Samples	GelMA (g)	Alendronate (mmol)	EDC (mmol)	NHS (mmol)
GelMA	1	-	-	-
G-LALN	1	0.3	0.3	0.3
G-MALN	1	1.5	1.5	1.5
G-HALN	1	3	3	3

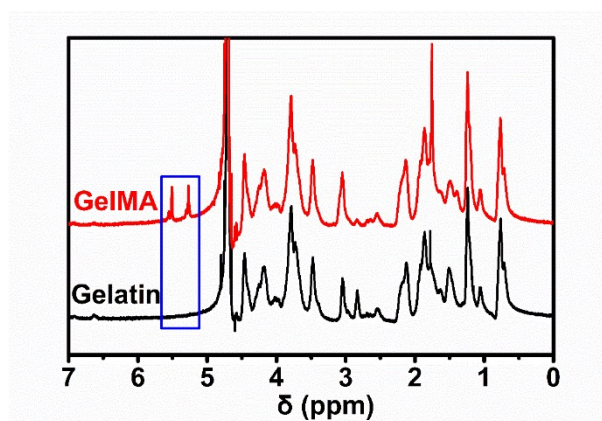Table S1. Feed ratio of different alendronate-content hydrogels (GelMA-ALN)
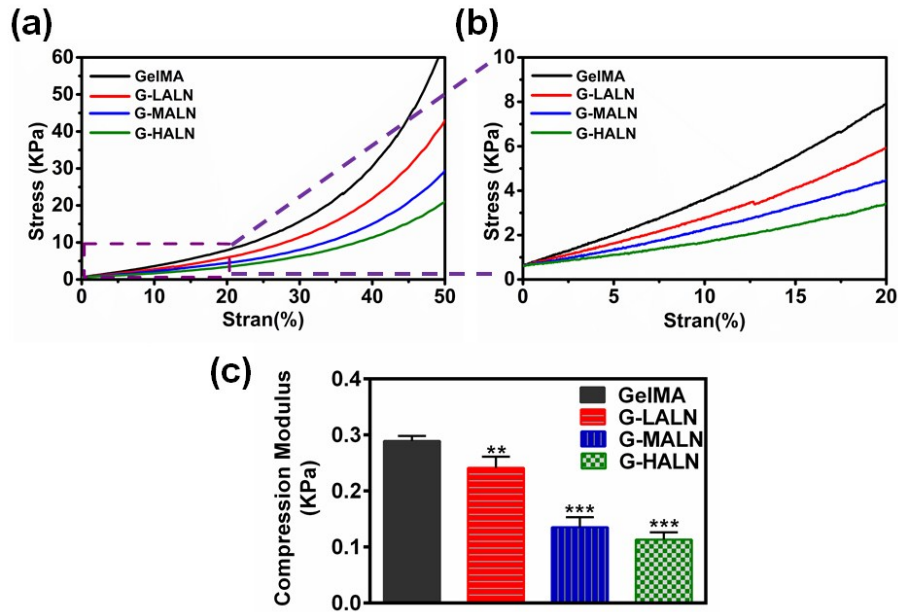

Figure S1. ^{1}H NMR of Gelatin and GelMA.

Figure S2. (a) (b)Mechanical compression curve of GelMA and GelMA-ALN hydrogels. (c) The corresponding compression modulus of GelMA and GelMA-ALN hydrogels.
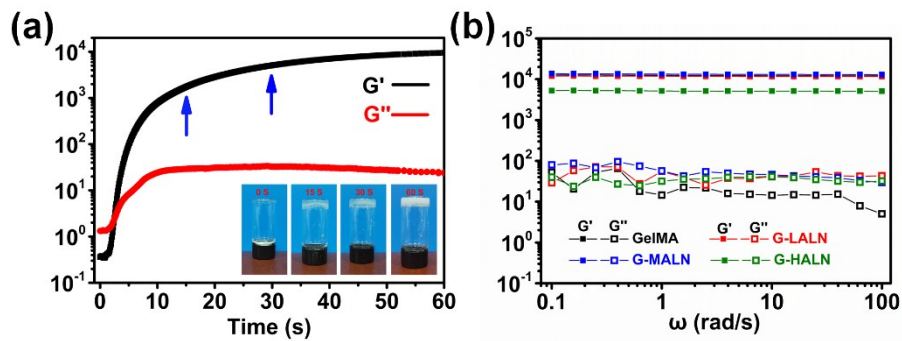

