Supporting Information

Tailoring $Ti_3C_2T_x$ nanosheet to tune local conductive network as an environmentally friendly material for highly efficient electromagnetic interference shielding

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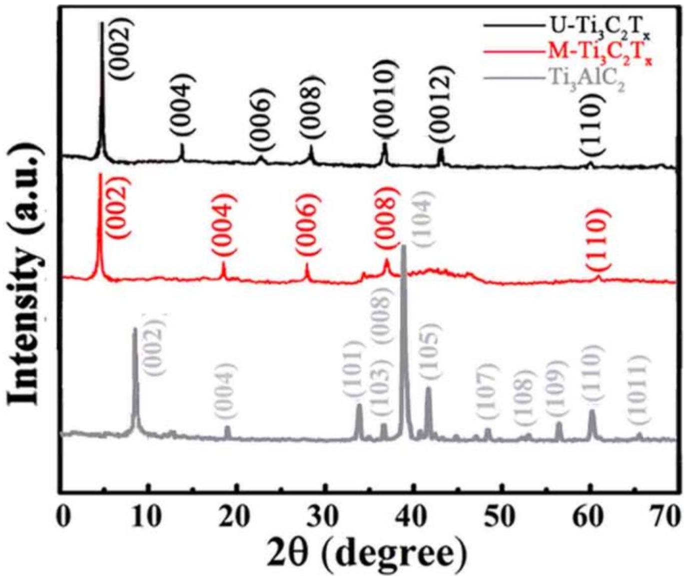

Fig. S1 XRD patterns of M-$Ti_3C_2T_x$ and U-$Ti_3C_2T_x$ and Ti_3AlC_2.

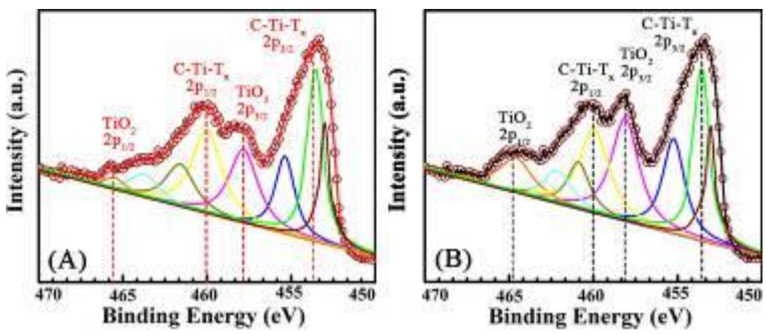

Fig. S2 Curve fitting of XPS spectra for Ti 2p region in (A) M-$Ti_3C_2T_x$ and (B) U-$Ti_3C_2T_x$.

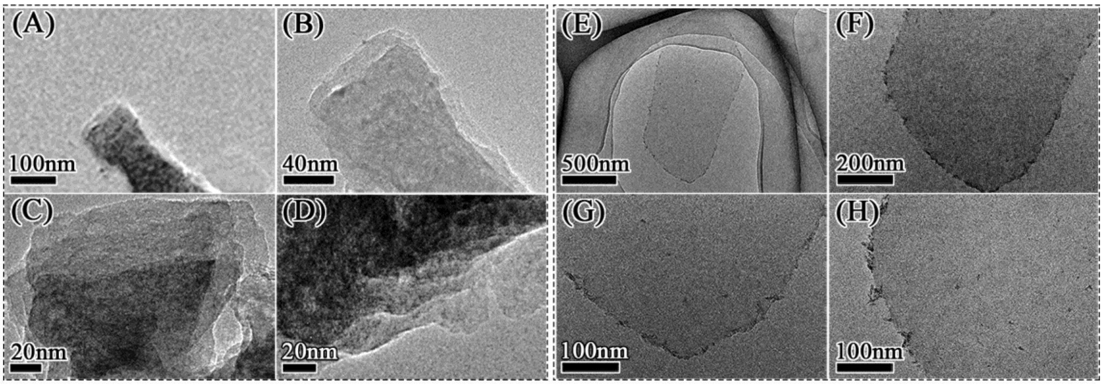

Fig. S3 (A)-(D) TEM images of M-$Ti_3C_2T_x$. (E)-(H) TEM images of U-$Ti_3C_2T_x$.

