Supplementary information

Study of 3D Printed MXene-Berberine-Integrated Scaffold for Photo-Activated Antibacterial Property and Bone Regeneration

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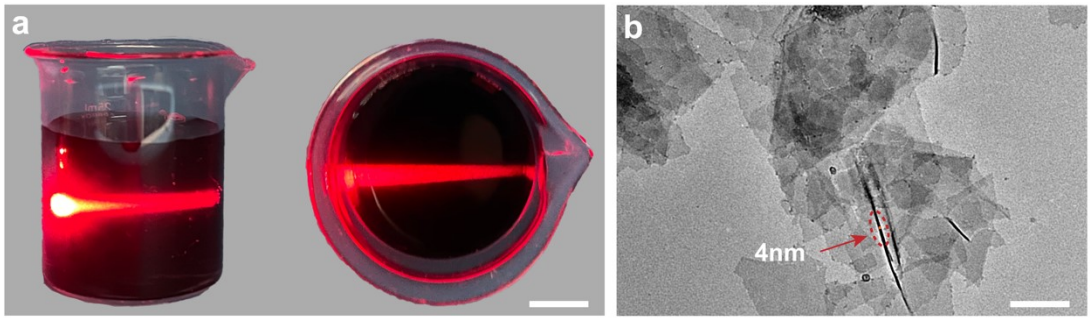

Fig. S1 (a) Digital photographs of Tyndall effect in Ti_3C_2 aqueous solution (scale bar: 20 mm). (b) TEM image of Ti_3C_2 nanosheets (scale bar: 200 nm).

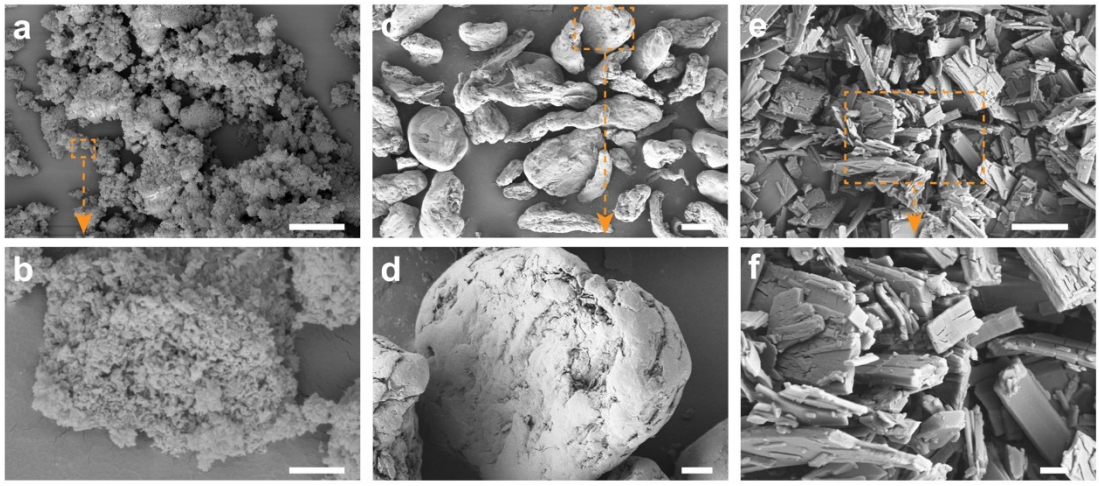

Fig. S2 (a) SEM image of BCP (scale bar: 10 μm). (b) Magnified SEM image of BCP (scale bar: 1 μm). (c) SEM image of SA (scale bar: 100 μm). (d) Magnified SEM image of SA (scale bar: 20 μm). (e) SEM image of BBR (scale bar: 10 μm). (f) Magnified SEM image of BBR (scale bar: 2 μm).

