15.19065	2.68838	14.10175	3.26842	13.20055	3.74665
15.3	16.25725	1.85015	15.12685	2.71571	14.02326	3.30063	13.11094	3.78544
15.4	16.21248	1.86935	15.06269	2.74358	13.94432	3.3335	13.02084	3.82501
15.5	16.16747	1.88893	14.99818	2.77199	13.86495	3.36702	12.93024	3.86535
15.6	16.12222	1.90888	14.93333	2.80094	13.78514	3.40119	12.83915	3.90645
15.7	16.07675	1.9292	14.86812	2.83041	13.7049	3.436	12.74757	3.94829
15.8	16.03104	1.94989	14.80258	2.8604	13.62424	3.47144	12.6555	3.99088
15.9	15.98511	1.97095	14.73669	2.89091	13.54314	3.5075	12.56295	4.0342
16.0	15.93894	1.99237	14.67046	2.92194	13.46163	3.54418	12.46993	4.07825
16.1	15.89255	2.01414	14.60389	2.95347	13.37969	3.58147	12.37642	4.12302
16.2	15.84594	2.03628	14.53699	2.9855	13.29733	3.61937	12.28244	4.16851
16.3	15.7991	2.05877	14.46976	3.01804	13.21456	3.65787	12.18799	4.2147
16.4	15.75204	2.08161	14.40219	3.05108	13.13137	3.69698	12.09306	4.2616
16.5	15.70476	2.1048	14.33429	3.08461	13.04777	3.73667	11.99767	4.30921
16.6	15.65726	2.12833	14.26607	3.11863	12.96377	3.77696	11.90182	4.3575
16.7	15.60954	2.15222	14.19752	3.15315	12.87935	3.81783	11.80551	4.4065
16.8	15.5616	2.17645	14.12865	3.18815	12.79454	3.85929	11.70874	4.45618
16.9	15.51345	2.20103	14.05945	3.22364	12.70932	3.90132	11.61151	4.50654
17.0	15.46508	2.22595	13.98994	3.25961	12.6237	3.94394	11.51382	4.5576
17.1	15.4165	2.2512	13.92011	3.29607	12.53768	3.98714	11.41569	4.60933
17.2	15.36771	2.27681	13.84996	3.33301	12.45127	4.0309	11.31711	4.66174
17.3	15.3187	2.30275	13.7795	3.37043	12.36447	4.07525	11.21808	4.71482
17.4	15.26949	2.32902	13.70872	3.40832	12.27728	4.12016	11.11861	4.76858
17.5	15.22006	2.35564	13.63764	3.4467	12.1897	4.16564	11.0187	4.82302
17.6	15.17043	2.3826	13.56625	3.48555	12.10173	4.21169	10.91835	4.87812
17.7	15.12059	2.40989	13.49455	3.52488	12.01338	4.25831	10.81757	4.9339
17.8	15.07055	2.43751	13.42254	3.56468	11.92465	4.30549	10.71635	4.99034
17.9	15.0203	2.46548	13.35023	3.60496	11.83554	4.35323	10.61471	5.04745
18.0	14.96984	2.49378	13.27762	3.64571	11.74606	4.40154	10.51263	5.10522
18.1	14.91919	2.52241	13.20471	3.68693	11.6562	4.45042	10.41013	5.16366
18.2	14.86833	2.55138	13.13151	3.72863	11.56596	4.49985	10.30721	5.22277
18.3	14.81728	2.58068	13.058	3.7708	11.47536	4.54984	10.20387	5.28254
18.4	14.76602	2.61032	12.9842	3.81344	11.38439	4.6004	10.10011	5.34297
18.5	14.71457	2.64029	12.91011	3.85656	11.29306	4.65152	9.99593	5.40407
18.6	14.66291	2.67059	12.83573	3.90014	11.20136	4.70319	9.89134	5.46583

