# Supplementary material

## Methods

Differential scanning calorimetry (DSC) was performed to monitor the effect of heating on the phase transitions of the pure magnesium (Mg) powder using a DSC instrument (DSC 404, Netzsch-Gerätebau GmbH, Germany). The sample underwent a heating process from 25 to 590 °C at a heating rate of 20 °C/min and then from 590 to 700 °C at a heating rate of 5 °C/min.

The surface morphologies and cross-section microstructures of the struts of the Mg scaffolds coated under different conditions were observed using SEM (JSM-IT100, JEOL, Japan). Back scatter mode was applied for the observation of the cross-section microstructures of the scaffold struts.

*In vitro* immersion tests of the Mg scaffold samples coated under different conditions were conducted in modified simulated body fluid (r-SBF) in a thermal bath at 37 °C for 6 h. The samples after *in vitro* biodegradation at different time points were imaged.

## Results

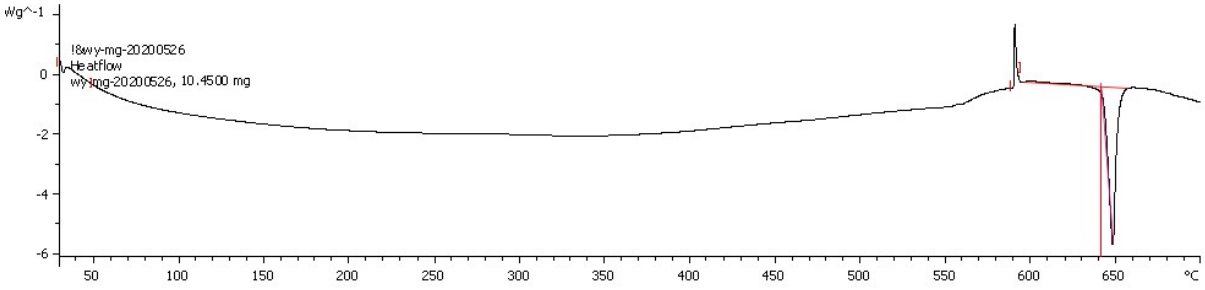


Fig. S1 DSC curve of the pure Mg powder.

