Supplementary Information

Controllable synthesis and magnetotransport properties of Cd_3As_2 Dirac semimetal nanostructures

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S1: Powder X-ray diffraction (XRD) patterns of Cd_3As_2 nanowires and nanobelts are shown in Fig. S1 (a) and (b), respectively. They both show the good agreement with the theoretical peak positions of Cd_3As_2, which has an I41cd symmetry structure (red lines). The powder samples are collected from grinding the grown Cd_3As_2 nanostructures on Si substrates.

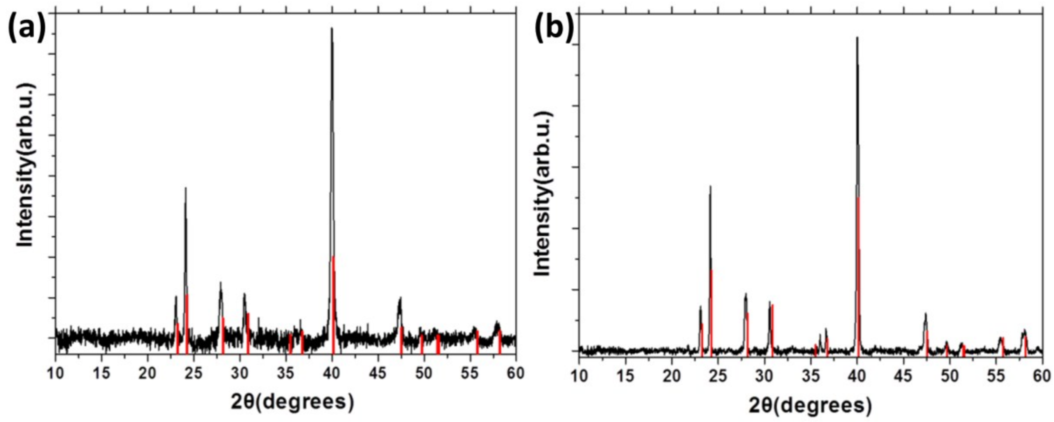

Fig. S1. The X-ray diffraction pattern from (a) Cd_3As_2 nanowires powder and (b) Cd_3As_2 nanobelts powder. The red lines show the theoretical positions of Cd_3As_2 (space group I41cd) peaks.

S2: To give more information on the magnetoresistance (MR), Figure 4(c), (f) and Figure 5(c) are drawn as MR(%)=(R(B)-R(0T))×100/R(0T). Figure S2(a), (b), (c) display the MR curves of Cd_3As_2 nanobelt, zigzag nanobelt and nanowire, respectively, and Figure S2(d), (e), (f) is the temperature dependence of MR at 14 T.

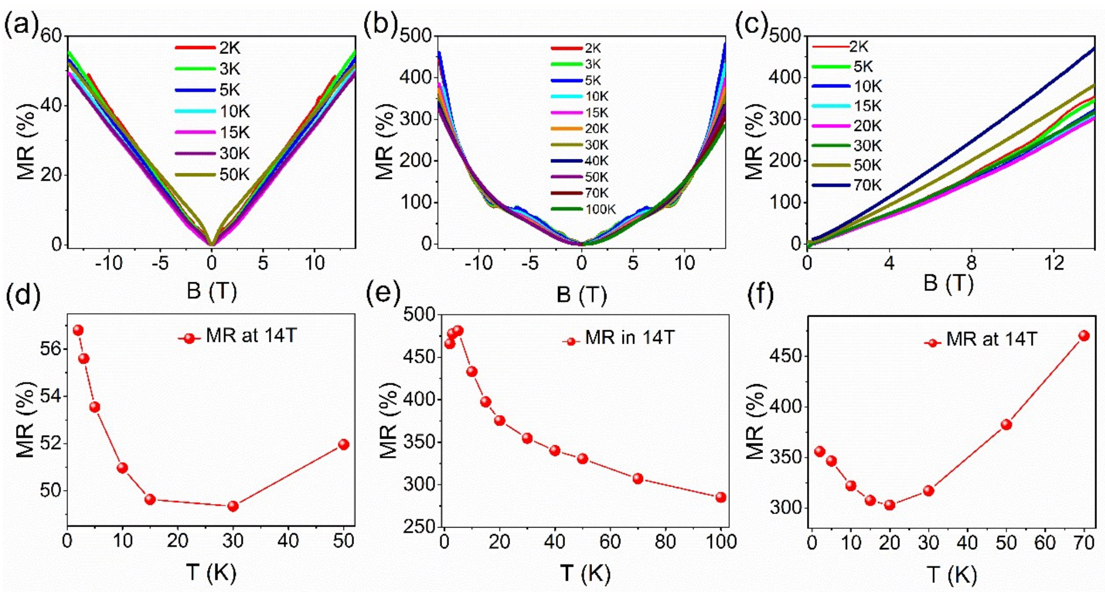

Fig. S2. The MR curves and the corresponding temperature dependence at 14 T. (a) and (d) are for the nanobelt device. (b) and (e) are for the zigzag nanobelt device. (c) and (f) are for the nanowire device.

S3: We have measured other nanodevice to study the magnetoresistance of Cd_3As_2 nanostructures. As displayed in Fig. S3, another nanobelt also exhibits the insulating behavior and unsaturated linear magnetoresistance. This confirms the reality of insulating behavior and magnetoresistance of our nanostructures.

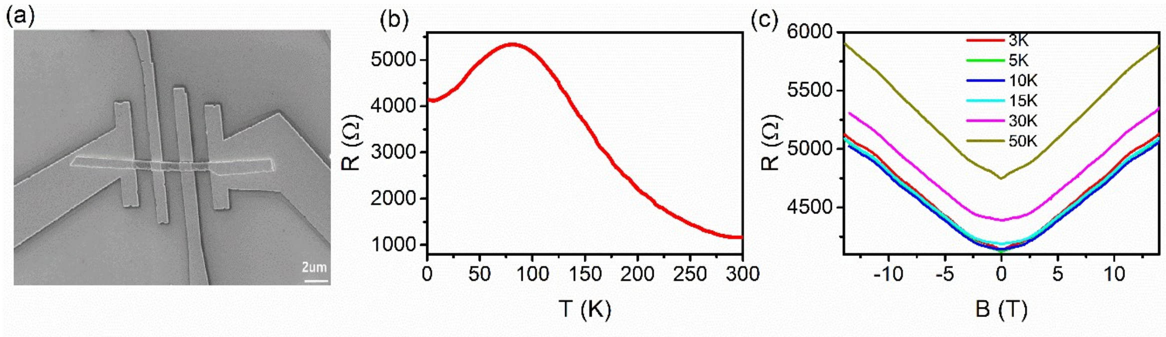

Fig. S3. (a) The SEM image of the nanobelt device. (b) Its temperature-dependent resistance curve. (c) Its magnetoresistance measured at various temperatures in perpendicular magnetic field.