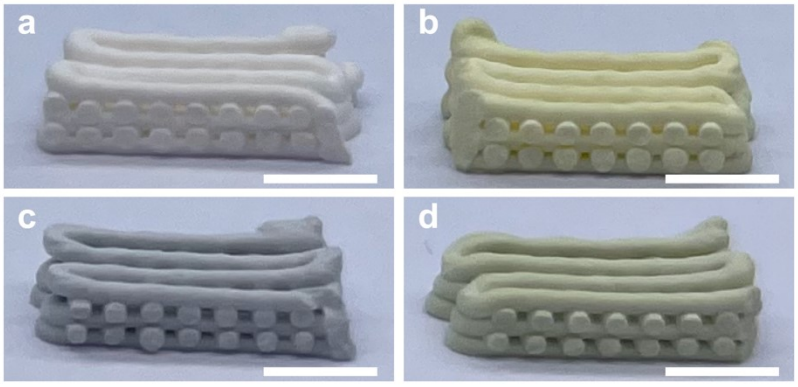

Fig. S3 Digital photographs of the cross sections of (a) BS, (b) BBS, (c) BTS, and (d) BBTS (scale bars: 3 mm).

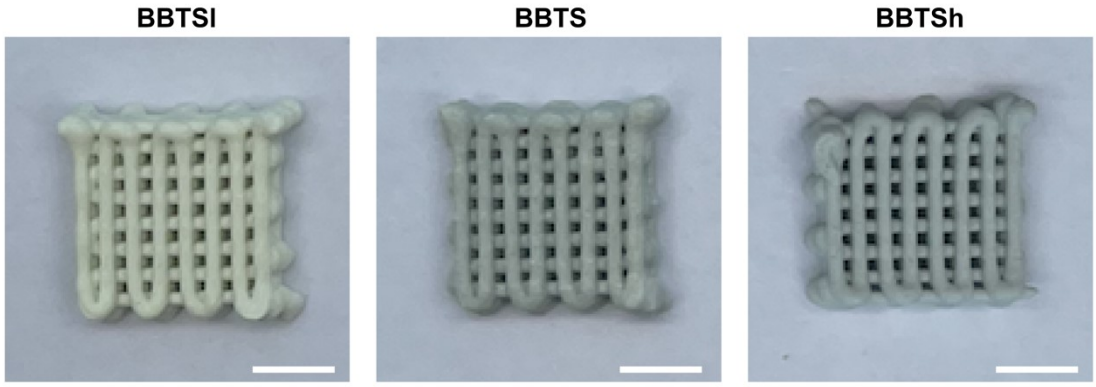

Fig. S4 Digital photographs of composite scaffolds with different content ratios of Ti_3C_2 (scale bars: 3 mm).

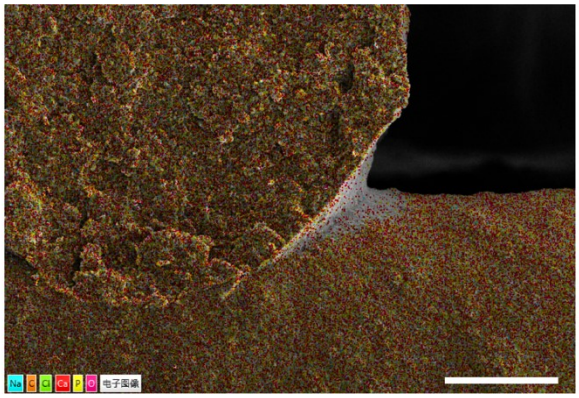

Fig. S5 Element mappings of the cross section of BS (scale bar: 100 μm).