18.7	14.61107	2.70123	12.76106	3.9442	11.1093	4.75543	9.78634	5.52825
18.8	14.55902	2.7322	12.6861	3.98873	11.01688	4.80822	9.68093	5.59133
18.9	14.50679	2.76351	12.61086	4.03373	10.92411	4.86158	9.57512	5.65507
19.0	14.45436	2.79515	12.53533	4.0792	10.83098	4.91549	9.46891	5.71948
19.1	14.40174	2.82712	12.45952	4.12514	10.73749	4.96996	9.36229	5.78455
19.2	14.34892	2.85943	12.38343	4.17156	10.64366	5.025	9.25528	5.85028
19.3	14.29592	2.89207	12.30705	4.21844	10.54948	5.08059	9.14787	5.91667
19.4	14.24273	2.92505	12.2304	4.2658	10.45495	5.13674	9.04007	5.98372
19.5	14.18935	2.95836	12.15348	4.31363	10.36008	5.19344	8.93187	6.05143
19.6	14.13578	2.992	12.07628	4.36193	10.26487	5.25071	8.82329	6.11981
19.7	14.08203	3.02598	11.99881	4.41071	10.16932	5.30854	8.71432	6.18885
19.8	14.0281	3.06029	11.92107	4.45995	10.07342	5.36692	8.60497	6.25855
19.9	13.97397	3.09493	11.84305	4.50967	9.9772	5.42587	8.49524	6.32892
20.0	13.91967	3.12991	11.76478	4.55987	9.88064	5.48538	8.38513	6.39994

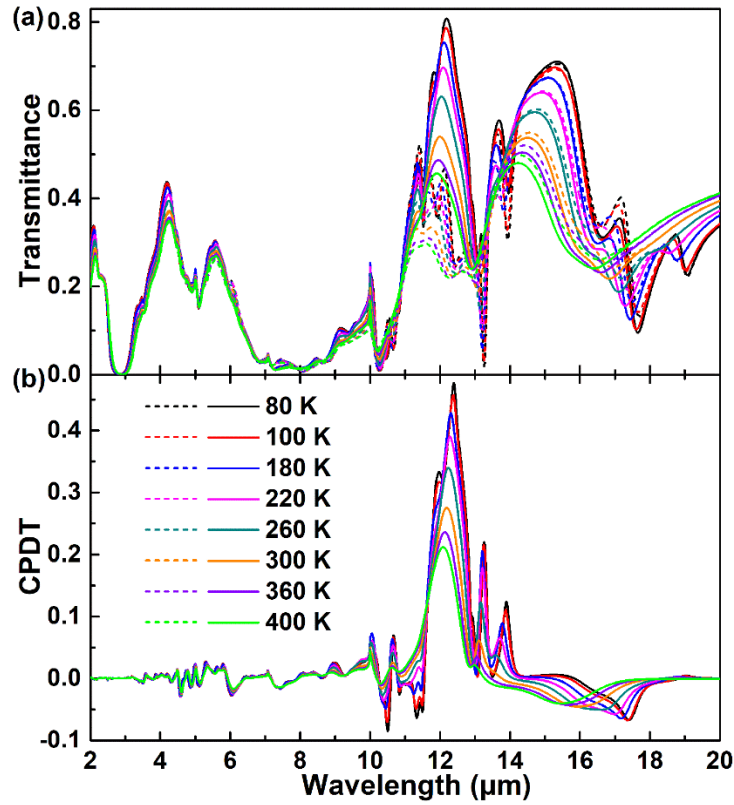


Fig. S1 (a) Transmittance and (b) CPDT spectra over the whole wavelength range. All the other parameters are identical to those of **Fig. 3** in the main text. Solid and dash lines in (a) are for LCP and RCP light, respectively.

