Supporting Information

N-Halaminated spermidine-containing polymeric coating enables titanium to achieve dual functions of antibacterial and osseointegration

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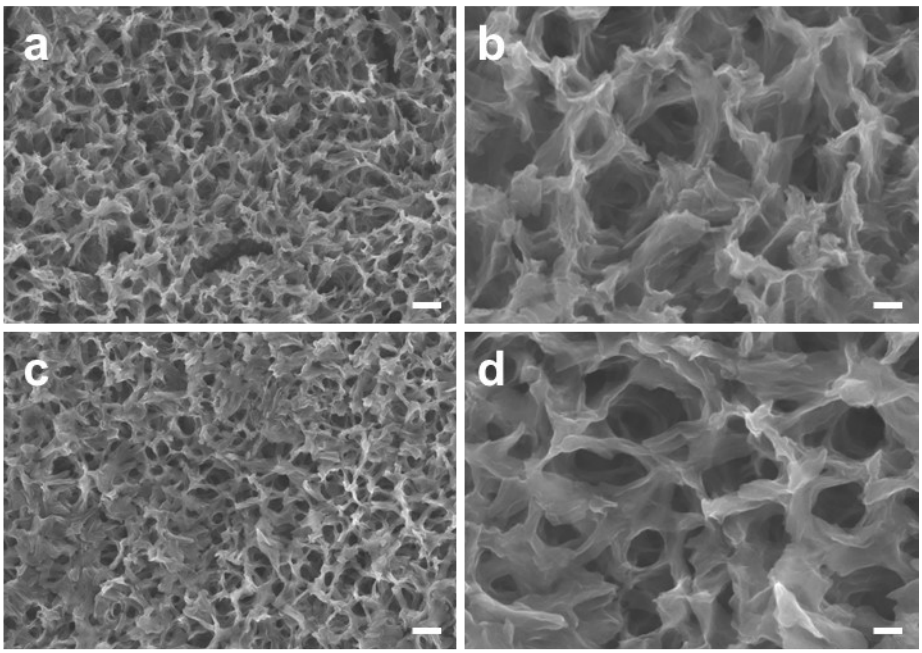

Fig. S1 SEM images of (a,b) Ti-KH570 and (c,d) Ti-PMAA (left scale bars = 500 nm, right scale bars = 150 nm).

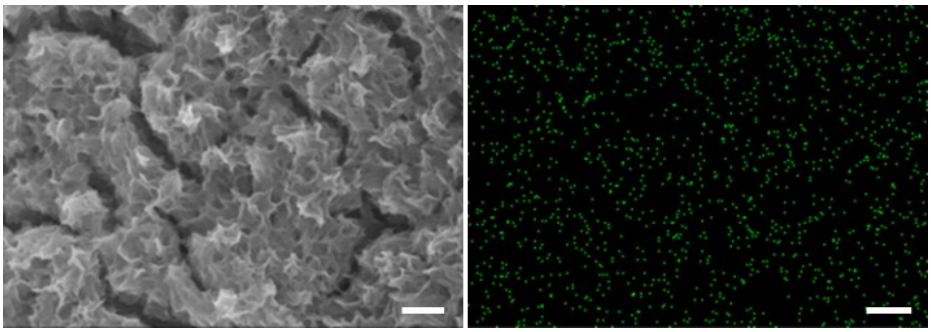

Fig. S2 SEM and elemental mapping images of Ti-SPD-Cl (scale bars = 250 nm).