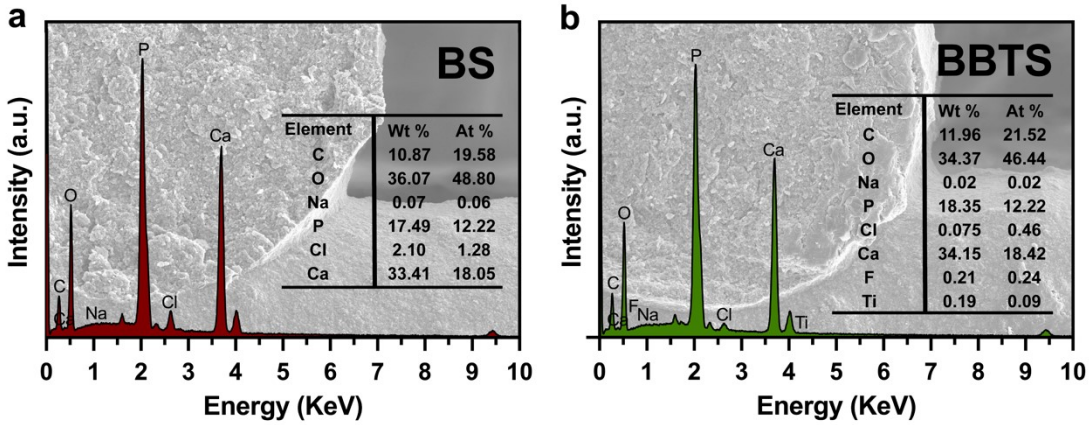

Fig. S6 EDS (inset image) of (a) BS, and (b) BBTS.

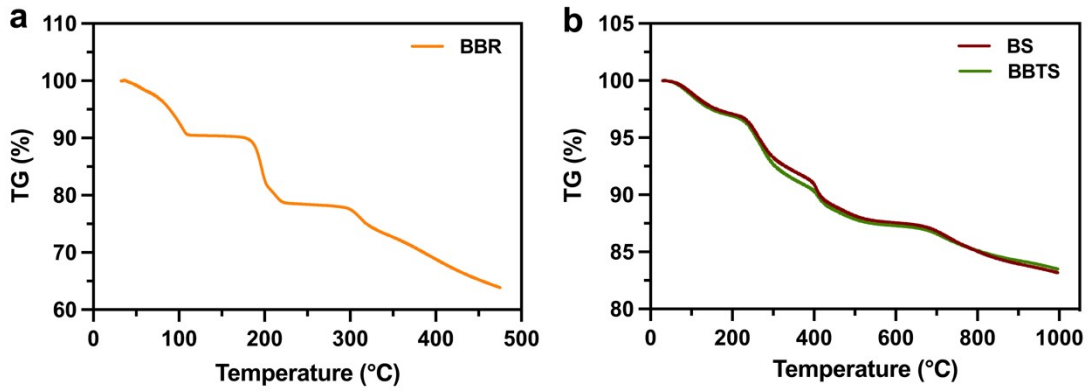

Fig. S7 TGA results of (a) BBR, and (b) BS and BBTS.

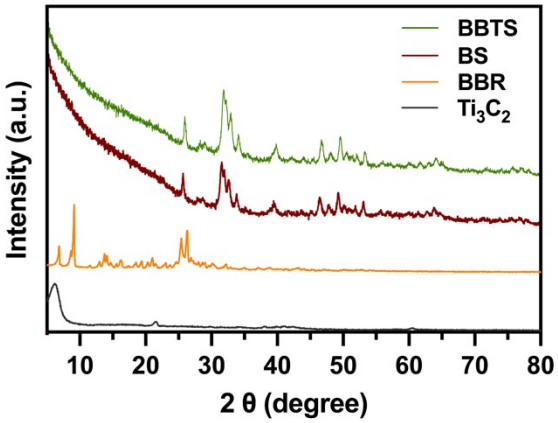

Fig. S8 XRD patterns of Ti_3C_2, BBR, BS, and BBTS.

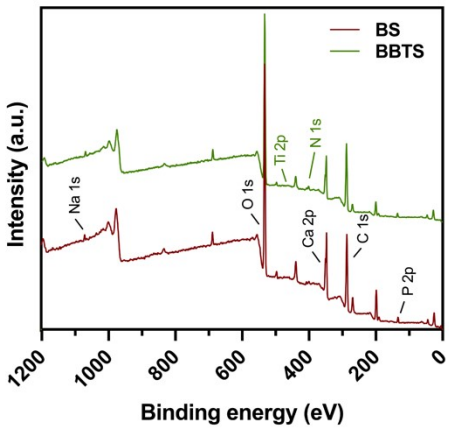

Fig. S9 XPS spectra of BS and BBTS.

