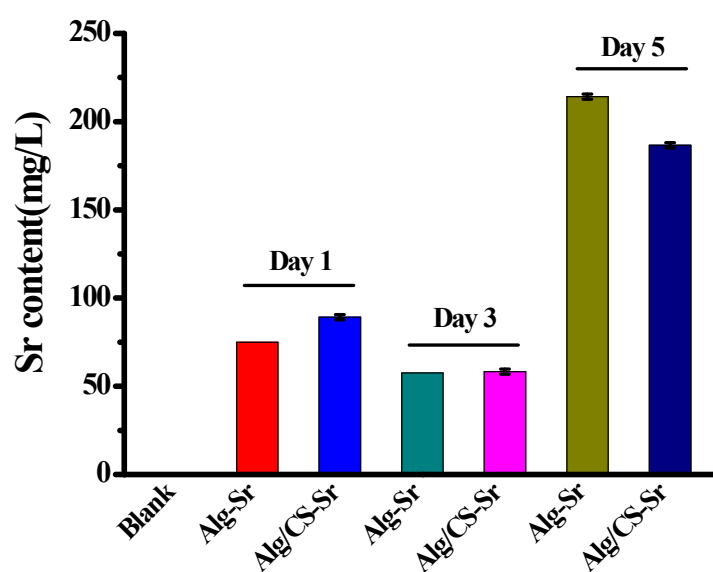
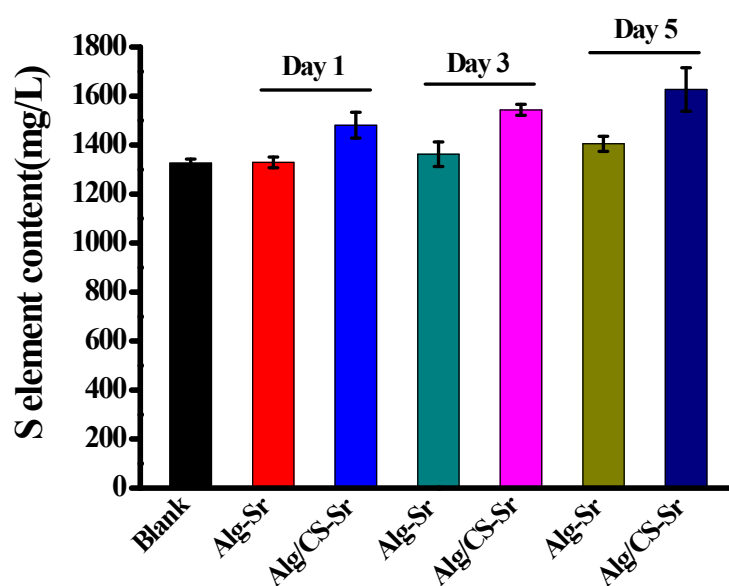


**Figure S1.** Cell growth photos of OA chondrocytes cultured with Alg-Sr and Alg/CS-Sr at 1, 3, 5 days.

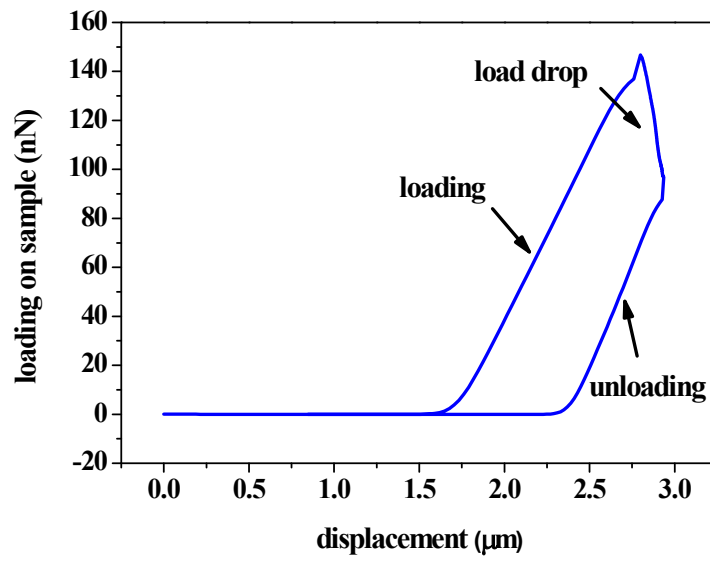


(a)



(b)

**Figure S2.** Quantitative assessment of the content of S element and strontium in the cell culture medium after soaking the prepared hydrogels (Alg-Sr and Alg/CS-Sr) into the cell culture medium for 1, 3 and 5 days at 37 °C. (a) Sr content analysis. (b) S element content detected by ICP-OES (Optima 7000DV, Perkin-Elmer, USA). (Blank stands for cell culture medium)



**Figure S3.** Typical force vs indentation depth curve obtained in AFM nanoindentation on hydrogels. A flat punch tip with a diameter of  $2.38\mu\text{m}$  was used for all the tests.