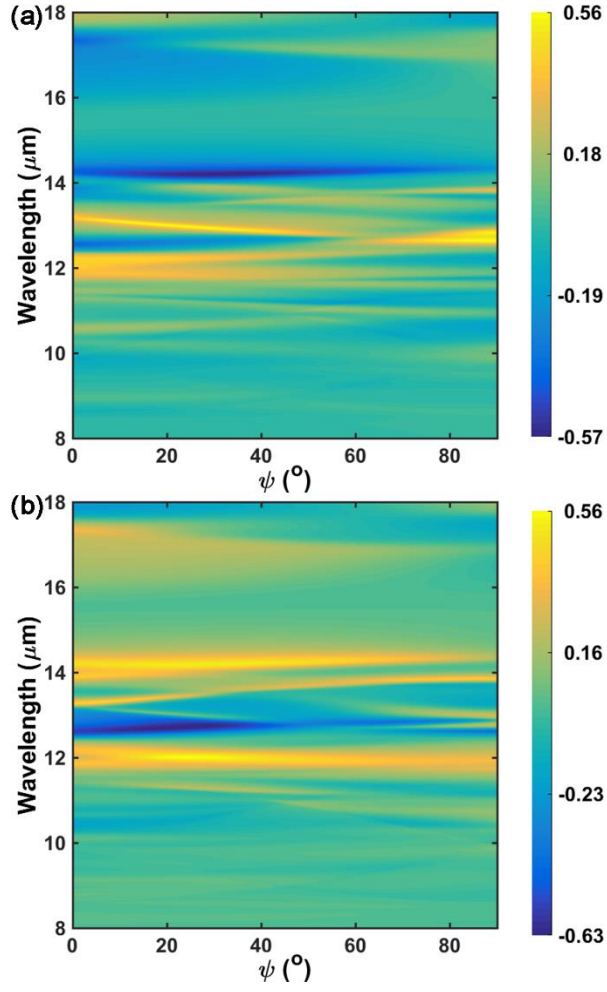


Fig. S2 CPDT mappings as a function of the wavelength and the azimuth angle at (a) $\theta_i = -8^\circ$ and (b) $\theta_i = 8^\circ$. The temperature is 80 K.

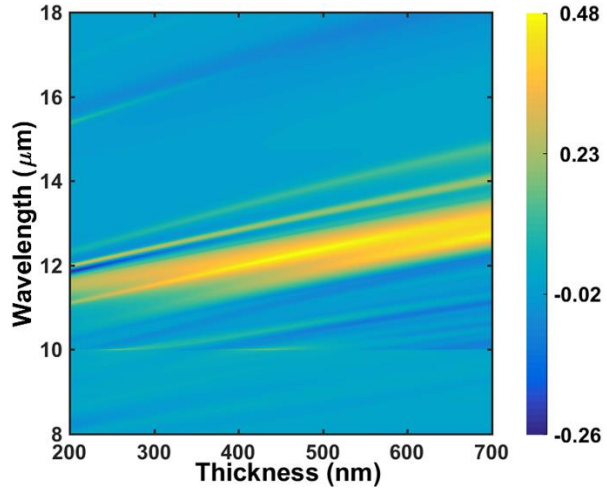


Fig. S3 CPDT mapping as a function of the wavelength and the thickness of Cd_3As_2 film at normal incidence and $T = 80$ K.

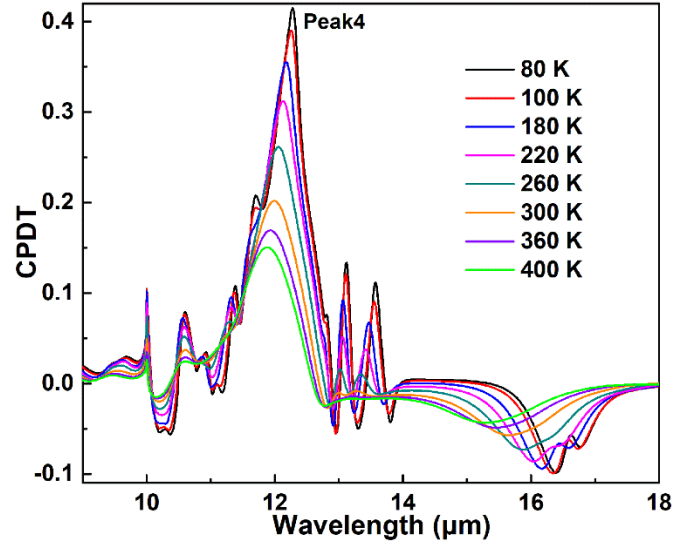


Fig. S4 Temperature-dependent CPDT spectra at $f_1=0.660$.