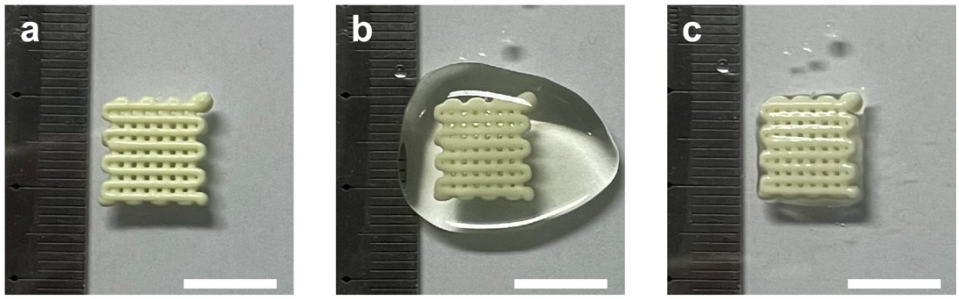

Fig. S10 Digital photographs of the composite scaffold (a) before crosslinking, (b) during crosslinking, and (c) after crosslinking for 10 min (scale bars: 1 cm).

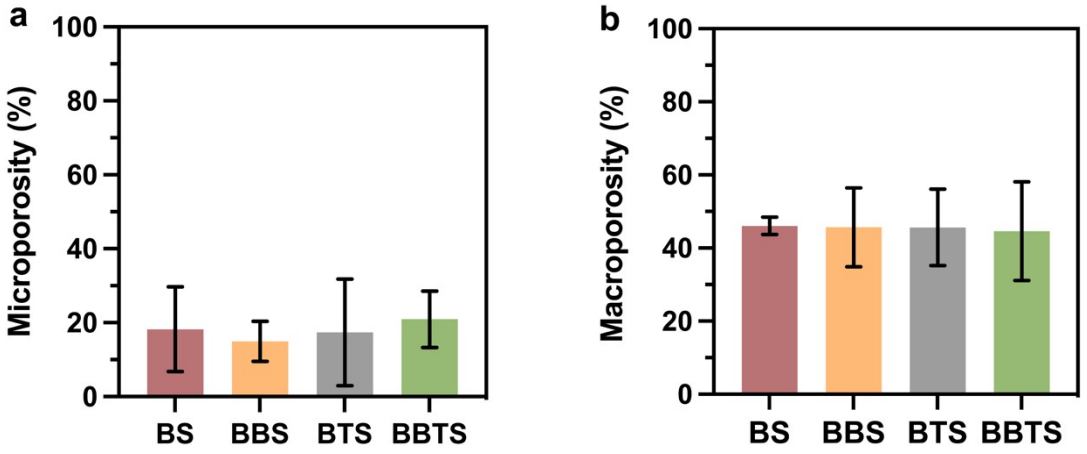

Fig. S11 (a) Microporosities of different scaffolds. (b) Macroporosities of different scaffolds.

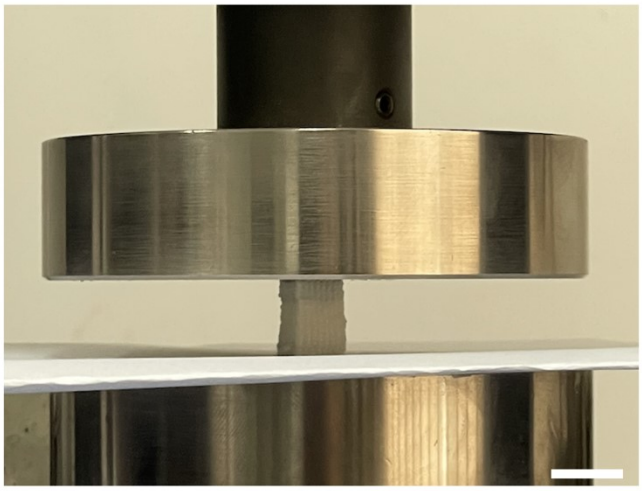

Fig. S12 Mechanical properties analysis of the integral scaffold (scale bar: 10 mm).