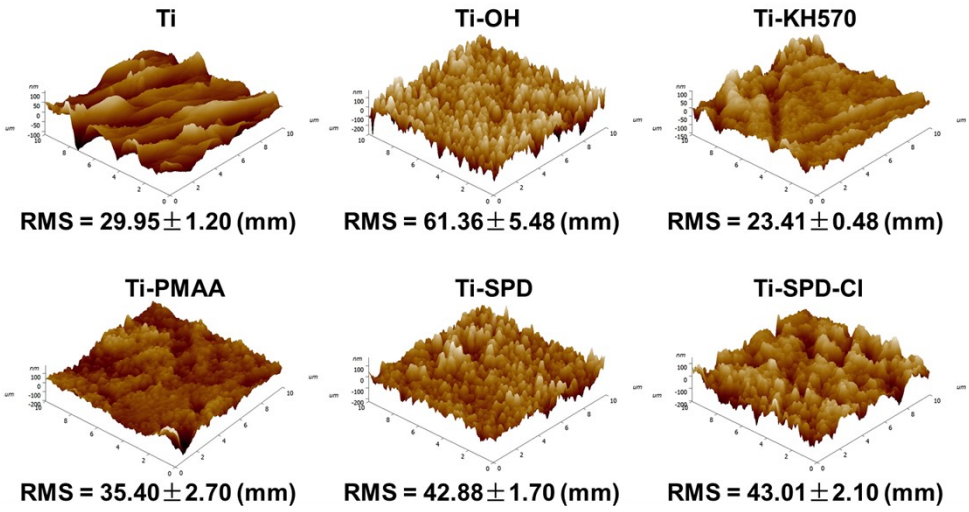

Fig. S3 Surface morphology and roughness of Ti, Ti-OH, Ti-KH570, Ti-PMAA, Ti-SPD and Ti-SPD-Cl by AFM.

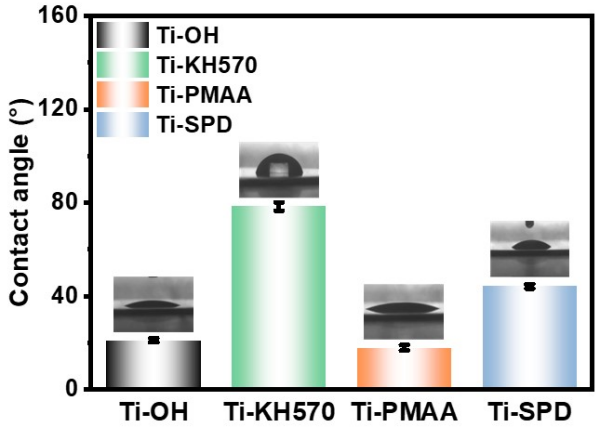

Fig. S4 Surface water contact angles of Ti-OH, Ti-KH570, Ti-PMAA and Ti-SPD (n = 6).

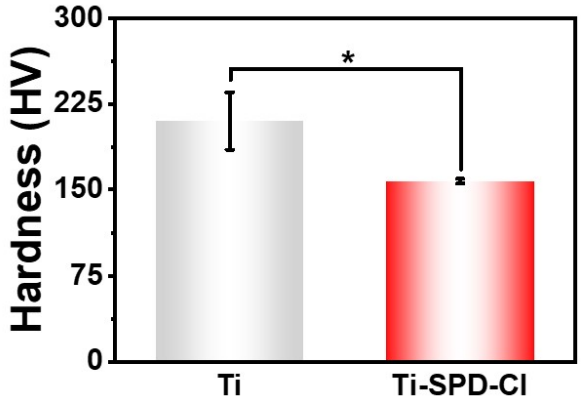

Fig. S5 Vickers hardness of Ti and Ti-SPD-Cl (n = 6, *p < 0.05).