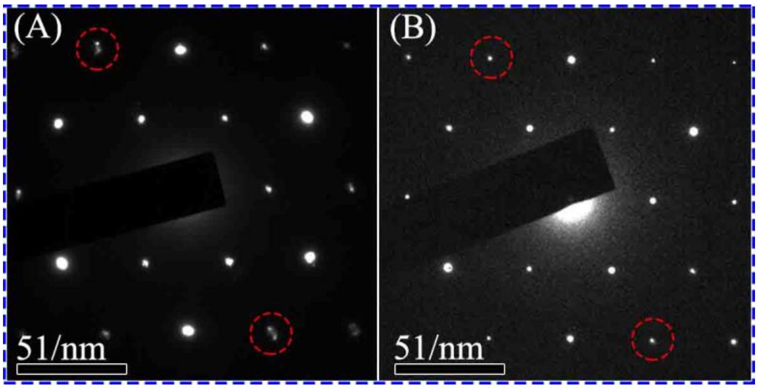

Fig. S4 The SAED pattern of (A) M-$Ti_3C_2T_x$ and (B) U-$Ti_3C_2T_x$.

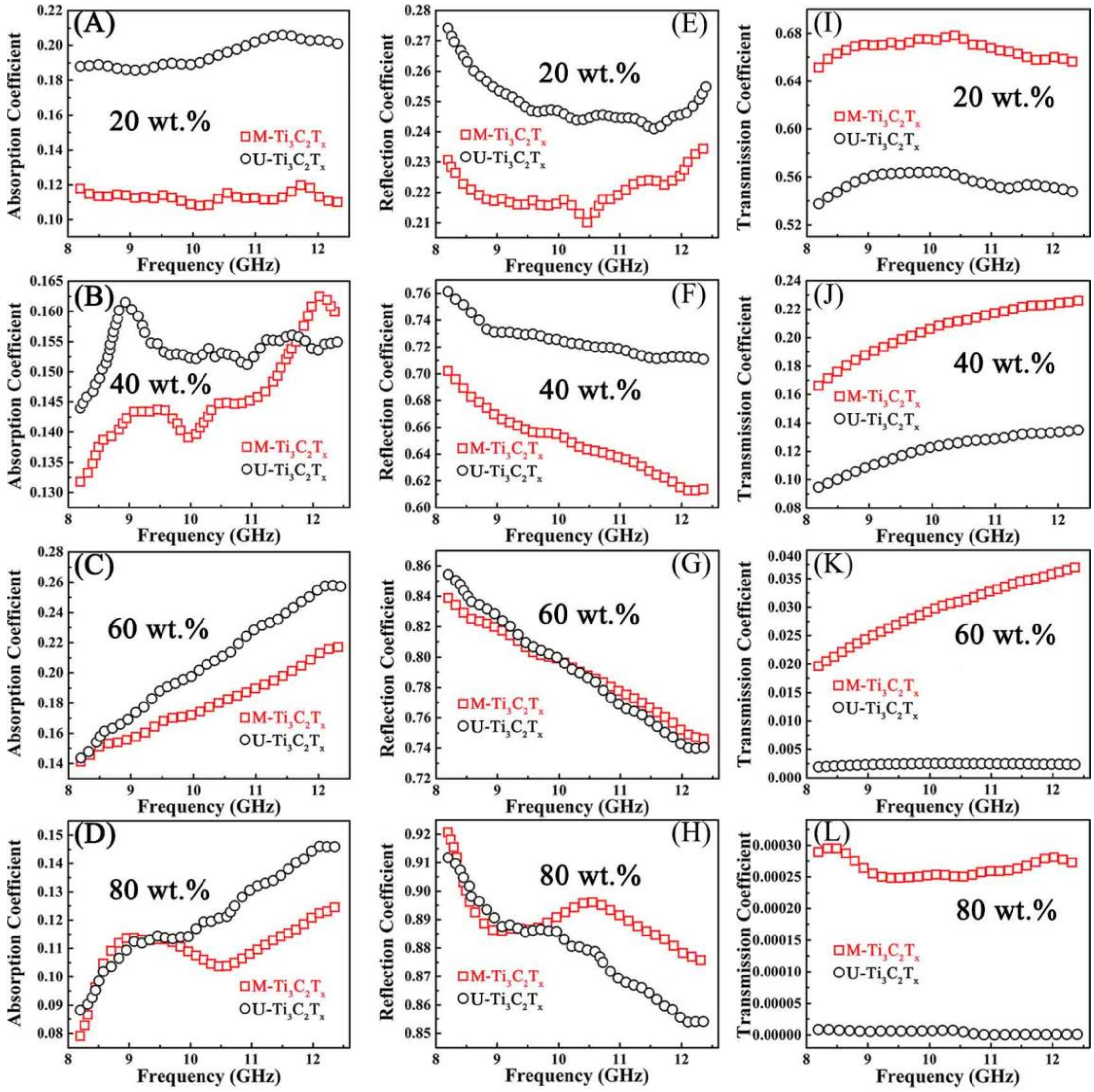

Fig. S5 (A)-(D) Absorption comparison of the M-$Ti_3C_2T_x$ and U-$Ti_3C_2T_x$ at each mass ratio. (E)-(H) Reflection comparison of the M-$Ti_3C_2T_x$ and U-$Ti_3C_2T_x$ at each mass ratio. (I)-(L) Transmission comparison of the M-$Ti_3C_2T_x$ and U-$Ti_3C_2T_x$ at each mass ratio.

