

## Supporting Information

# Dressing blood-contacting materials by tough hydrogel coating with embedded antimicrobial peptides for robust anti-bacterial and anti-thrombus properties

Kunpeng Liu<sup>a#</sup>, Fanjun Zhang<sup>a#</sup>, Yuan Wei<sup>a</sup>, Qinsheng Hu<sup>b</sup>, Qingfeng Luo<sup>c</sup>, Chong Chen<sup>d</sup>, Jingyu Wang<sup>e</sup>, Li Yang<sup>a\*</sup>, Rifang Luo<sup>a\*</sup>, Yunbing Wang<sup>a</sup>

a National Engineering Research Center for Biomaterials, Sichuan University, Chengdu 610064, China

b West China Hospital, Sichuan University, Chengdu 610064, China

c Center for medical device evaluation. MMPA, Beijing, 100081 China

d Laboratory of Biomechanical Engineering, Department of Applied Mechanics, College of Architecture & Environment, Sichuan University, Chengdu 610064, China

e First Affiliated Hospital of Xi'an Jiaotong University, Xi'an 710061, China

Corresponding author E-mail: [yanglisc@scu.edu.cn](mailto:yanglisc@scu.edu.cn), (L. Yang); [lrifang@scu.edu.cn](mailto:lrifang@scu.edu.cn), (R. Luo).

Contents

Figure S1. Microphotograph of sectional view of hydrogel coating.....S-3

Figure S2. SEM images of the cross-section of the hydrogel coating.....S-3

Figure S3. Water absorption ability of PVC and hydrogel coated samples.....S-4

Figure S4. Scratching test of hydrogel coating by steel tweezer.....S-4

Figure S5. FTIR spectra of samples.....S-5

Figure S6. Map scanning of different hydrogel coating at section view by EDS.....S-5

Figure S7. Cell viability of HUVECs.....S-6

Figure S8. E. coli and S. aureus colonies on agar plates from the samples.....S-6

Table S1. XPS datas of the coatings.....S-7

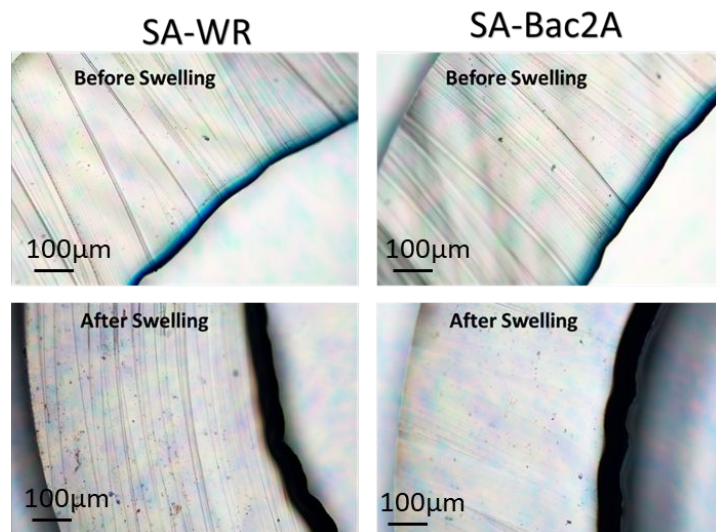


Figure S1. Microphotograph of sectional view of toluidine blue stained hydrogel coating, before and after swelling in water.