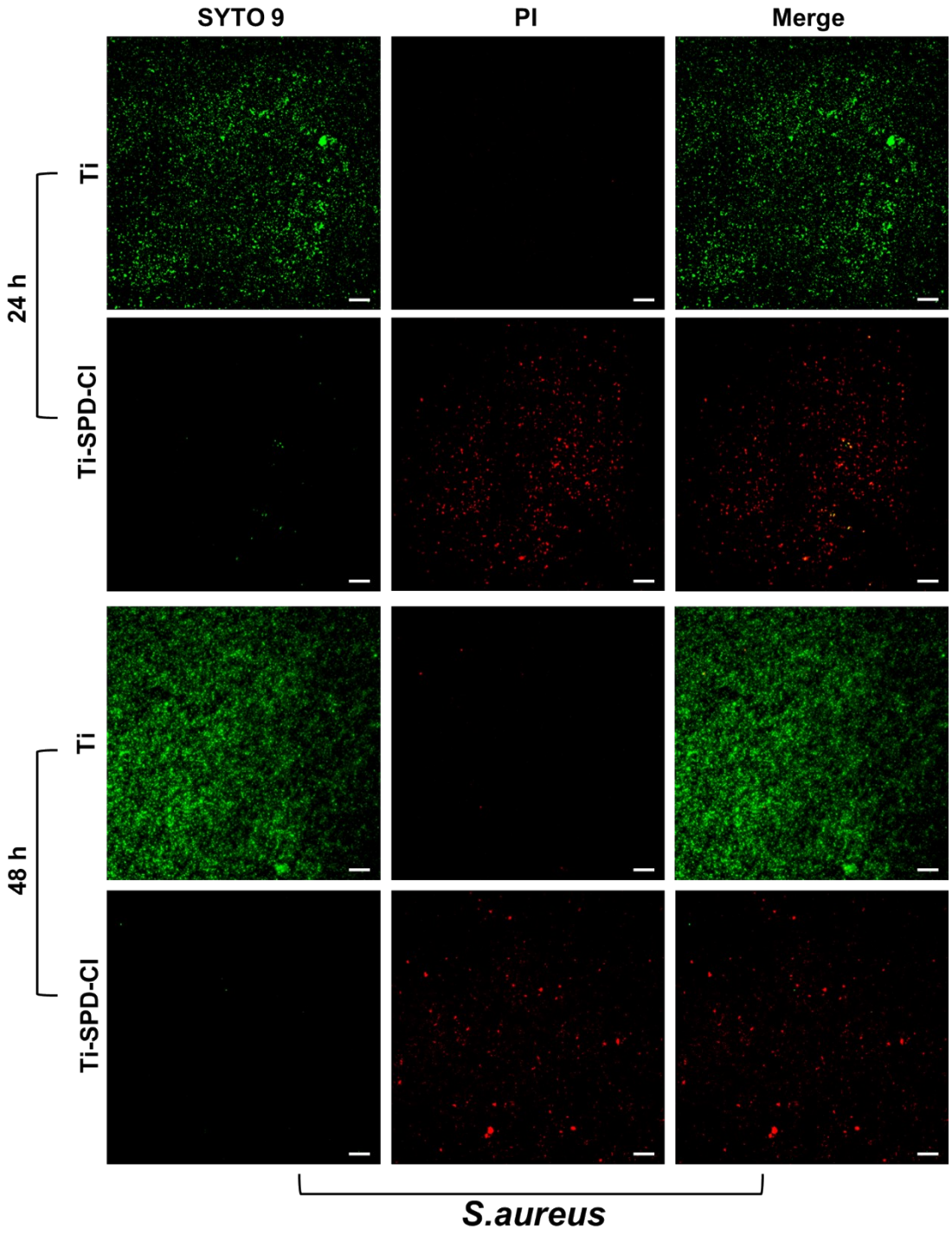

Fig. S6 The live/dead bacteria distribution of *S. aureus* cultured on the surfaces of Ti and Ti-SPD-Cl for 24 and 48 h (green for live bacteria, red for dead bacteria; scale bars = 50 μm).