Figure S3. (a) Oscillatory frequency sweeps showing the UV-initiated polymerization of the GelMA hydrogel. The insert picture represents the hydrogel crosslinked under ultraviolet light for different time (0, 15, 30 and 60 s). (b) Oscillatory frequency sweeps curves of GelMA and GelMA-ALN hydrogels (storage modulus, G', and loss modulus, G").
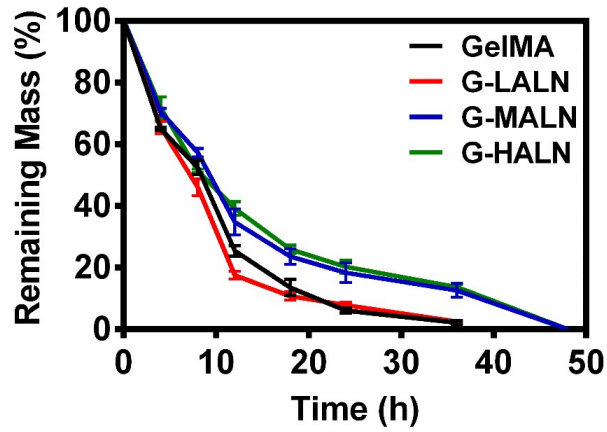
Figure S4. Enzymatic degradation of GelMA and GelMA-ALN hydrogels by 2.5 U/mL
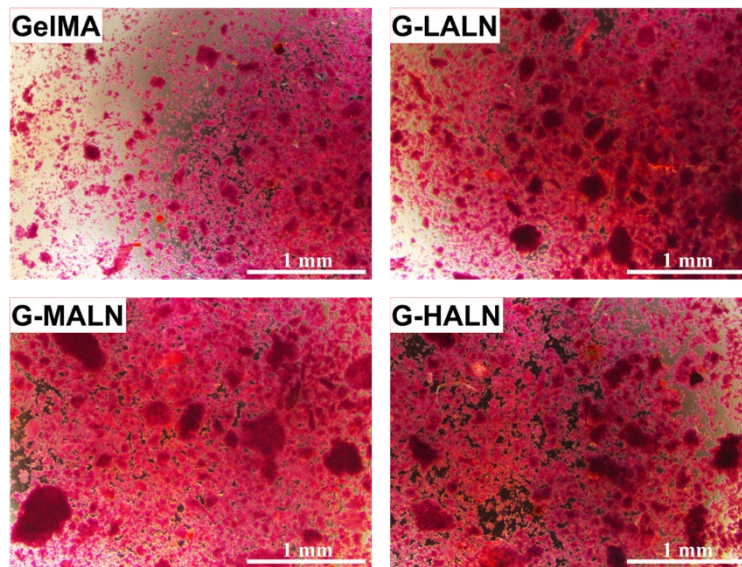
collagenase.

Figure S5. Alizarin red S staining of hFOB cells cultures on hydrogels for 14 days.
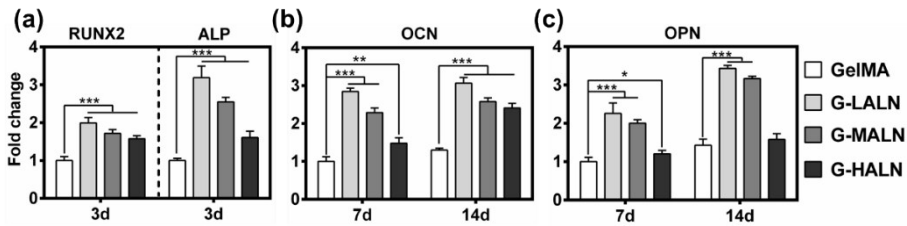

Figure S6. Semi-quantitative analysis of immunofluorescence staining of hFOB cells cultured

on GelMA, G-LALN, G-MALN and G-HALN hydrogels. ImageJ software for semi-quantitative

analysis and n=4. Statistically significant difference between different materials at the same time point (* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$).