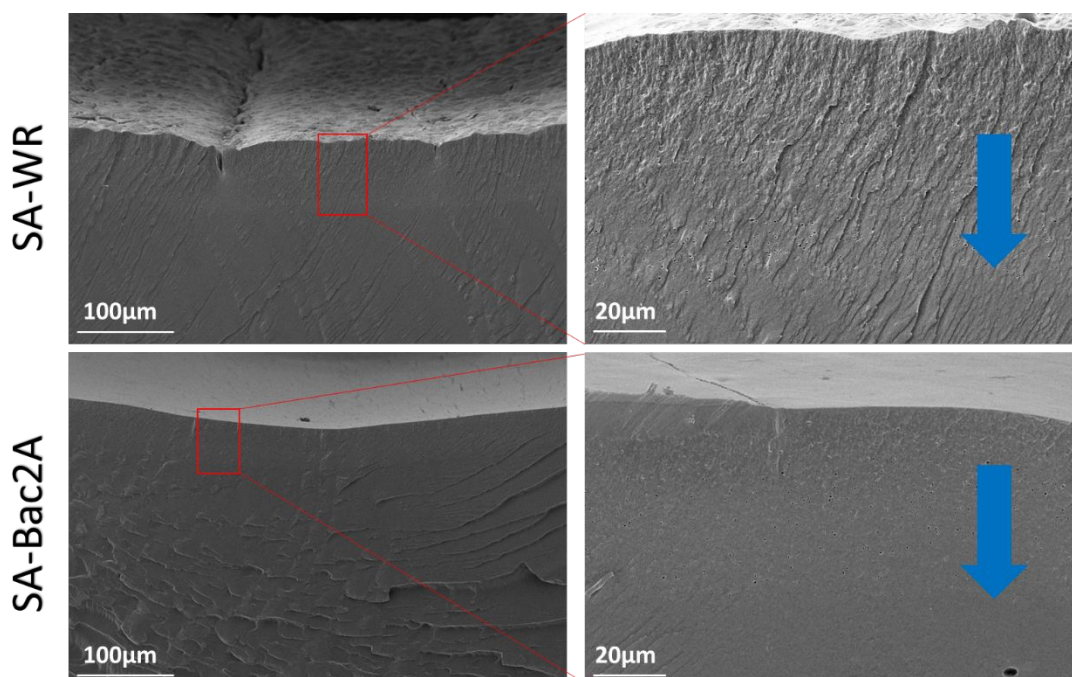


Figure S2. SEM images of the cross-section of the hydrogel coating with different magnification, the blue arrow indicating the interface between hydrogel coating and substrate.

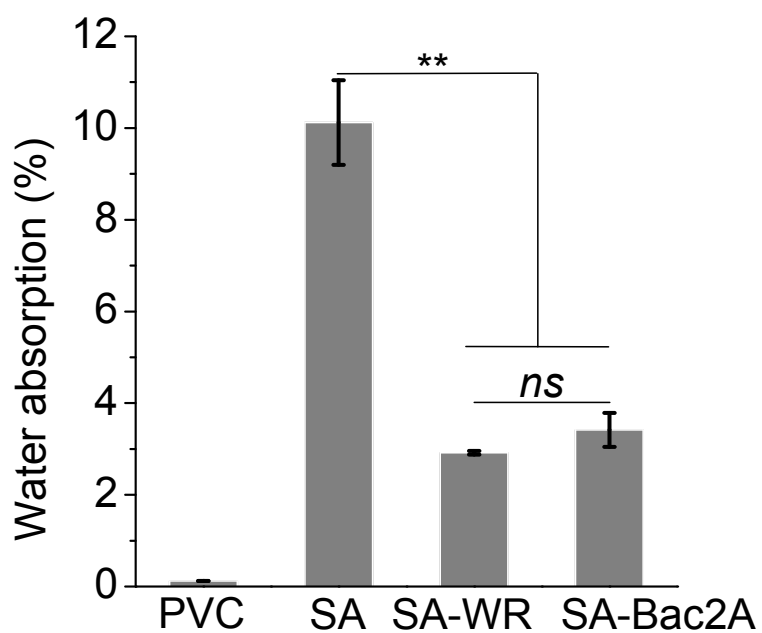


Figure S3. Water absorption ability of PVC and hydrogel coated samples.

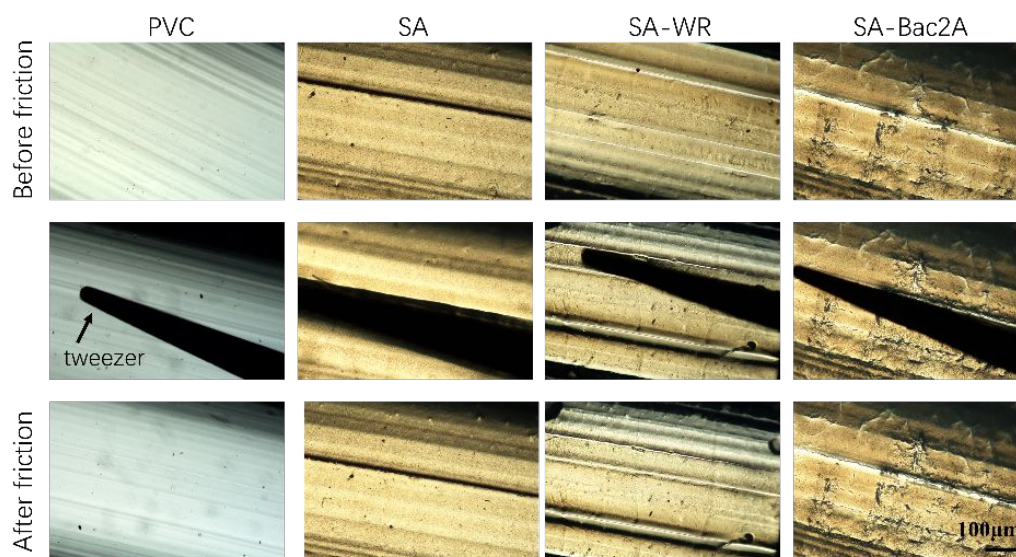


Figure S4. Scratching test of hydrogel coating by steel tweezers. This test was done to illustrate mechanical ability to resist friction.