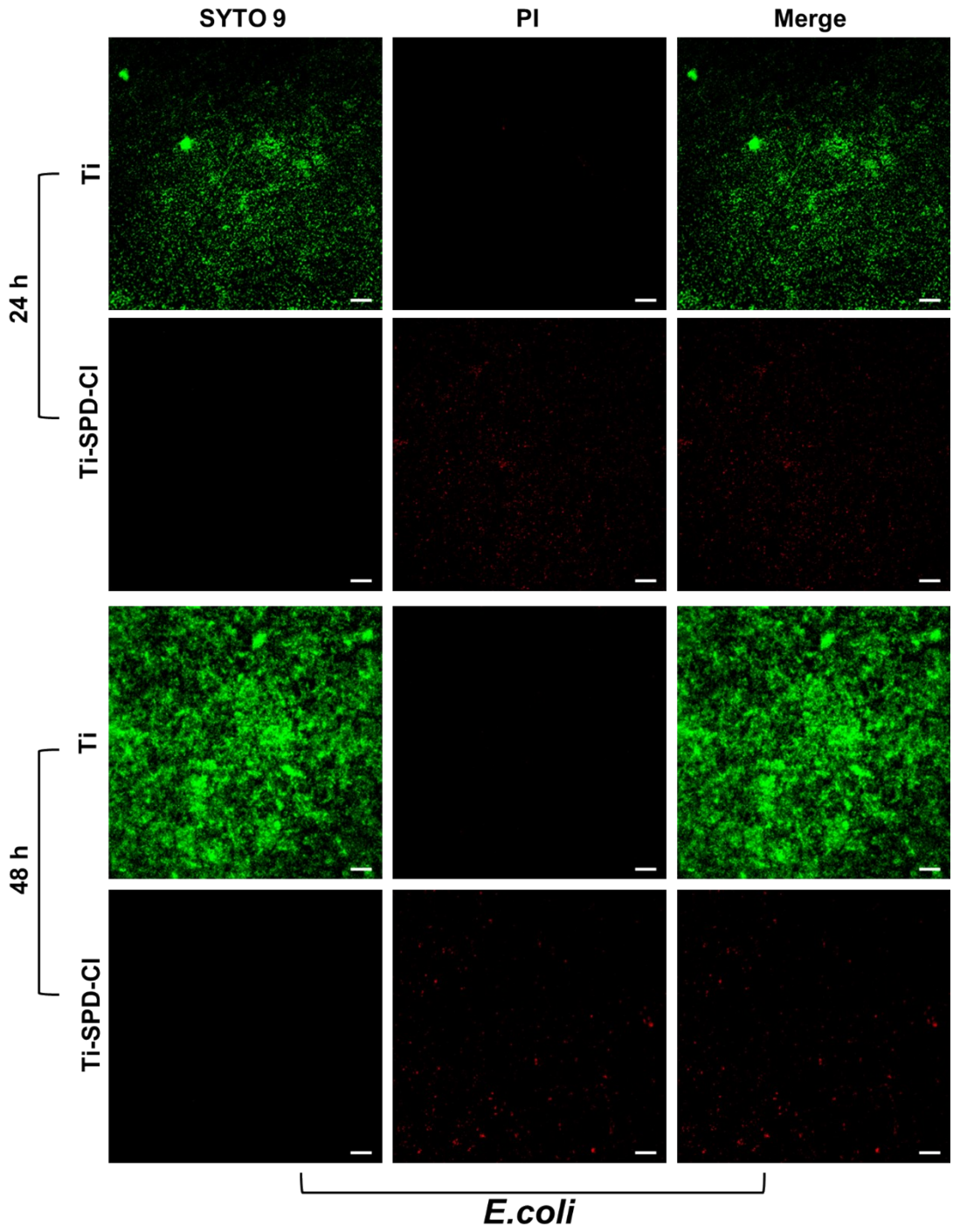

Fig. S7 The live/dead bacteria distribution of *E. coli* cultured on the surfaces of Ti and Ti-SPD-Cl for 24 and 48 h (green for live bacteria, red for dead bacteria; scale bars = 50 μm).

