Electronic supplementary information

Distinct anisotropy and high power factor in highly textured TiS_2 ceramics via mechanical exfoliation

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S1. AFM images for Exfoli-TiS_2 nanosheets

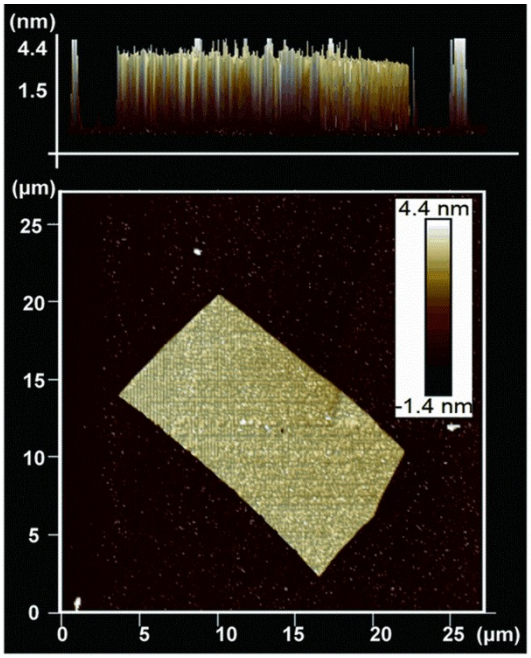

Fig. S1 AFM images for Exfoli-TiS_2 nanosheets.

In order to avoid agglomeration, the AFM sample is prepared from high speed of centrifugation (12000 rpm/min) in ethyl alcohol. As shown in Fig. S1, a distinct and sharp morphology can be observed in the nanosheet, of which the length is about 10 μm, right within the size range shown above, and the thickness is only about 4 nm, corresponding to the dimension of about 7 units along the c-axis (c ~ 5.7Å).

S2. XRD patterns of Raw- and Exfoli- (Exf.) TiS_2 powders.

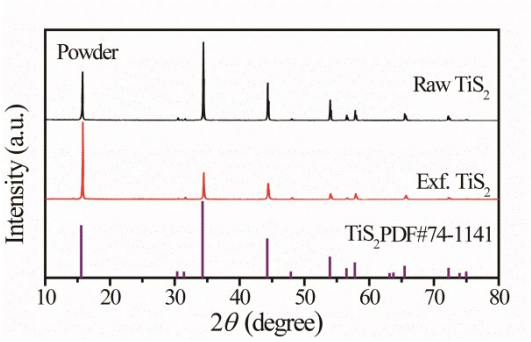

Fig. S2 XRD patterns of Raw- and Exfoli- (Exf.) TiS_2 powders.

As shown in Fig. S2, both the samples were found to be of single phase in accordance with the standard profile of 1T-type TiS2 (PDF#74-1141). Comparatively, in Exfoli-TiS_2, intensities of the (00l) peaks are much higher, indicating a stronger orientation of the resultant particles that would be caused by hand press during being filled into the sample holder. Particularly, the peaks are all still very sharp without obvious broadening, evidencing the preserved high crystallinity after exfoliation, which can be regarded as a distinct advantage over the ball milling process that usually causes amorphization and destruction of the original plate-like morphology.