

Supporting Information

Engineered Macroporous Hydrogel Scaffolds via Pickering Emulsions Stabilized by MgO Nanoparticles Promote Bone Regeneration

Haotian Pan^{‡a,b}, Huichang Gao^{‡c}, Qingtao Li^c, Zefeng Lin^e, Qi Feng^{a,b}, Chenxi Yu^{a,b},
Xiaohua Zhang^{a,b}, Hua Dong^{a,b,d,f,g}, Dafu Chen^{*h}, Xiaodong Cao^{*a,b,d,f,g}

a. School of Materials Science and Engineering, South China University of Technology, Guangzhou 510641, P. R. China.

b. National Engineering Research Centre for Tissue Restoration and Reconstruction, Guangzhou 510006, P. R. China.

c. School of Medicine, South China University of Technology, Guangzhou 510006, P. R. China.

d. Key Laboratory of Biomedical Engineering of Guangdong Province, South China University of Technology, Guangzhou 510006, P. R. China.

e. Guangdong Key Lab of Orthopedic Technology and Implant, General Hospital of Southern Theater Command of PLA, 111 Liuhua Road, Guangzhou, 510010, P. R. China.

f. Key Laboratory of Biomedical Materials and Engineering of the Ministry of Education, South China University of Technology, Guangzhou 510006, P. R. China.

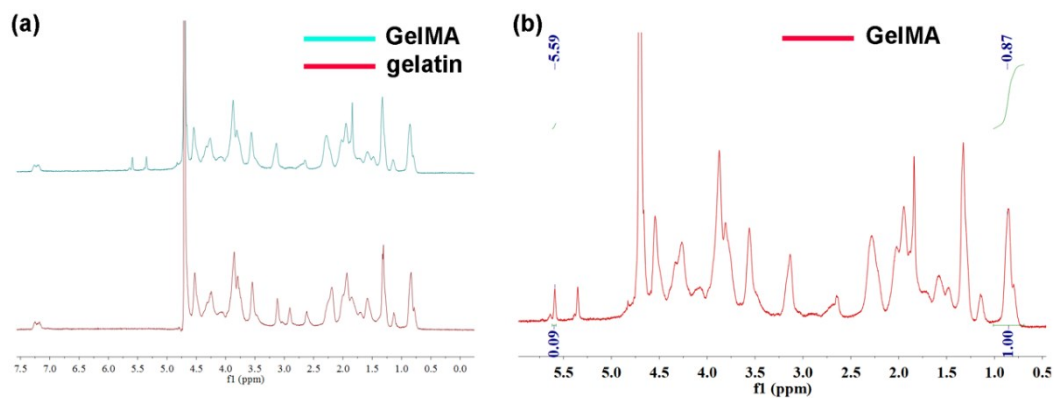
g. Innovation Center for Tissue Restoration and Reconstruction, South China University of Technology, Guangzhou 510006, P. R. China.

h. Laboratory of Bone Tissue Engineering, Beijing Laboratory of Biomedical Materials, Beijing Research Institute of Orthopaedics and Traumatology, Beijing JiShuiTan Hospital, Beijing, 100035, P. R. China.

‡Haotian Pan and Huichang Gao contributed equally to this work.

* Corresponding author : Dafu Chen, E-mail: chendafu@jsthospital.org

Xiaodong Cao, E-mail: caoxd@scut.edu.cn.



$$DS(\%) = 0.3836 \text{ mol} \times \frac{I_{5.59\text{ppm}}}{I_{0.87\text{ppm}}} \times \frac{100}{0.0385 \text{ mol}} = 89.67\%$$

Figure S1. (a) Representative ¹H-NMR spectra of GelMA (green) and gelatin (red). (b) ¹H-NMR spectra analysis of of GelMA (red).