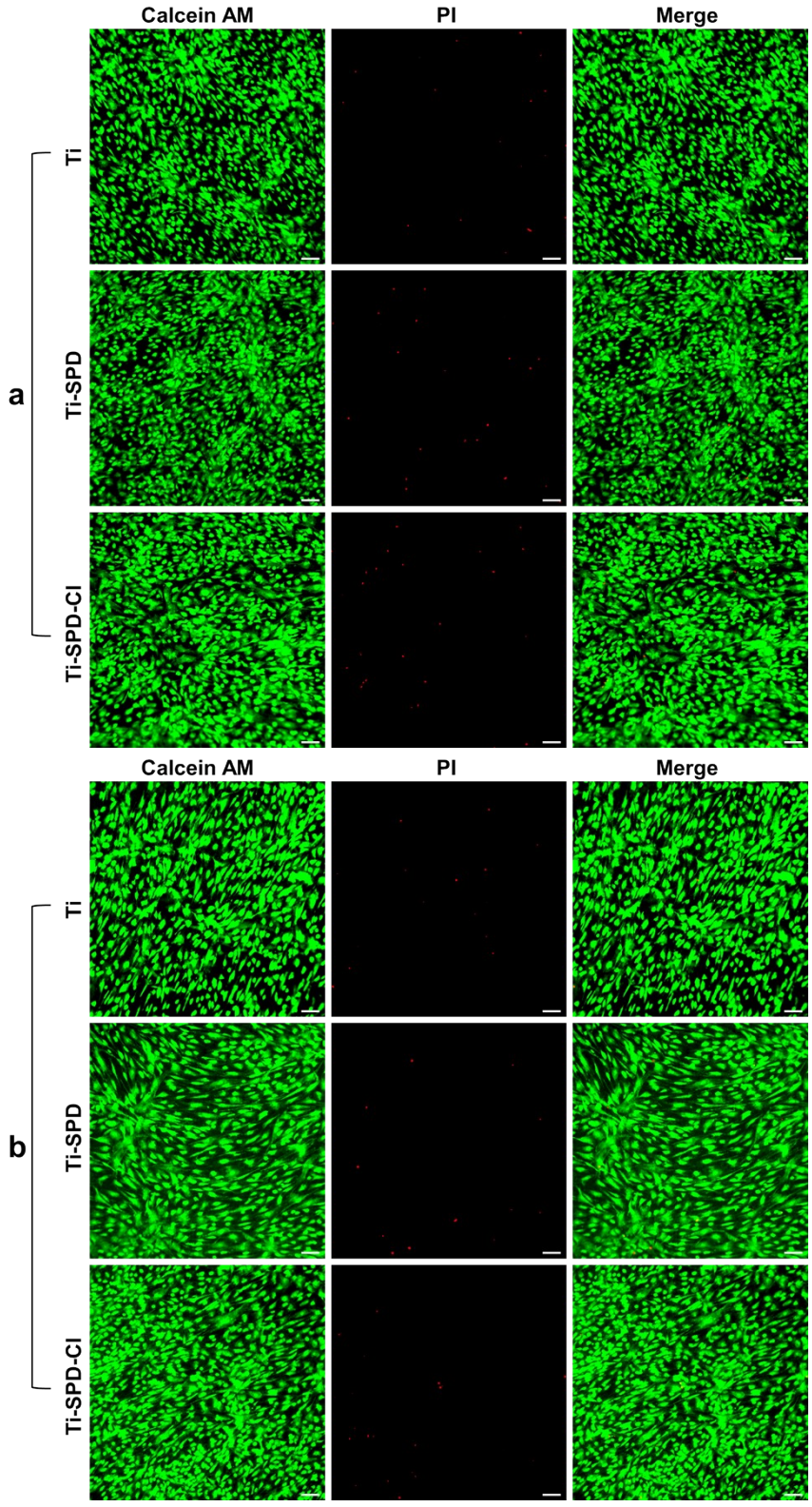

Fig. S8 Fluorescence images of MSCs cultured on Ti, Ti-SPD and Ti-SPD-Cl surfaces for (a) 3 days and (b) 7 days (green for live cells, red for dead cells; scale bars = 200 μm).

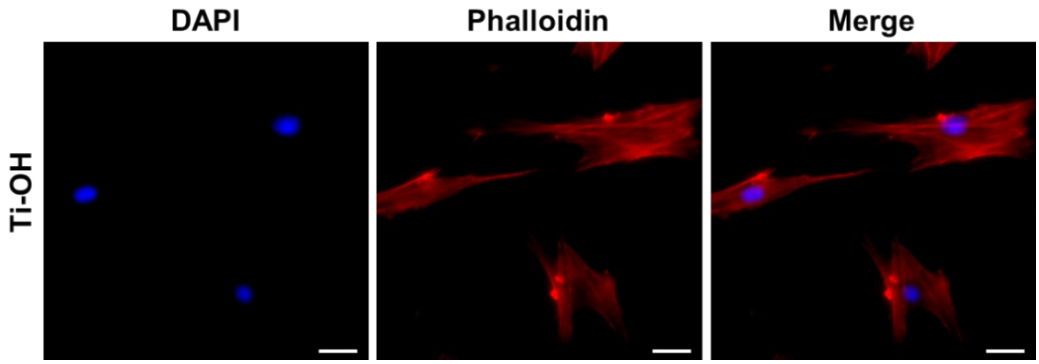

Fig. S9 Morphology of MSCs cultured on Ti-OH surface for 24 h (red for F-actin, blue for cell nucleus; scale bars = 40 μm).

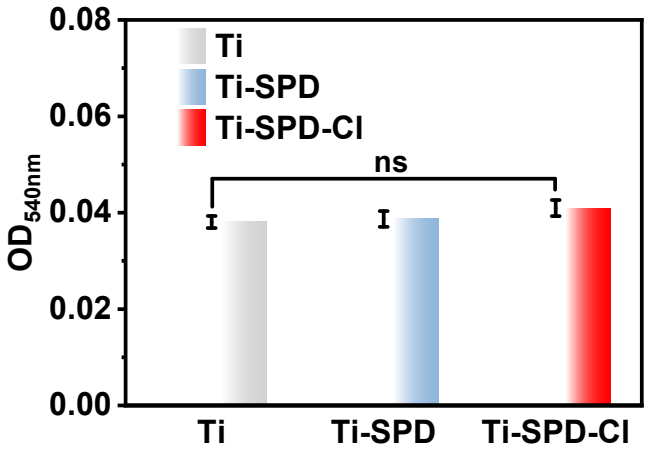

Fig. S10 OD values of supernatants from Ti, Ti-SPD and Ti-SPD-Cl groups after contact with blood (n = 3, ns means not statistically significant).

