

Supporting information

**Multifunctional composite hydrogel bolus with combined
self-healing, antibacterial and adhesive functions for
radiotherapy**

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Table S1 The compositions of experimental hydrogels

Hydrogels	TPU/AAm (wt %)	AAm (g)	MBA (wt %)	Irgacure 2959 (wt %)	H ₂ O (wt %)
TPU(25%)/PAAm	25	4	0.03	2	70
TPU(37.5%)/PAAm	37.5	4	0.03	2	70
TPU(50%)/PAAm	50	4	0.03	2	70
PU(50%)/PAAm	PU/AAm (wt %) = 50	4	0.03	2	70

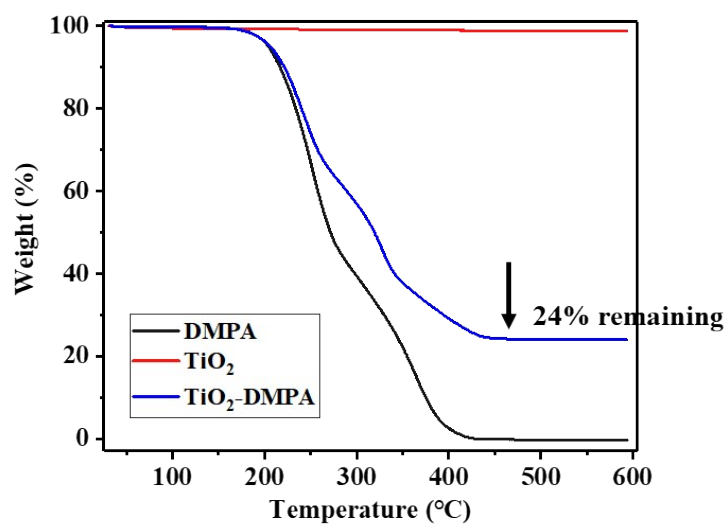


Fig. S1 TG curves of DMPA, TiO₂ and nTiO₂-DMPA.

