Supporting Information

*for*

Nano hydroxyapatite and nano silicate-reinforced injectable and biomimetic gelatin-methacryloyl hydrogel for bone tissue engineering

Zhe Shi1***#***, Qiang Zhong1***#***, Yuhang Chen1, Jian Gao1, Xin Pan1, Qiang Lian1, Rong Chen1, Pinkai Wang1, Jian Wang1, Zhanjun Shi1***\****, Hao Cheng1***\****

**1**Department of Orthopedics, Nanfang Hospital, Southern Medical University, 1838 # Guangzhou North Avenue, Guangzhou, Guangdong Province, 510515, P. R. China

***†*** These authors contributed equally to this work.

***\**** Correspondence:

Professor Zhanjun Shi, Email: shizhanjun111@gmail.com

Dr. Hao Cheng, Email:[haocool317@gmail.com](mailto:haocool317@gmail.com)

**Figure S1.** (a) Fabricated GelMA foam; (b-e) GelMA-HAP-SN hydrogel (uncrosslinked) injectability demonstrated using a 10mL syringe with various sizes of needles at room temperature.



**Figure S2.**Pore size of the GelMA-based hydrogels. ***\****P<0.05.



**Figure S3.**(a) Compress modulus of the HAP-loaded GelMA with various HAP concentration with a 30-S UV radiation; (b) Compress modulus of the SN-loaded GelMA with various SN concentration with a 30-S UV radiation; (c) UV radiation time needed for the GelMA-based hydrogel to achieve preset compress modulus (~ 25 Kpa). ***\****P<0.05.



**Figure S4.** Pore size of hydrogels in lyophilized and non-lyophilized status. ***\****P<0.05.

|  |  |  |
| --- | --- | --- |
| **Gene** | **Forward primer sequence** | **Reverse primer sequence** |
| **ALP** | CAGCGGGTAGGAAGCAGTTT | CCCCTGCACCTCATCCCTGA |
| **RUNX2** | CCATAACGGTCTTCACAAATCCT | TCTGTCTGTGCCTTCTTGGTTC |
| **OCN** | GGTGCAGACCTAGCAGACACCA | AGGTAGCGCCGGAGTCTATTCA |
| **OPN** | TTCCAAGTAAGTCCAACGAAAG | GTGACCAGTTCATCAGATTCAT |

**Table S1.** Primers used for qRT–PCR

|  |  |  |  |
| --- | --- | --- | --- |
| **SN-loaded hydrogel** | **power law index (n)** | **consistency index (k)** | **correlation efficient** |
| **1% GelMA-SN** | **0.25 ± 0.02** | **24 ± 2.89** | **0.992** |
| **2% GelMA-SN** | **0.22 ± 0.03** | **57 ± 4.33** | **0.990** |

**Table S2.** The power law index (n), consistency index (k) and the correlation coefficient (Corr. Coeff) values of 1% GelMA-SN and 2% GelMA-SN.