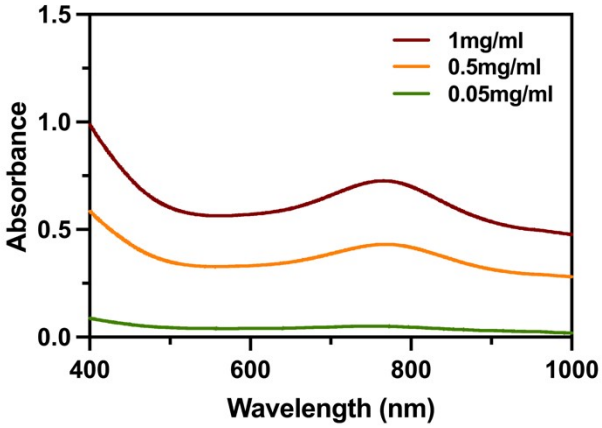

Fig. S13 UV-vis-NIR absorption spectra of Ti_3C_2 aqueous solution at different concentrations.

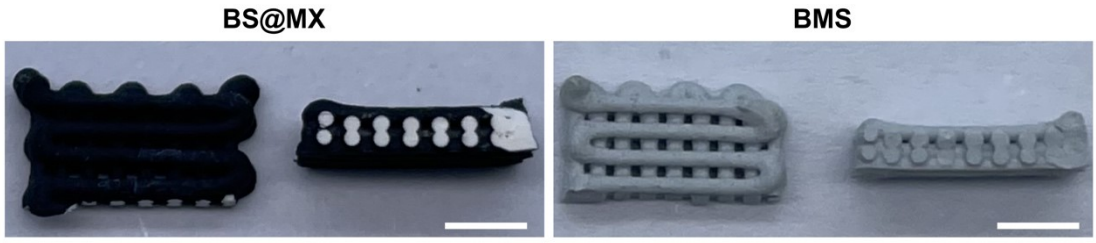

Fig. S14 Digital photographs of BS@MX and BMS (scale bars: 3 mm).

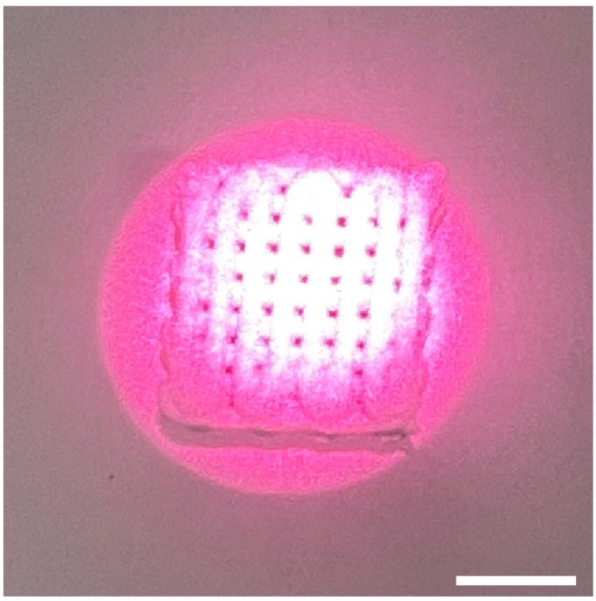

Fig. S15 Digital photograph of the scaffold under 808 nm laser irradiation (scale bar: 3mm).

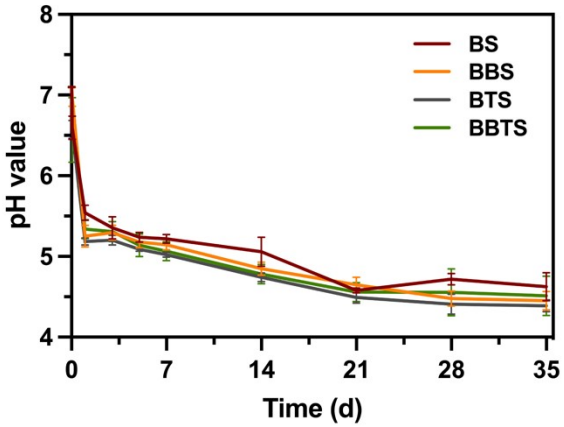

Fig. S16 pH changes in PBS incubating different scaffolds.