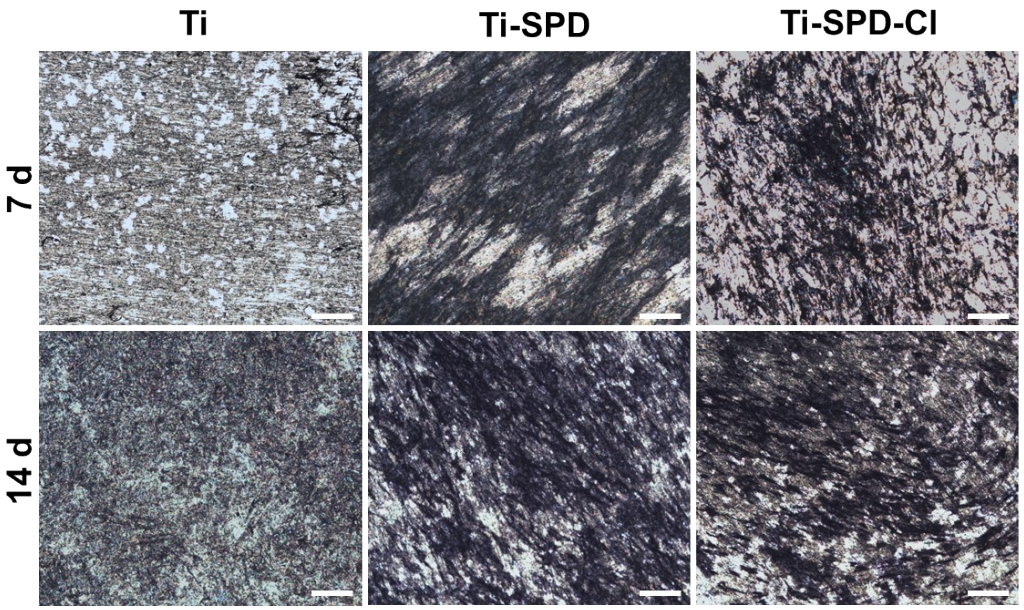

Fig. S11 ALP staining of MSCs cultured on Ti, Ti-SPD and Ti-SPD-Cl surfaces for 7 and 14 days (scale bars = 300 μm).

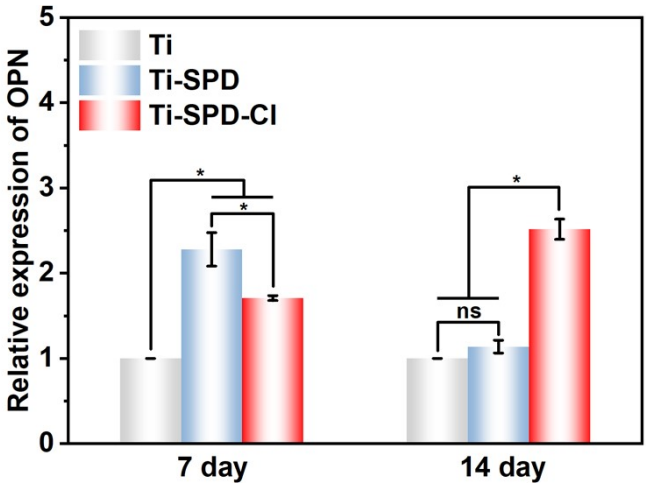

Fig. S12 OPN gene expression level of MSCs cultured on Ti, Ti-SPD and Ti-SPD-Cl surfaces for 7 and 14 days ($n = 3$, $^*p < 0.05$).

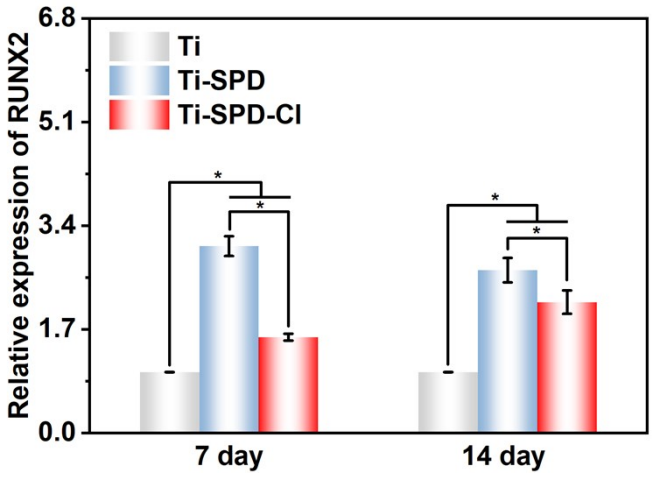

Fig. S13 RUNX2 gene expression level of MSCs cultured on Ti, Ti-SPD and Ti-SPD-Cl surfaces for 7 and 14 days ($n = 3$, $^*p < 0.05$).