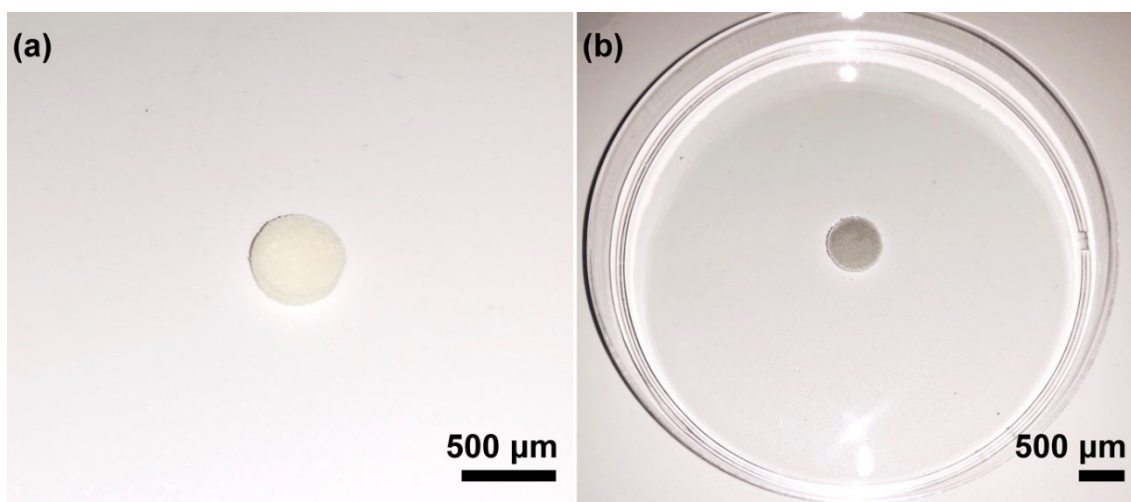


Figure S2. Optical images of the 0.5MH scaffold. (a) Dry state. (b) After swelling by deionized water.

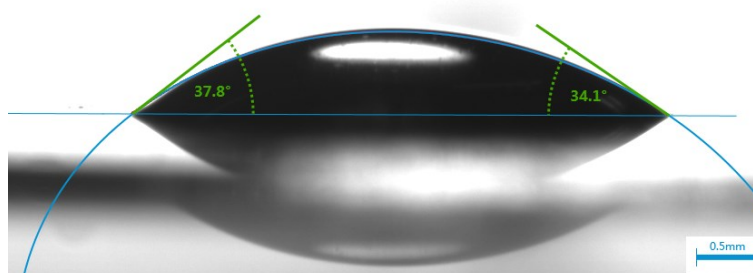


Figure S3. Contact angle of MgO NPs film coated on glass slides.

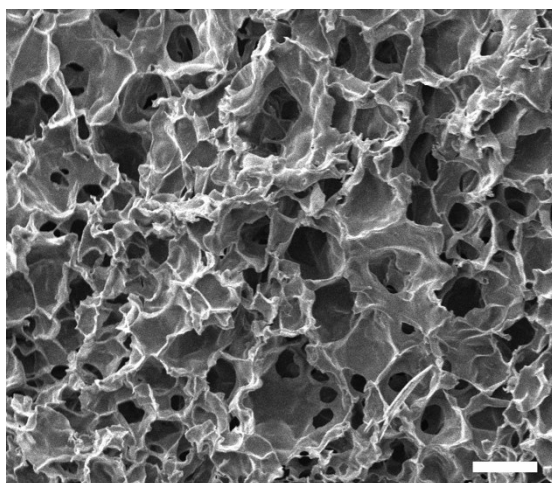


Figure S4. SEM images of the 0.5MH scaffold with shorter treatment time (1 minute) of liquid nitrogen quenching. Scale bars: 100 μm .

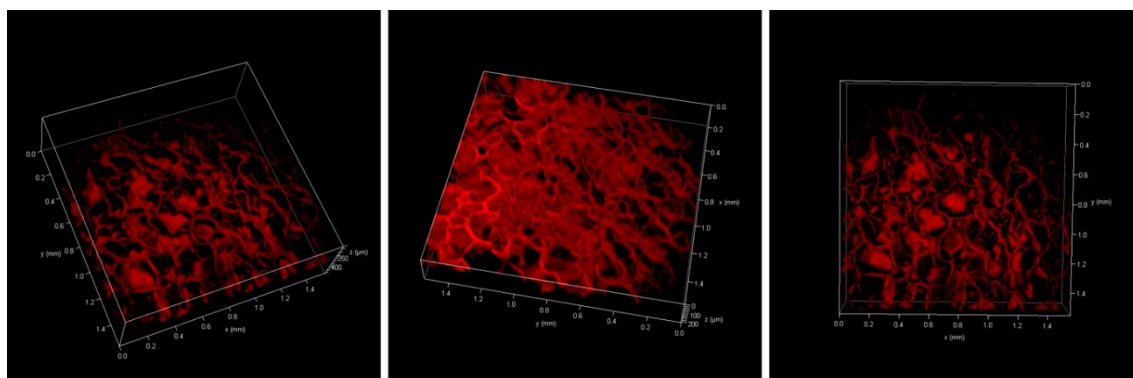


Figure S5. CLSM images of the 0.3MH scaffold stained by Rhodamine B.