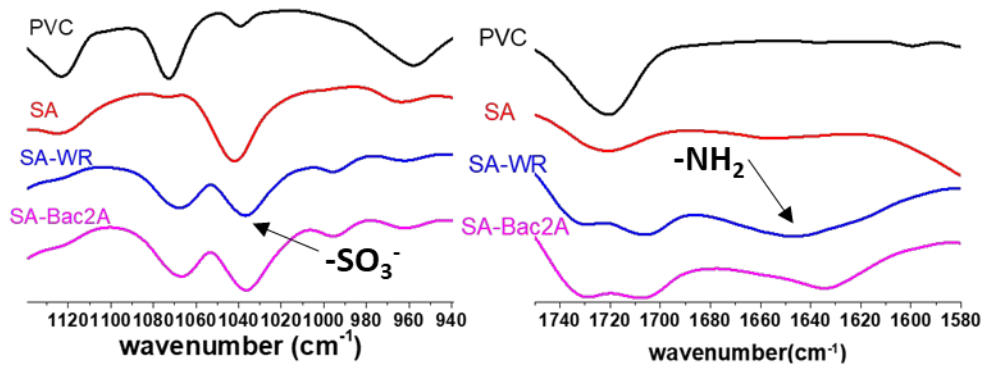


Figure S5. FTIR spectra of samples

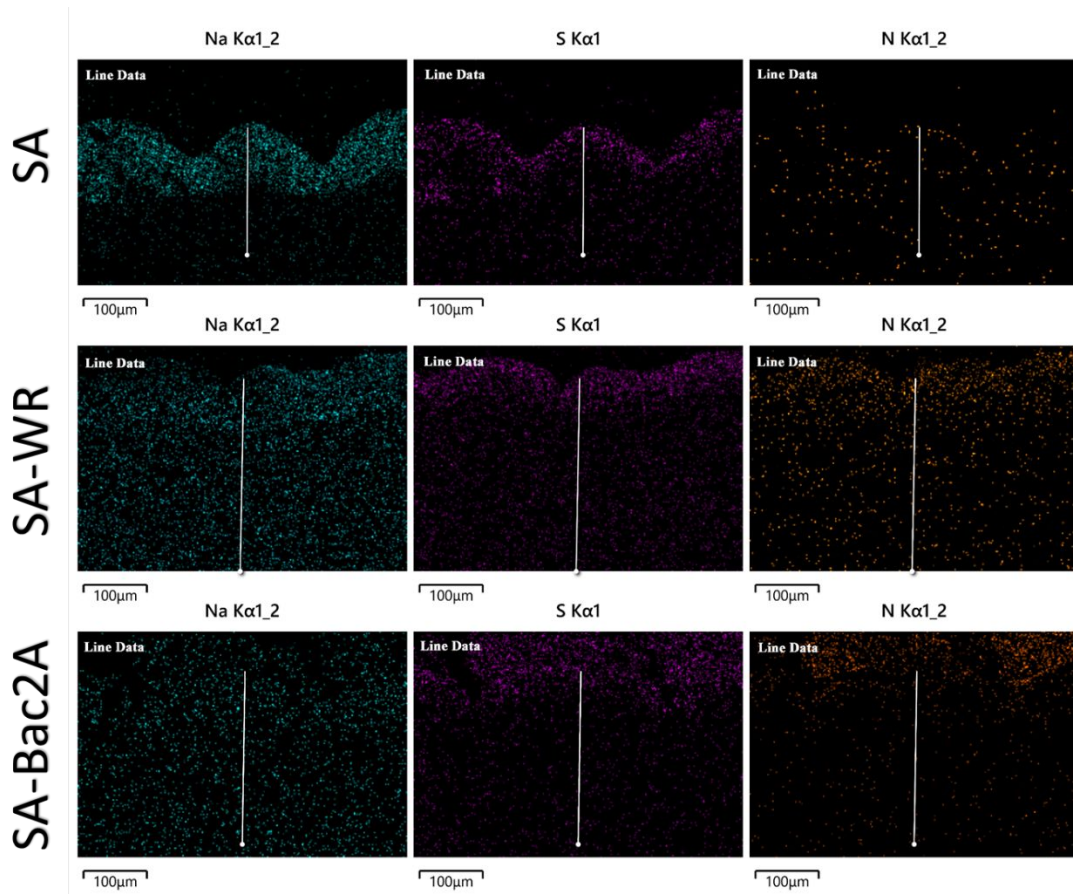


Figure S6. Map scanning of different hydrogel coating at section view by EDS.

