Supplementary Material (ESI) for Green Chemistry

Green synthesis of chitosan-based nanofibers and their applications

*Lei Qian and Haifei Zhang**

Department of Chemistry, University of Liverpool, Crown Street, Liverpool, United Kingdom L69 7ZD. Email: zhanghf@liv.ac.uk

Supporting information

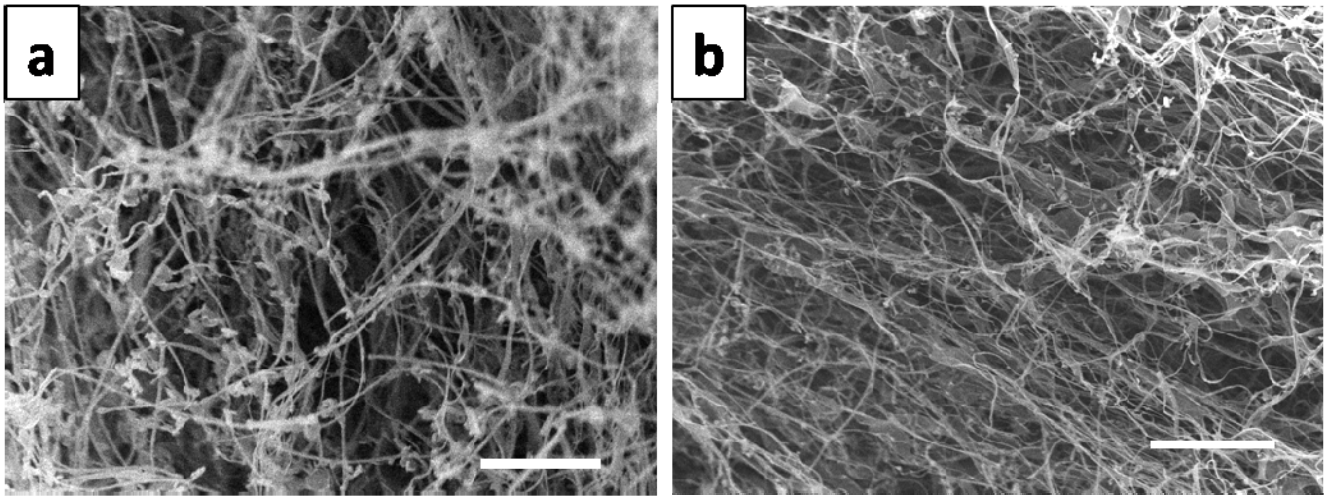

Figure S1. SEM images of chitosan nanofibers from freeze-drying chitosan solutions with different molecular weight. (a) Low molecular weight at the concentration of 0.02 wt % chitosan, scale bar 10 μm. b) High molecular weight at the concentration of 0.02 wt %, scale bar 30 μm.

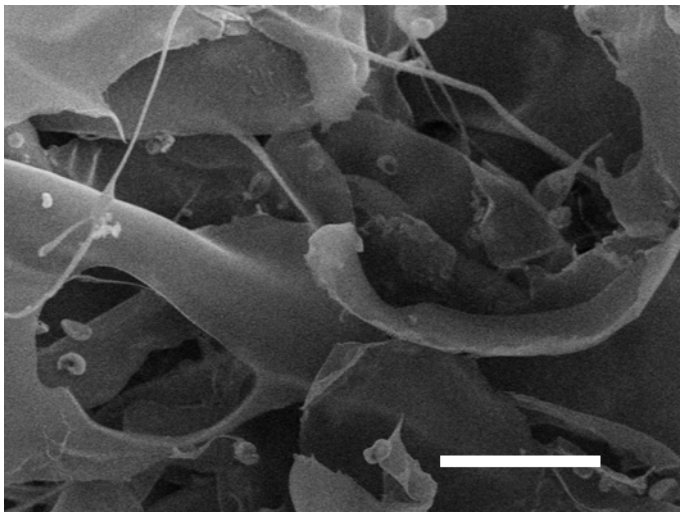

Figure S2. The random macroporous structure was obtained by freezing a 0.1 wt% chitosan (MMw) solution in the freezer at – 20 ^{o}C and then freeze-drying, scale bar 50 μm.

