Supporting Information

Reduced corrosion of Zn alloy by HA nanorods for enhancing early bone regeneration

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Experimental methods

In order to examine the HA/ZN interface, the H-180 coating on Zn-1Ca was removed by CrO_3 water solution. In brief, the H-180 sample was immersed into a 20 mg/mL CrO_3 water solution at 70 °C for 2 min to remove the surface coating according to the ASTM standard (Standard Practice for Preparing, Cleaning, and Evaluating Corrosion Test Specimens ASTM (2003), pp. G1-03). Then the exposed surface was examined by FESEM.

In order to know whether HA formation is related to Ca in ZN substrate, the HA nanorods on pure Zn plate treated with same HT process of H-180 were examined. Briefly, pure Zn plates were placed in an aqueous solution containing 0.04M ($Ca(CH_3COO)_2 \cdot H_2O$ in a Teflon-lined autoclave and heated at 110 °C for three hours. Then, they were cleaned by sonication in deionized water for 10 min and hydrothermally treated at 110 °C for three hours in an aqueous solution with 0.167M EDTA-Ca, 0.1M $(NH_4)_2HPO_4$ and adjusted pH of 12.5.

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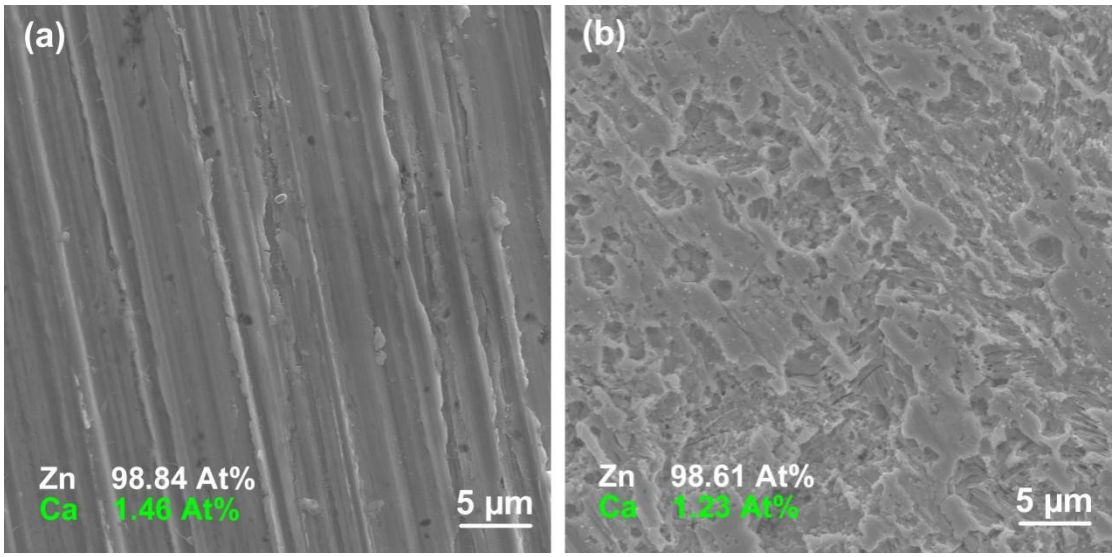

Fig. S1 Surface morphologies and element content of: (a) untreated ZN, and (b) H-180 after removing the surface coating.

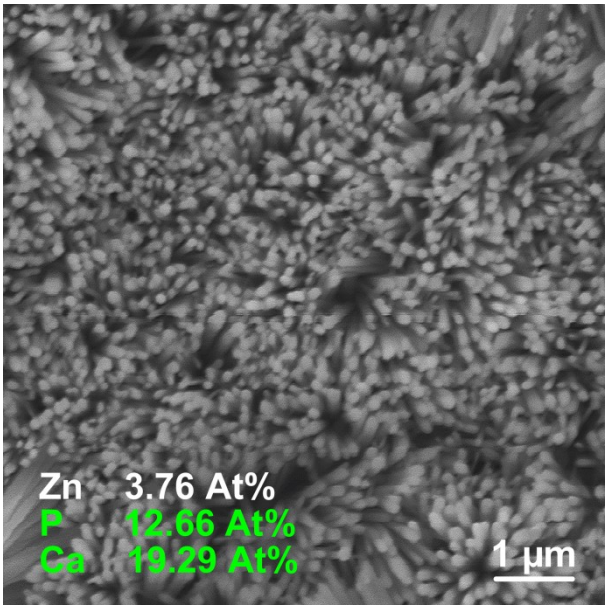

Fig. S2 Surface morphology and element contents of pure Zn after treatment with same process of H-180.