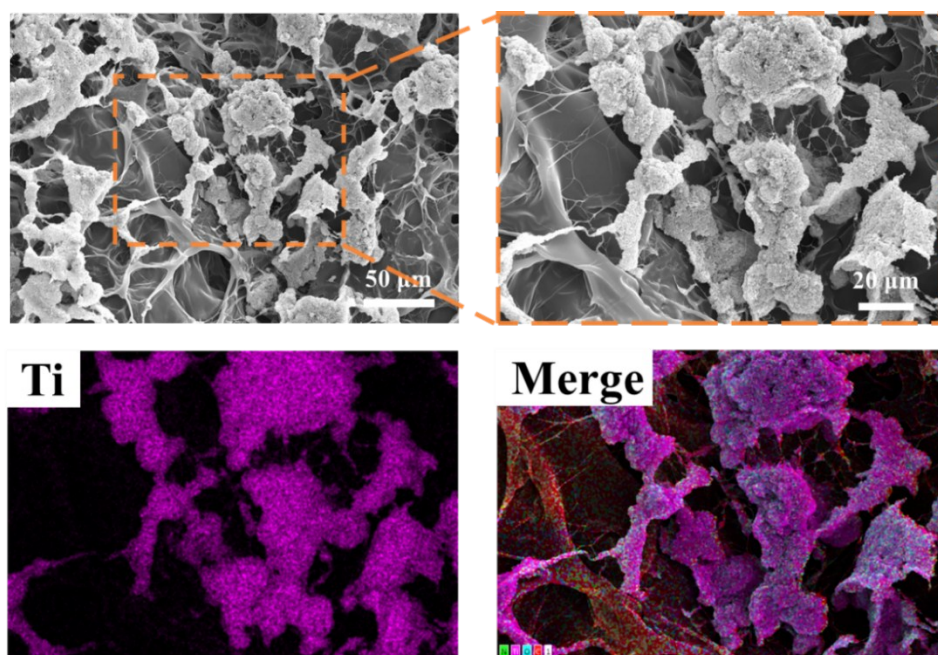


Fig. S2 SEM images of T/PU/PAAm and the corresponding EDS-mapping

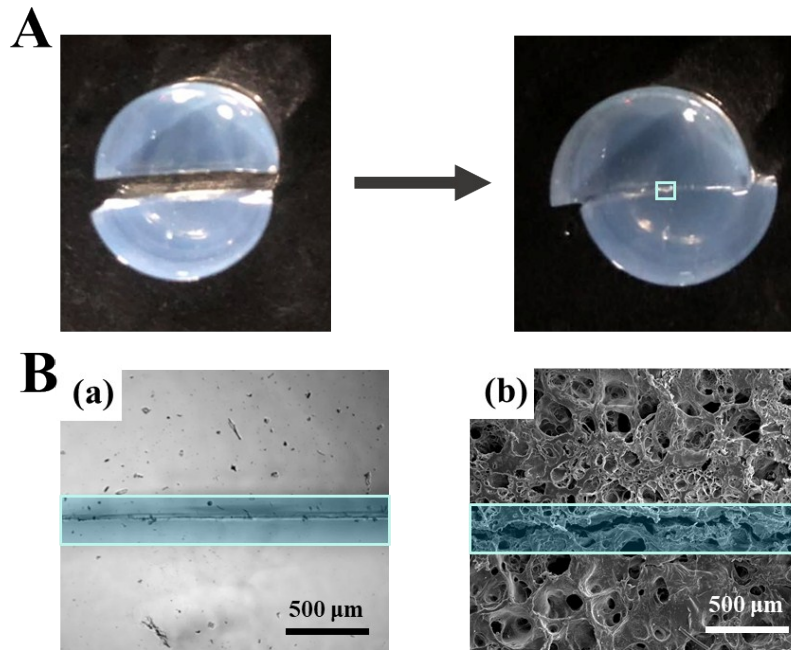


Fig. S3 A) Digital photos and B) micrographs of PAAm hydrogel observed by optical microscope (a) and SEM (b) after healed for 2h.

Since the CT signal of human soft tissue is very similar to H_2O , H_2O is used here instead of human soft tissue. As shown in Fig. S4-a, the hounsfield units (HU) value of PU/PAAm and TPU/PAAm hydrogel are closely to commercial bolus, demonstrating that the presence of $nTiO_2$ does not obviously affect the physical characteristic of hydrogel. Also, PDD curve of TPU/PAAm hydrogel is basically consistent with the curve of H_2O , and the dose reaches a maximum value at 1.3 cm under the effect of dose build-up (Fig. S4-b).

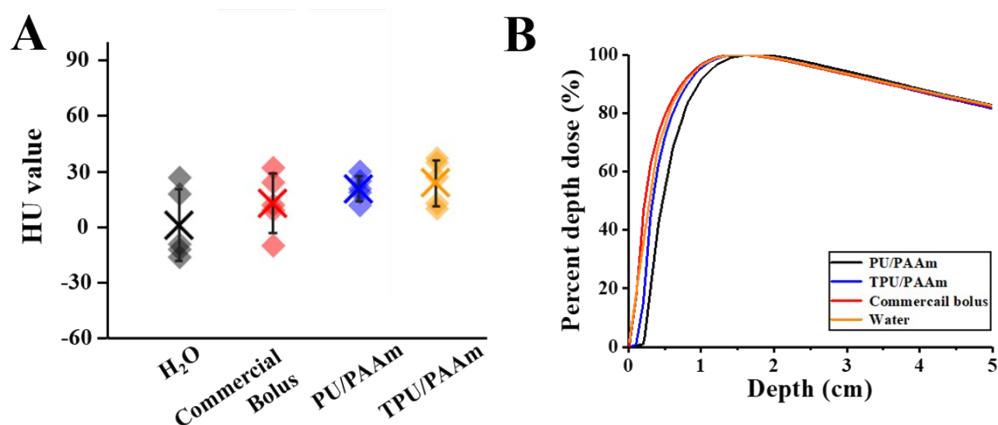


Fig. S4 Hounsfield units (HU) Values(a) and Percent depth dose (PDD) curves (b) of H_2O , conventional bolus, PU(50%)/PAAm and TPU(50%)/PAAm hydrogels