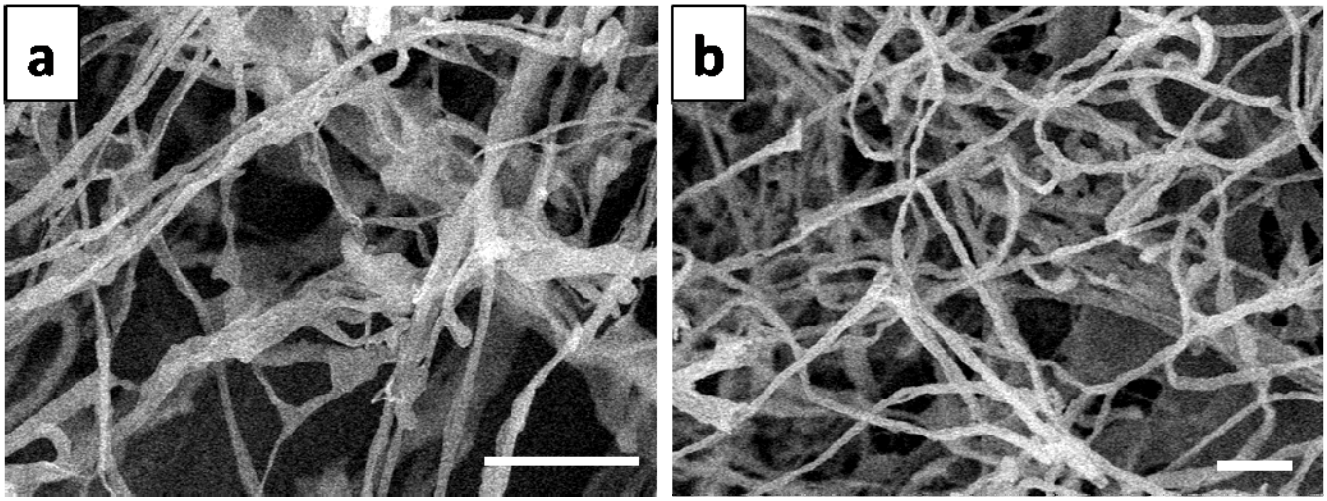

Figure S3 Chitosan/PVA blend nanofibers prepared by freeze-drying the 0.1 wt% chitosan (MMw)/0.1 wt% PVA mixture solutions at the volume ratio 9:1 (a) and 3:7 (b). Scale bar 5 μm.