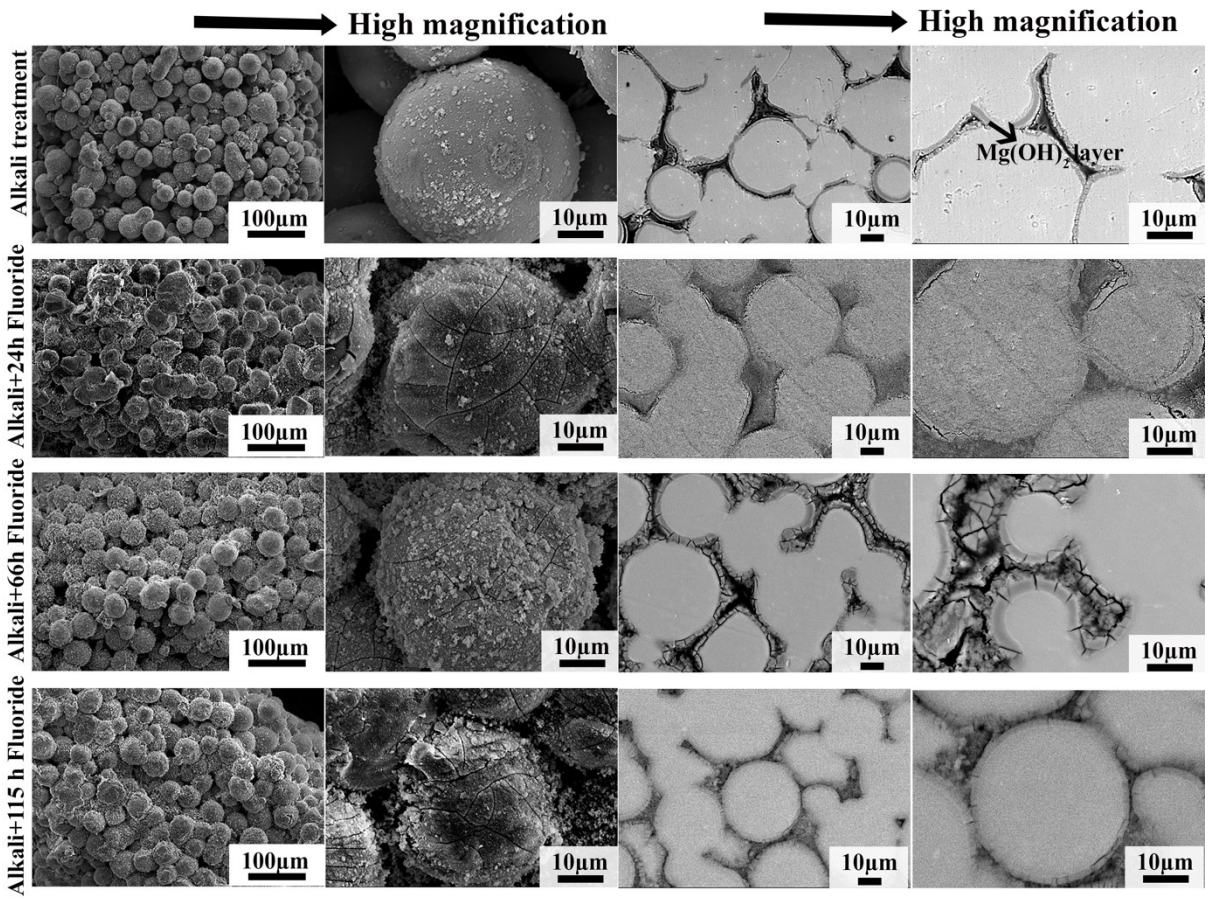


Fig. S2 Surface morphologies and cross-section microstructures of the coatings formed under different conditions.

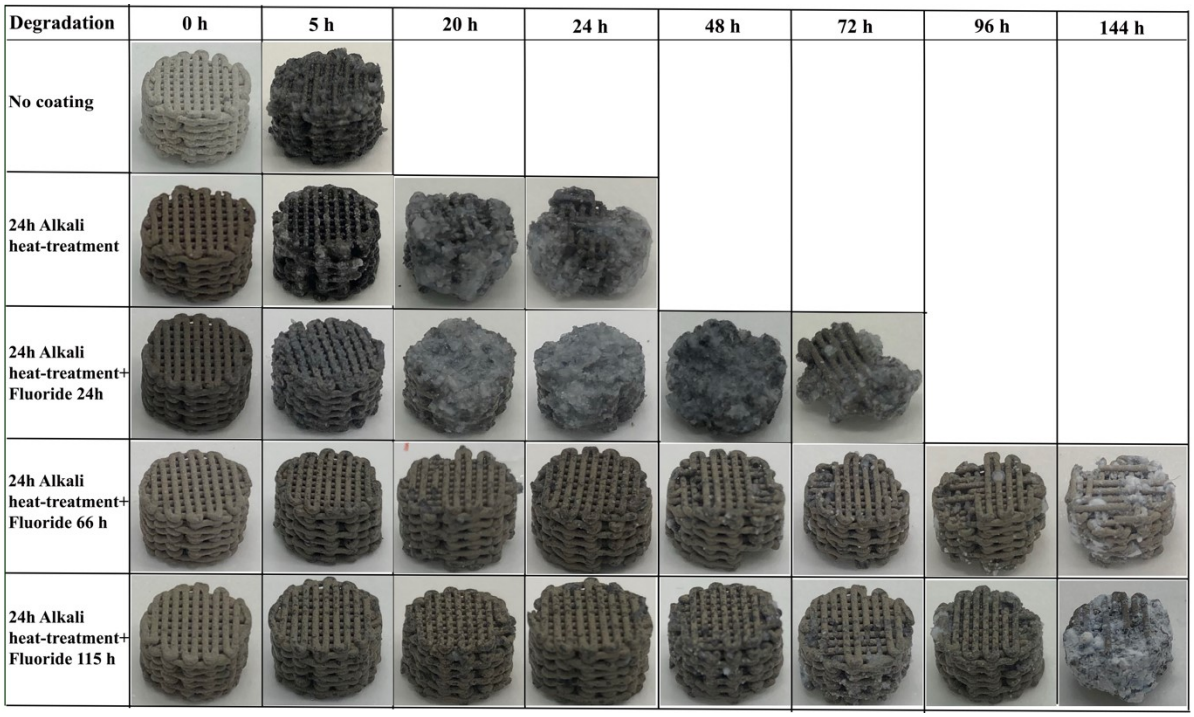


Fig. S3 Appearances of the Mg scaffolds without and with surface modification under various conditions after *in vitro* biodegradation in r-SBF for up to 144 h.