Supplemental information

Characterization and cytotoxicity study of rectorite and carbon nanotubes incorporated nanofibrous mats

Yuan Lu a,b,1, Xueyong Li c,1, Xiaodong Zhou d, Qun Wang e, Xiaowen Shi b, Yumin Du b, Hongbing Deng b,* and Linbin Jiang a,*

a School of Chemistry and Chemical Engineering, Guangxi Key Laboratory of Petrochemical Resource Processing and Process Intensification Technology, Guangxi University, Nanning 530004, China

b School of Resource and Environmental Science, Wuhan University, Wuhan 430079, China

c Department of Plastic Surgery, Tangdu Hospital, Fourth Military Medical University, Xi’an 710038, China

d College of Chemistry and Molecular Sciences, Wuhan University, Wuhan 430072, China

e Department of Chemical and Biological Engineering and Department of Civil, Construction and Environmental Engineering, Iowa State University, Iowa 50011, USA

*Corresponding authors. Tel.: +86 27 68778501; Fax: +86 27 68778501

Tel.: +86 771 3239203; Fax: +86 771 3233718.

E-mail addresses: hbdeng@whu.edu.cn; alphabeita@yahoo.com (H. Deng)

jianglinbin@126.com (L. Jiang)

1 Co-first author with the same contribution to this work
Figure of contents

1 Title page
2 Figure of contents
3 EDX spectroscopy analysis
4 XPS narrow scans analysis
5 References
6 Supplemental Figure S1
7 Supplemental Figure S2
**EDX spectroscopy of the composite nanofibrous mats:** In Fig. S1, EDX analysis was also applied to determine the elements in the composites. As expected, the characteristic elements of REC were Si and Al, which were detected in the EDX spectrum of PLA/REC and PLA/MWCNTs/REC nanofibrous mats. And the composite nanofibrous mats containing MWCNTs showed higher weight percentage of carbon element than that in PLA/REC nanofibrous mats.

**XPS narrow scans of Si and Al in the composite nanofibrous mats:** In Fig. S2, the narrow scans were analyzed using the free software XPSPEAK Fit. In the Si$_{2p}$ scan of the REC contained mats, the peaks at 102.53 and 101.4 eV were corresponding to the Si 2$p_{3/2}$ and Si 2$p_{1/2}$ of REC. When MWCNTs were added, the Si$_{2p}$ peaks were shifted to lower binding energy (BE) of 102.4 and 101.35 eV, indicating the valence electron density of silicon nuclei was increased. And the similar peak shift appeared in the Al$_{2s}$ scan, the peak in the PLA mats containing REC at 117.8 eV belong to the Al-O of REC, was shifted to the lower value of 116.5 eV in the PLA/MWCNTs/REC mats. In the curve-fitted C$_{1s}$ core-level spectrum of the PLA, the main peak at 284.87 eV assigned to the C-H of PLA, the peak with a higher BE of 286.7 eV attributed to the C-O and C=O species, and the main peak at 288.84 eV stood for the ester functional group of PLA. When the MWCNTs were incorporated into the PLA mats, the BE of the C$_{1s}$ had not changed.
Supplemental References:


Supplemental Figure S1

TEM images of the pristine MWCNTs and REC, and EDX spectroscopy of the composite nanofibrous mats. (a) PLA/REC, (b) PLA/MWCNTs and (c) PLA/MWCNTs/REC.
Supplemental Figure S2: XPS narrow scans of C$_{1s}$, Si$_{2p}$ and Al$_{2s}$ in the nanofibrous mats.