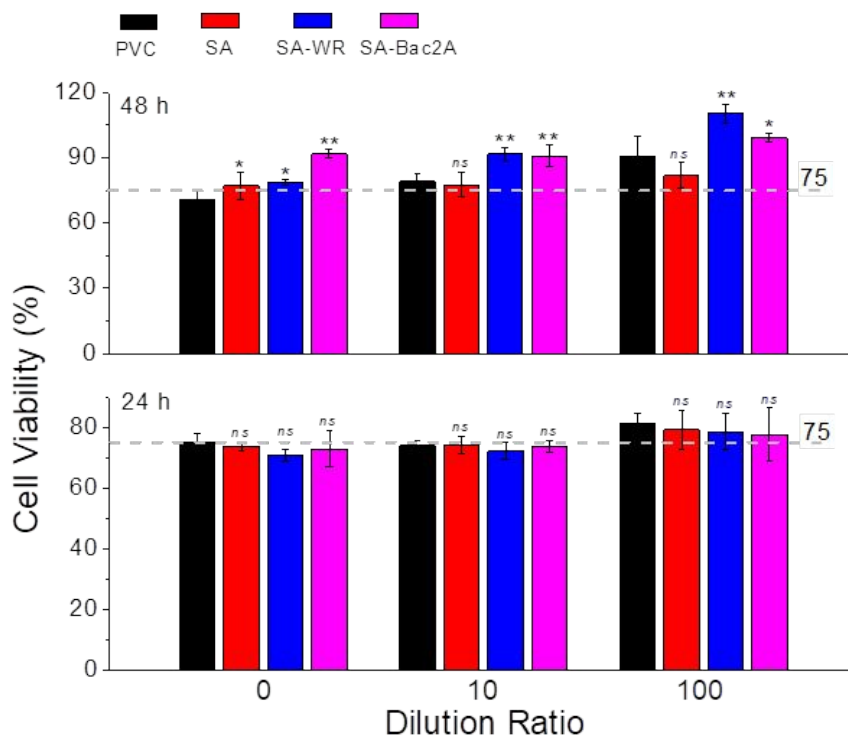


Figure S7. Cell viability of HUVECs after 1 day and 2 days of culturing at different dilution ratios of sample extracts, the cell viability cultured in tissue-culture polystyrene (TCPS) with the fresh culture medium is defined as 100%. (\*  $p < 0.05$ , \*\*  $p < 0.01$ ); ns = no significant difference ( $p > 0.05$ ), (n = 6, mean  $\pm$  SD).

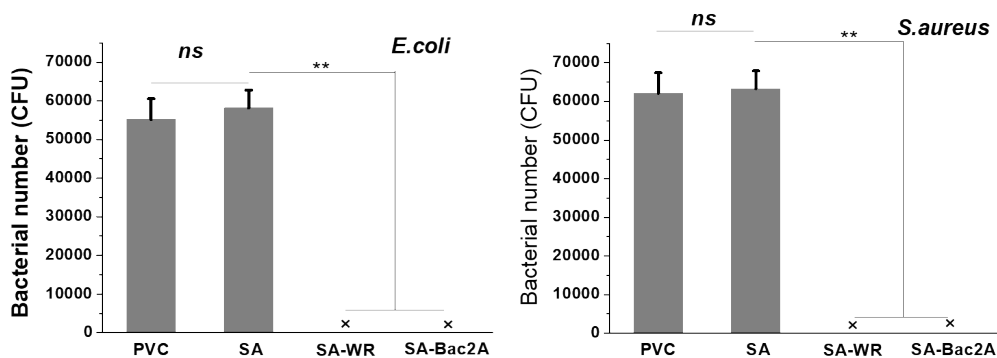


Figure S8. *E. coli* and *S. aureus* colonies on agar plates from the PVC, SA, SA-WR, and SA-Bac2A, all samples were stored under dry condition for four weeks. (\*\*  $p < 0.01$ ); ns = no significant difference ( $p > 0.05$ ), x indicating no live bacteria. (n = 6, mean values  $\pm$  SD).

Table S1. XPS datas of the coatings

Samples	C (%)	N (%)	O (%)	S (%)
PVC	94.20	1.36	4.31	0.13
SA	71.43	1.62	25.91	1.03
SA-WR	67.10	11.49	20.42	0.98
SA-Bac2A	64.27	11.11	22.90	1.73