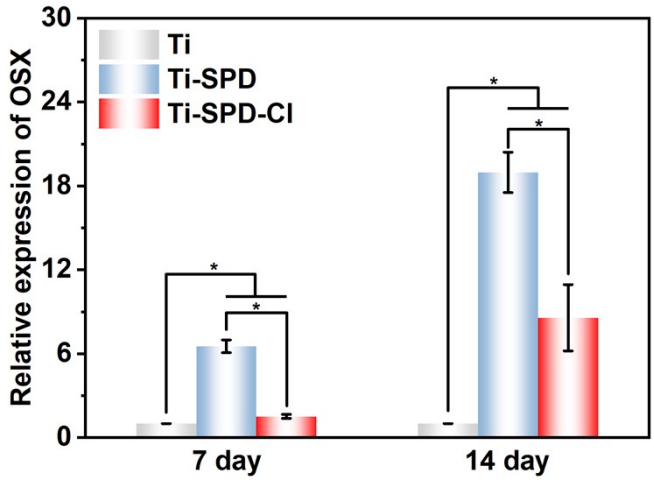

Fig. S14 OSX gene expression level of MSCs cultured on Ti, Ti-SPD and Ti-SPD-Cl surfaces for 7 and 14 days ($n = 3$, $^*p < 0.05$).

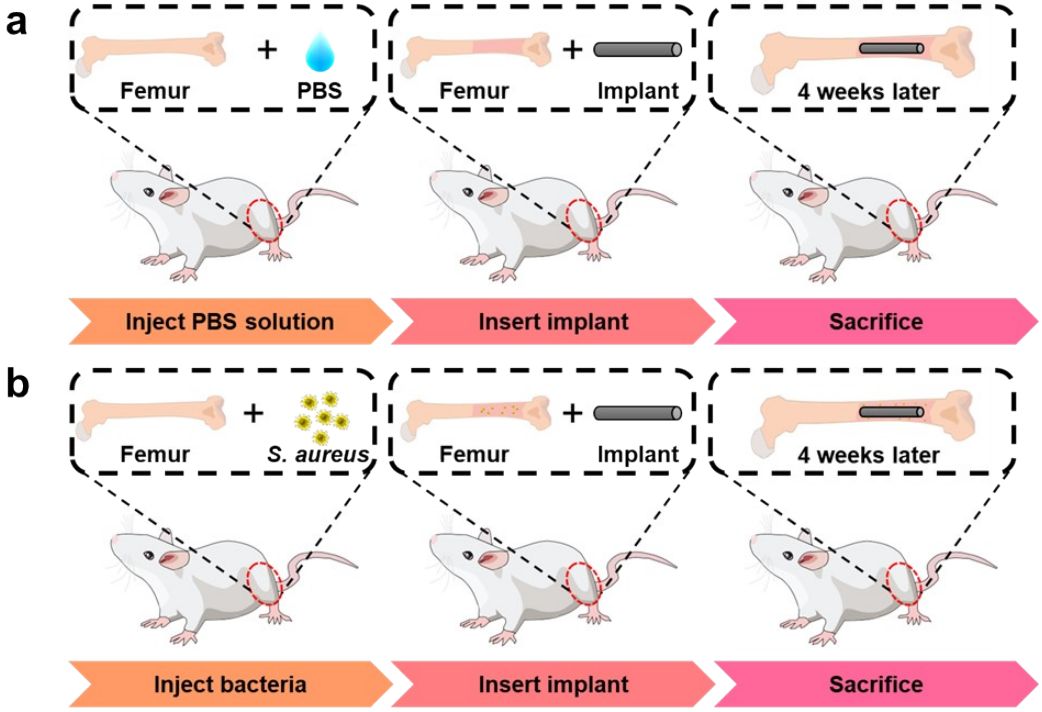

Fig. S15 Animal surgical procedures for (a) femoral implant model and (b) osteomyelitis implant model.