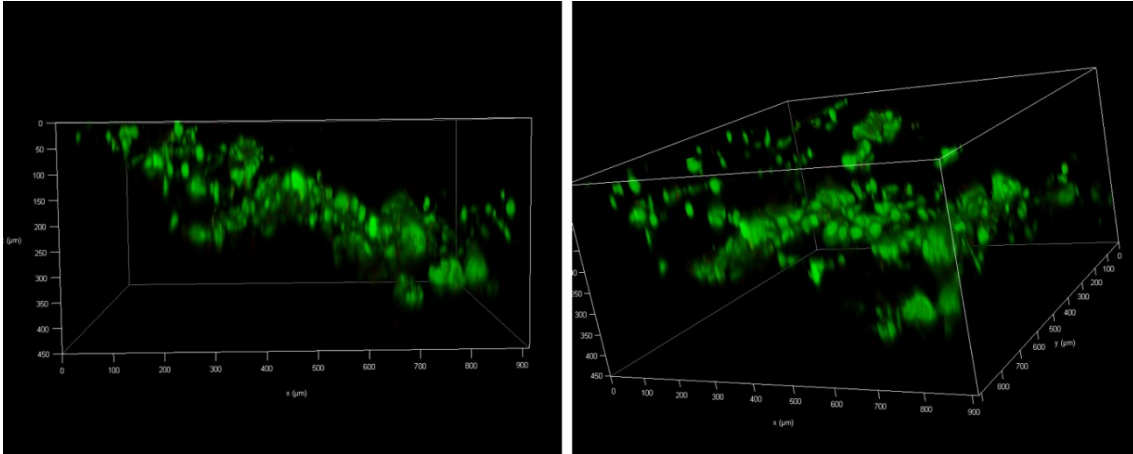


Figure S6. CLSM images of mBMSCs cultured on the 0.5MH scaffold for 7 days.

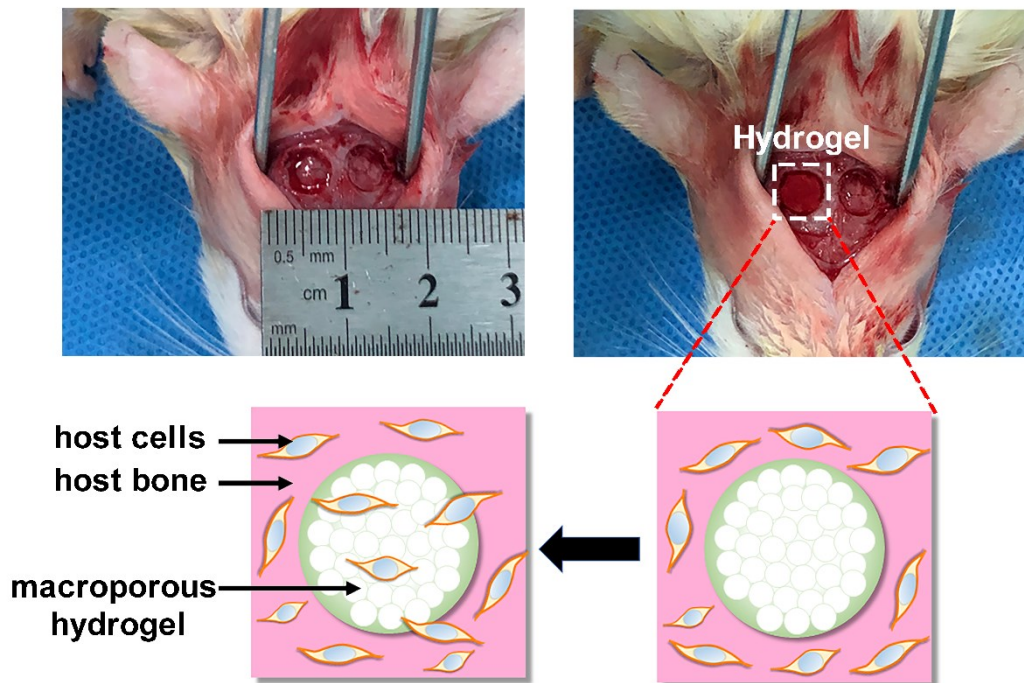


Figure S7. Schematic illustration of the infiltration and migration of the host cells in GelMA-co-PEG macroporous nanocomposite hydrogels.