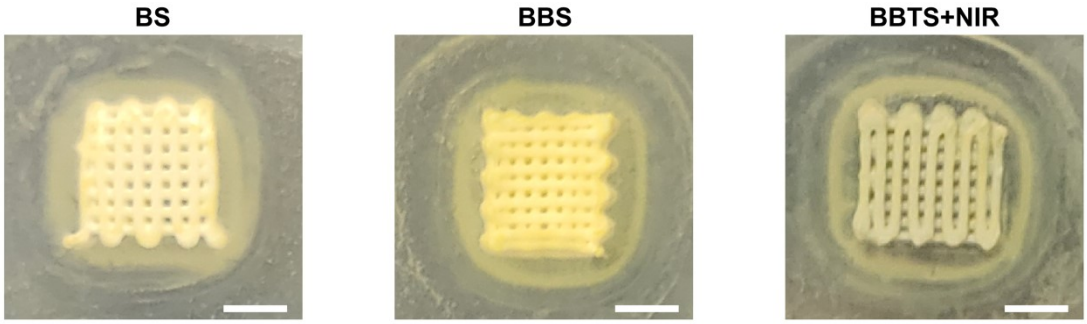

Fig. S17 Inhibition zones (*S. aureus*) after different treatments (scale bars: 3 mm).

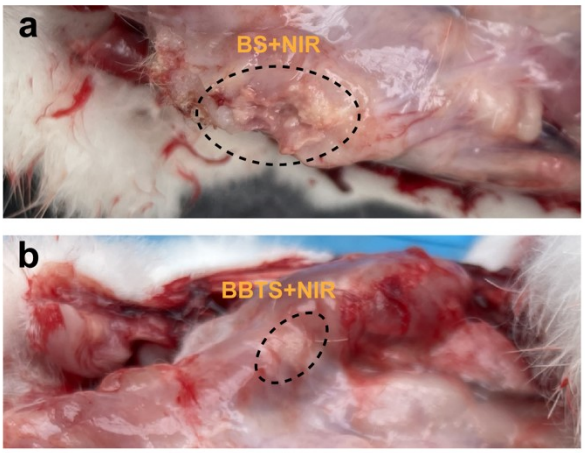

Fig. S18 Digital photographs of the infections on the implanted sites. (a) BS+NIR. (b) BBTS+NIR

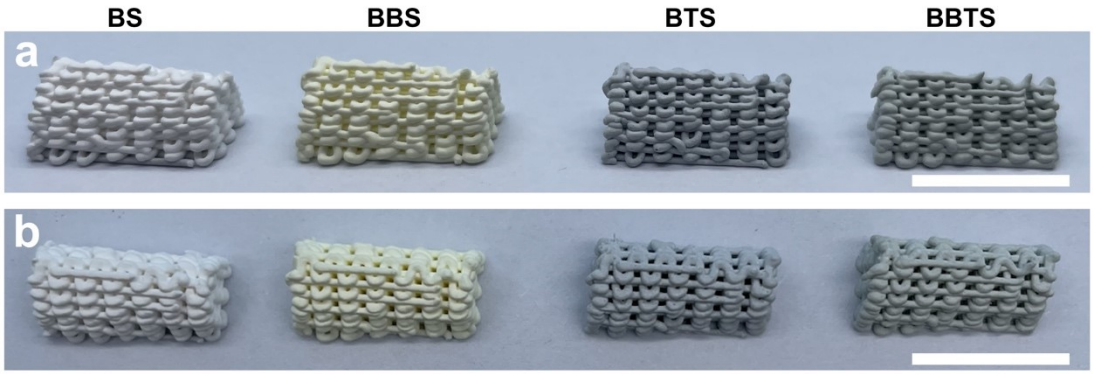

Fig. S19 Digital photographs of composite scaffolds designed for the mandibular defect (a) Anterior aspect. (b) Superior aspect (scale bars: 1 cm).

Fig. S20 Digital photographs of the animal surgical procedures. (a) The mandible of the rabbit. (b) The mandibular defect. (c) The implantation of the composite scaffold in the defective area.