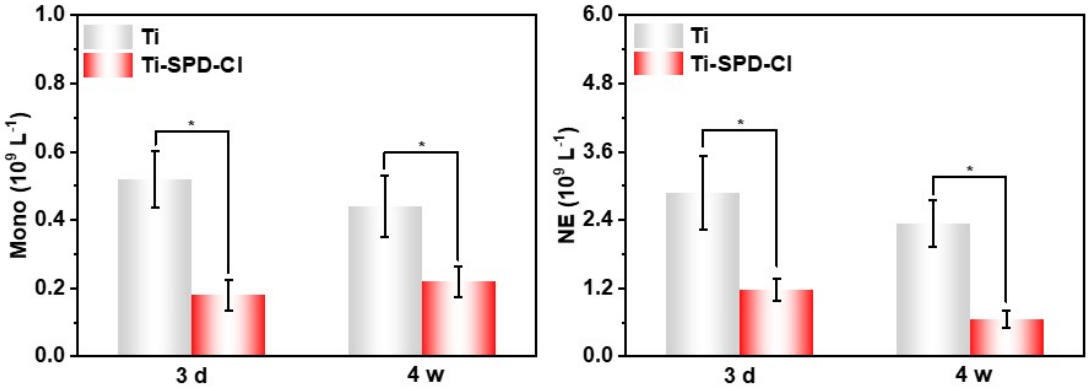

Fig. S16 Monocyte and neutrophil levels at 3 days and 4 weeks ($n = 5$, $^*p < 0.05$).

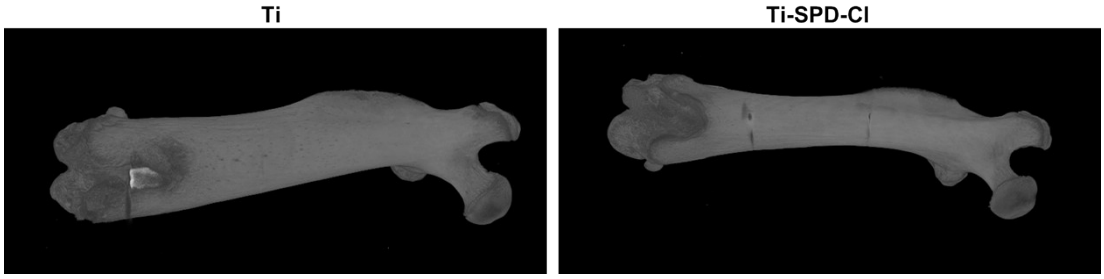

Fig. S17 Micro-CT images of femur in Ti and Ti-SPD-Cl groups.

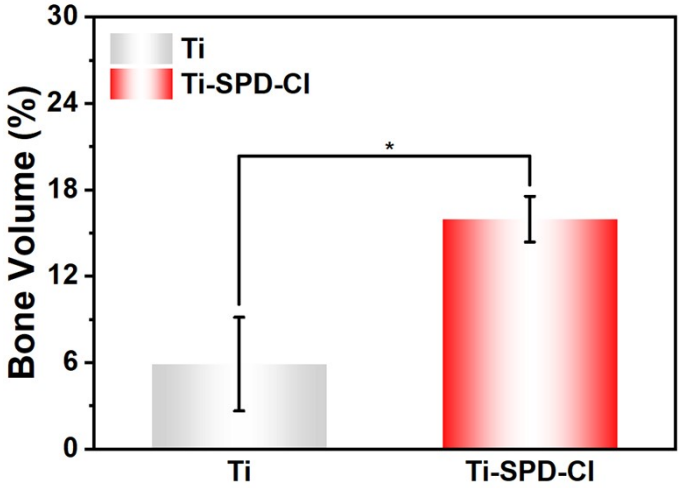

Fig. S18 Semi-quantitative analysis of Masson staining ($n = 3$, $^*p < 0.05$).

Table S1 Primer sequences used for RT-qPCR.

Genes	Primers
OSX	Forward: 5'-GTGTGCGAATGCAAGGAAGG-3'
	Reversed: 5'-CCACTCCAAATCCAGGAGGG-3'
OPN	Forward: 5'-CTCCATTGACTCGAACGACTC-3'
	Reversed: 5'-CAGGTCTGCGAAACTTCTTAGAT-3'
RUNX2	Forward: 5'-CCGCCTCAGTGATTTAGGGC-3'
	Reversed: 5'-GGGTCTGTAATCTGACTCTGTCC-3'
GAPDH	Forward: 5'-GGAGCGAGATCCCTCCAAAAT-3'
	Reversed: 5'-GGCTGTTGTCATACTTCTCATGG-3'