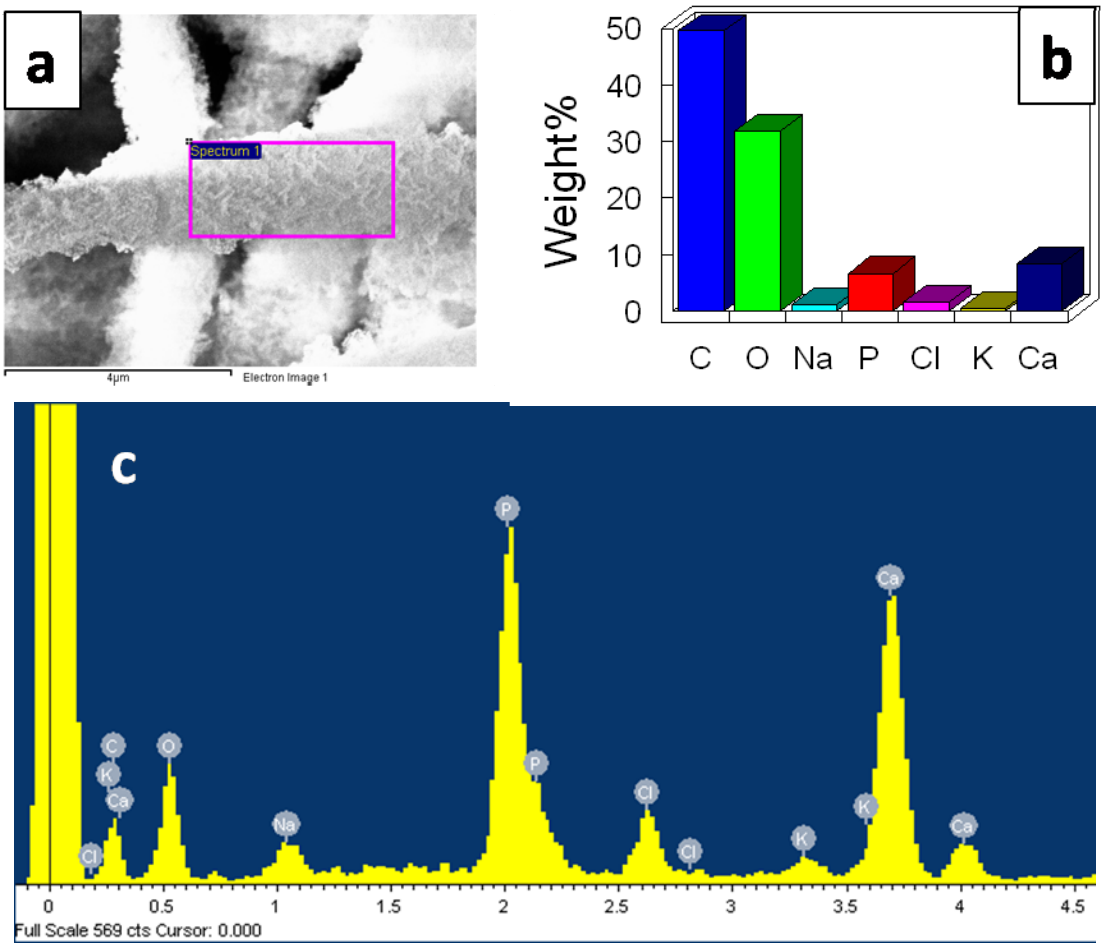

Figure S4. Energy dispersive x-ray (EDX) microanalysis of chitosan/calcium phosphate. (a) The SEM image indicates the fibrous structure and the site for EDX analysis. (b) The chart illustrates the weight percentage of the elements contained in the composite fibers. (c) The EDX spectrum shows the energy levels of x-rays (unit, keV) being received by the EDX detector. The higher a peak in a spectrum, the more concentrated the element is in the specimen. Based on the EDX analysis, the Ca/P molar ratio in the composite fibers is about 0.97.

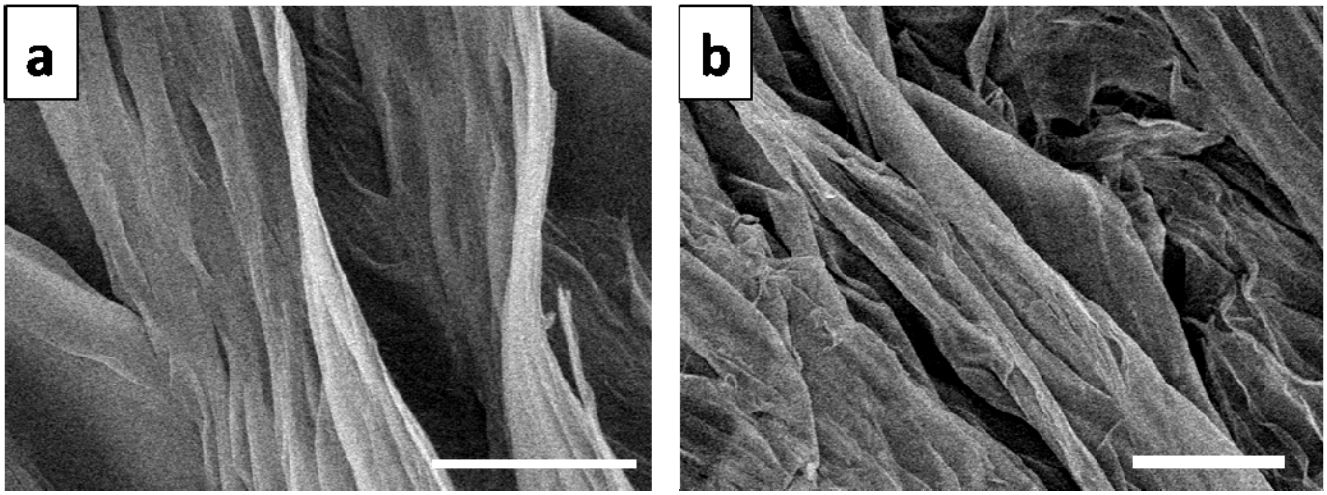

Figure S5. SEM images of chitosan/RhB materials prepared from freeze-drying 1.80 μg RhB/ml 0.5 wt % chitosan solution (a) and 3.60 μg RhB/ml 1 wt % chitosan solution (b). Scale bar (a) 10 μm and (b) 50 μm.