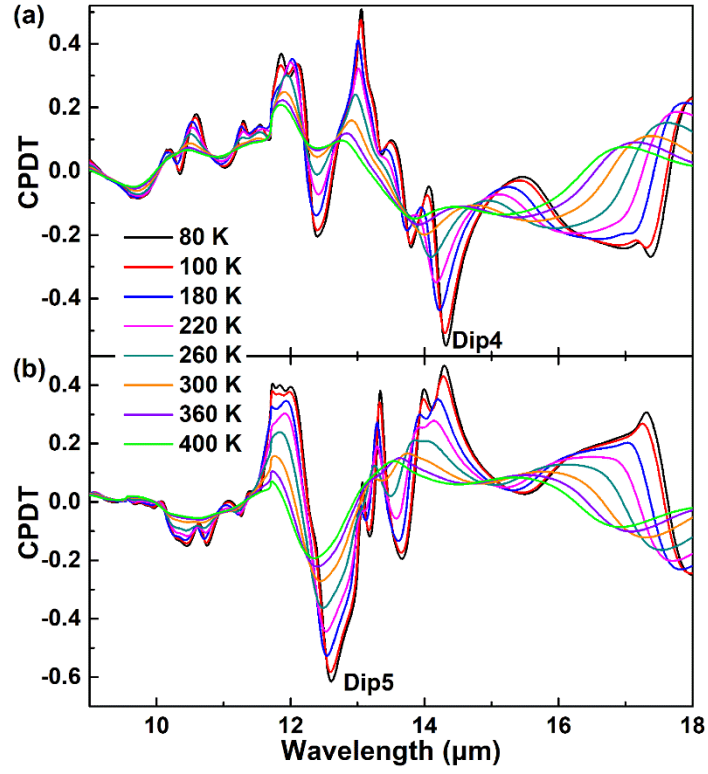


Fig. S5 Temperature-dependent CPDT spectra at $\psi = 10^\circ$. The incident angles are (a) $\theta_i = -10^\circ$ and (b) $\theta_i = 10^\circ$.

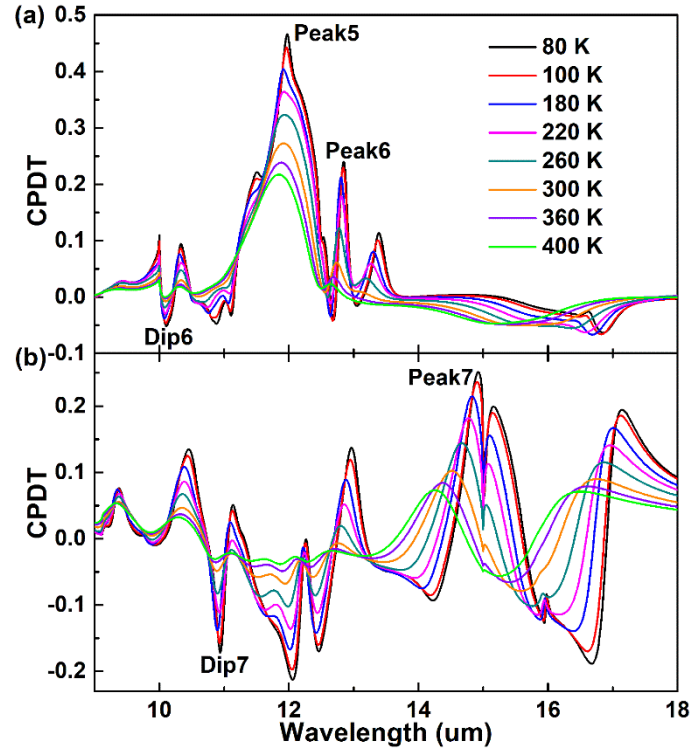


Fig. S6 Temperature-dependent CPDT spectra when the thickness of Cd_3As_2 is 400 nm. The incident angles are (a) $\theta_i = 0^\circ$ and (b) $\theta_i = 30^\circ$.

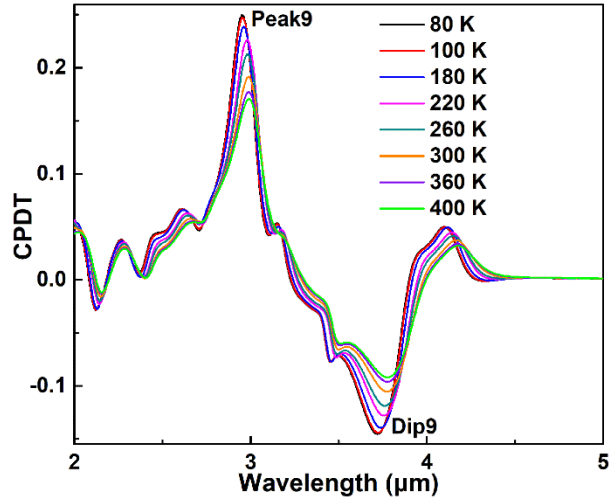


Fig. S7 Temperature-dependent CPDT spectra when the parameter $a = 1750$ nm. The thicknesses of Cd_3As_2 and CdTe are 400 and 1000 nm, respectively.

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