

Supplementary materials for

**Enhanced osteogenic and selective antibacterial activities on micro-
/nano-structured carbon fiber reinforced polyetheretherketone**

Tao Lu, Jian Li, Shi Qian, Huiliang Cao, Congqin Ning, Xuanyong Liu*

State Key Laboratory of High Performance Ceramics and Superfine Microstructure,
Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai 200050,
China

***Corresponding Authors:**

Prof. Xuanyong Liu

State Key Laboratory of High Performance Ceramics and Superfine Microstructure,
Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai 200050,
China.

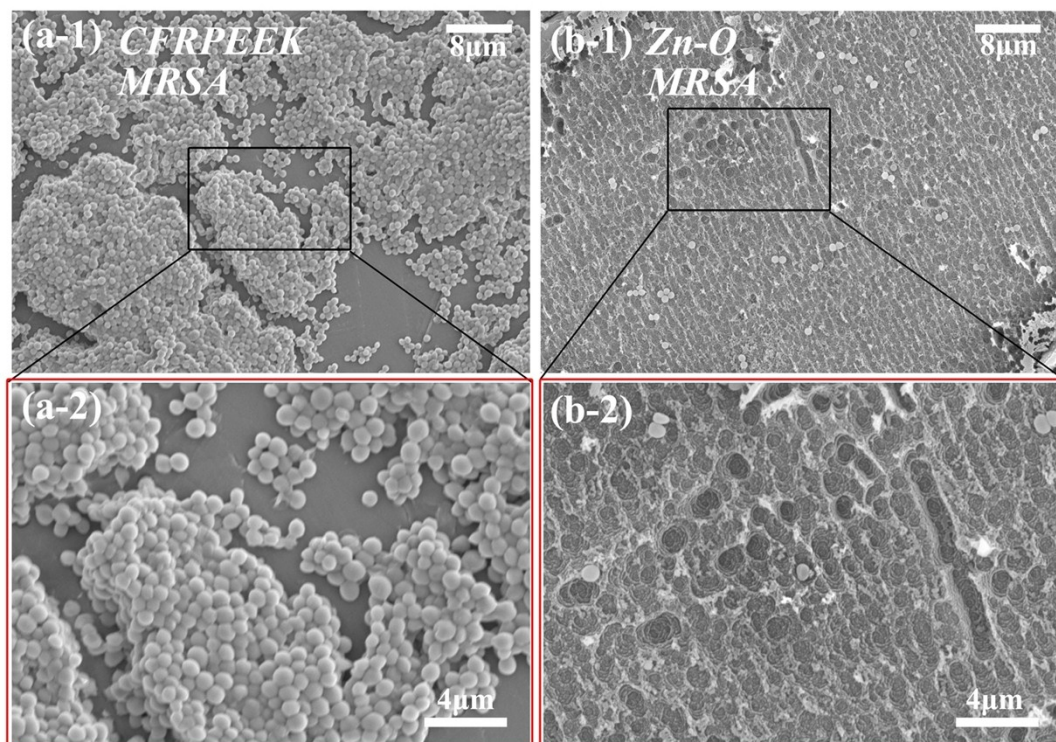
E-mail: xyliu@mail.sic.ac.cn

Tel.: +86 21 52412409.

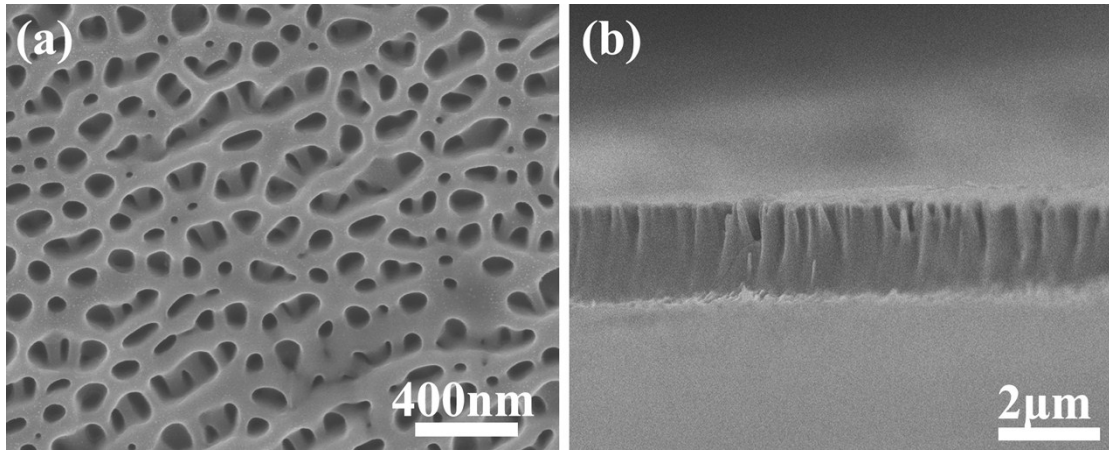
Fax: +86 21 52412409.