For revealing the SE of reflection (SE_R) and absorption (SE_A) in detail, the SE in dB can also be achieved by

$$SE = SE_R + SE_A \tag{1}$$

The effective absorbance (A_{eff}) can be described as

$$A_{eff} = (1 - R - T)/(1 - R) \tag{2}$$

The reflection and effective absorption can be conveniently expressed as

$$SE_R = -10\log(1 - R) \tag{3}$$

and

$$SE_A = -10\log(1 - A_{eff}) = -10\log[T/(1 - R)] \tag{4}$$

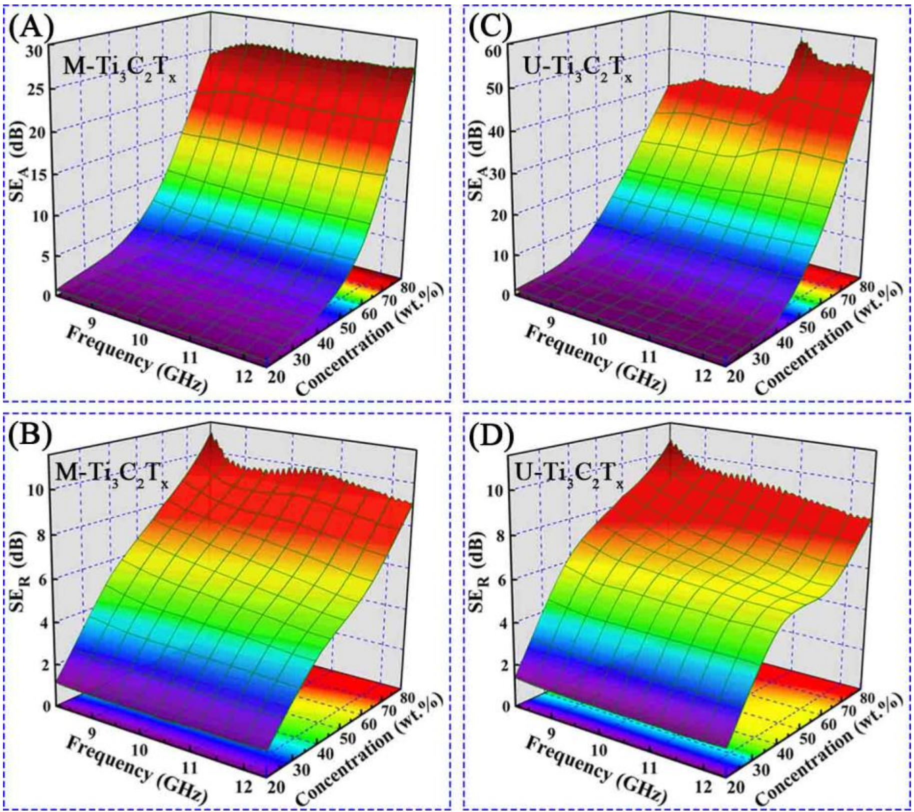

Fig. S6 (A) SE_A and (B) SE_R of M-$Ti_3C_2T_x$ composites. (C) SE_A and (D) SE_R of U-$Ti_3C_2T_x$ composites.

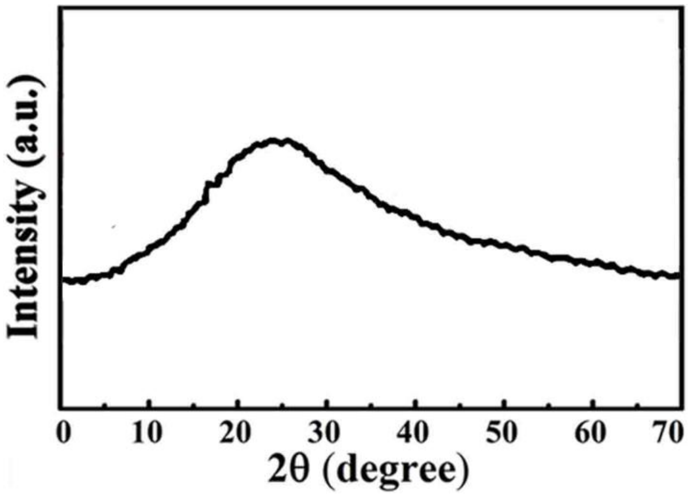

Fig. S7 XRD pattern of SiO_2 nanopowders.