Supplemental Content:

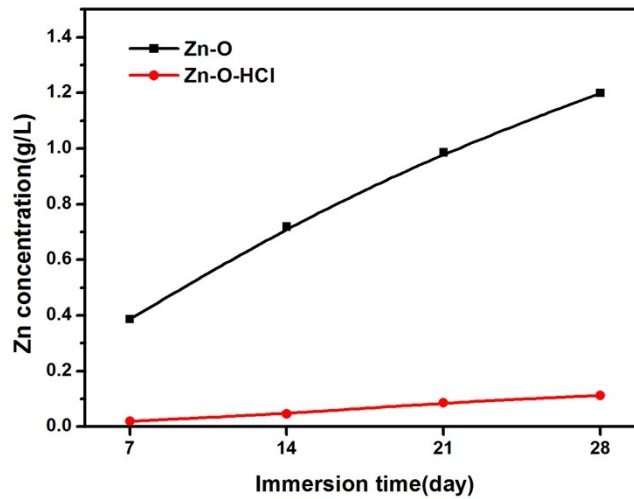
Captions and descriptions of the supplemental figures.



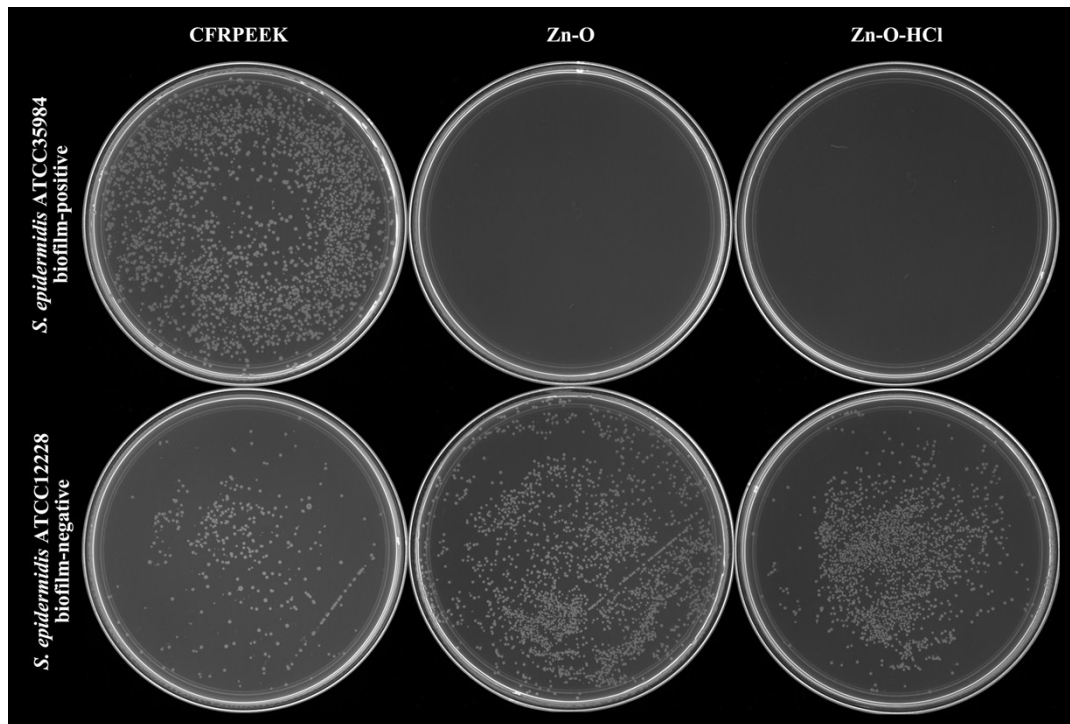
Supplementary Fig. S1. SEM morphology of the *MRSA* bacterial cells on the CFRPEEK (a-1 and a-2) and Zn-O (b-1 and b-2) samples after culturing for 24 h.



Supplementary Fig. S2. SEM morphology of the surface (a) and cross-sectional (b) morphology of single Zn implanted CFRPEEK sample.



Supplementary Fig. S3. Zn concentrations of the PBS buffer solution with immersion of the Zn-O and Zn-O-HCl samples for 4 weeks



Supplementary Fig. S4. Re-cultivated bacterial colonies on agar: biofilm-positive *S. epidermidis* (ATCC 35984) and biofilm-negative *S. epidermidis* (ATCC 12228) colonies are previously dissociated from CFRPEEK, Zn-O and Zn-O-HCl samples. The *S. epidermidis* (ATCC 35984) and *S. epidermidis* (ATCC 12228) bacteria concentration seeded on the samples is 10^7 cfu/mL.