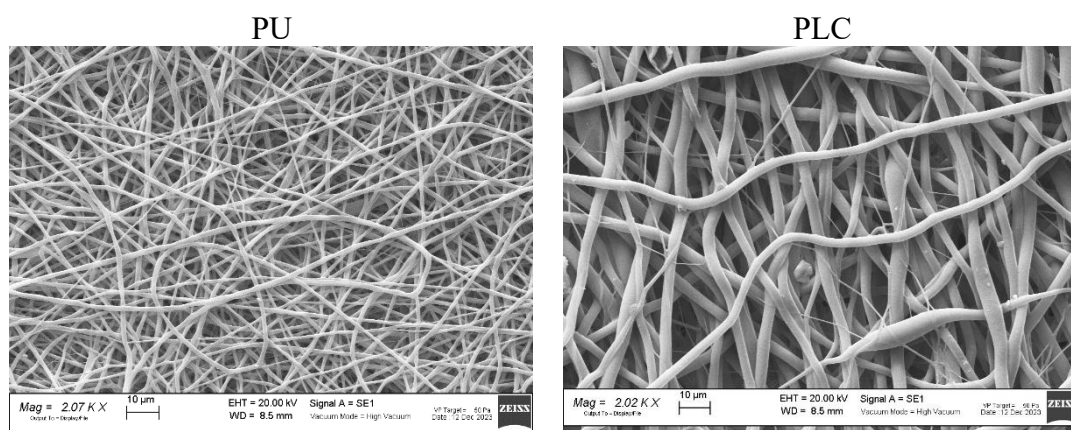


## Peptide-Functionalized Biomedical Polymers that Support Cell Adhesion and Prevent Bacterial Attachment

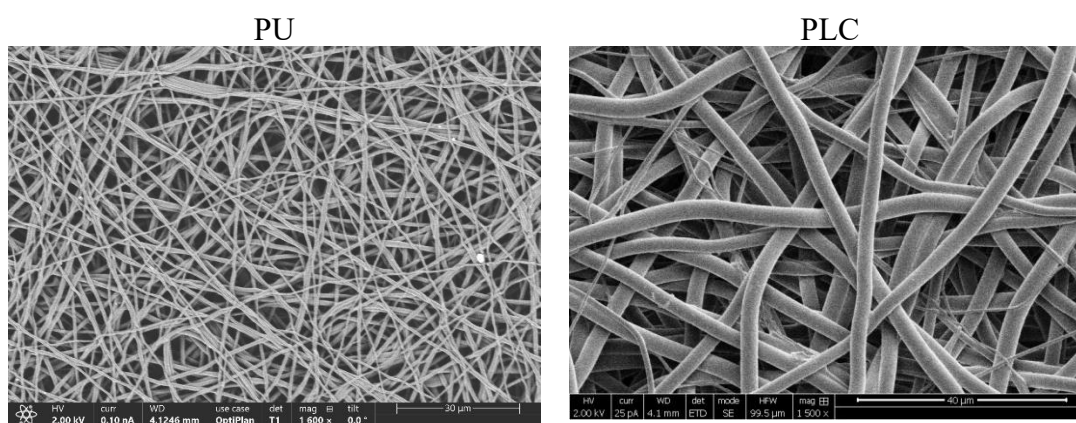
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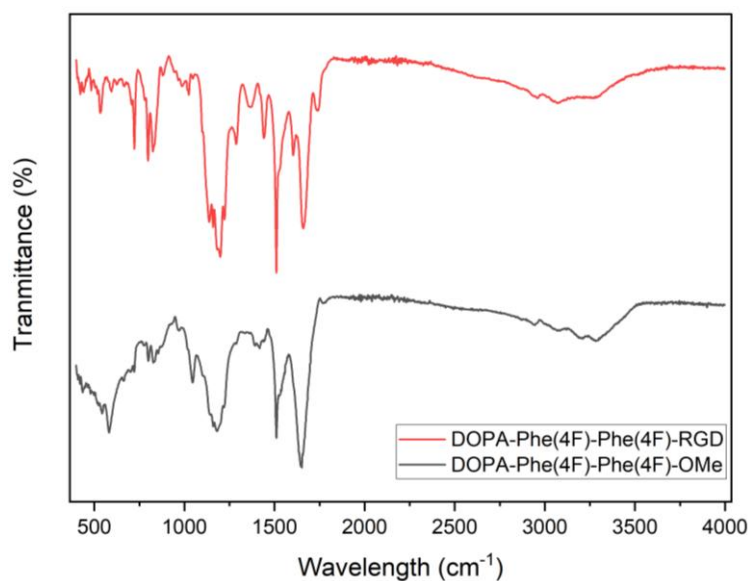
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**Fig S1.** Representative SEM images of electrospun PU and PLC scaffolds captured at 2000× magnification using a Zeiss EVO MA10 scanning electron microscope (Carl Zeiss, Germany).



**Fig S2.** Representative SEM images of PU and PLC scaffolds after functionalization with HP, acquired at 1500× magnification.



**Fig S3.** FTIR spectra of peptides: *DOPA-Phe(4F)-Phe(4F)-OMe* (TP, in black) and *NH<sub>2</sub>-DOPA-Phe(4F)-Phe(4F)-RGD-CONH<sub>2</sub>* (HP, in red). Both peptides show characteristic amide I ( $\sim 1670\text{ cm}^{-1}$ , C=O stretching) and amide II ( $\sim 1510\text{ cm}^{-1}$ , N-H bending and C-N stretching) bands, as well as a peak at  $\sim 1200\text{ cm}^{-1}$  corresponding to C-F bond of fluorinated aromatic rings (4F-Phe). The RGD-containing peptide shows additional features, including shoulders at  $\sim 1600\text{ cm}^{-1}$  (Asp COO<sup>-</sup> asymmetric stretch and Arg guanidinium bending) and  $\sim 1730\text{ cm}^{-1}$  (protonated carboxylic acid C=O stretch), along with a distinct peak at  $\sim 1440\text{ cm}^{-1}$  (Asp COO<sup>-</sup> symmetric stretch), confirming the presence of the RGD moiety.

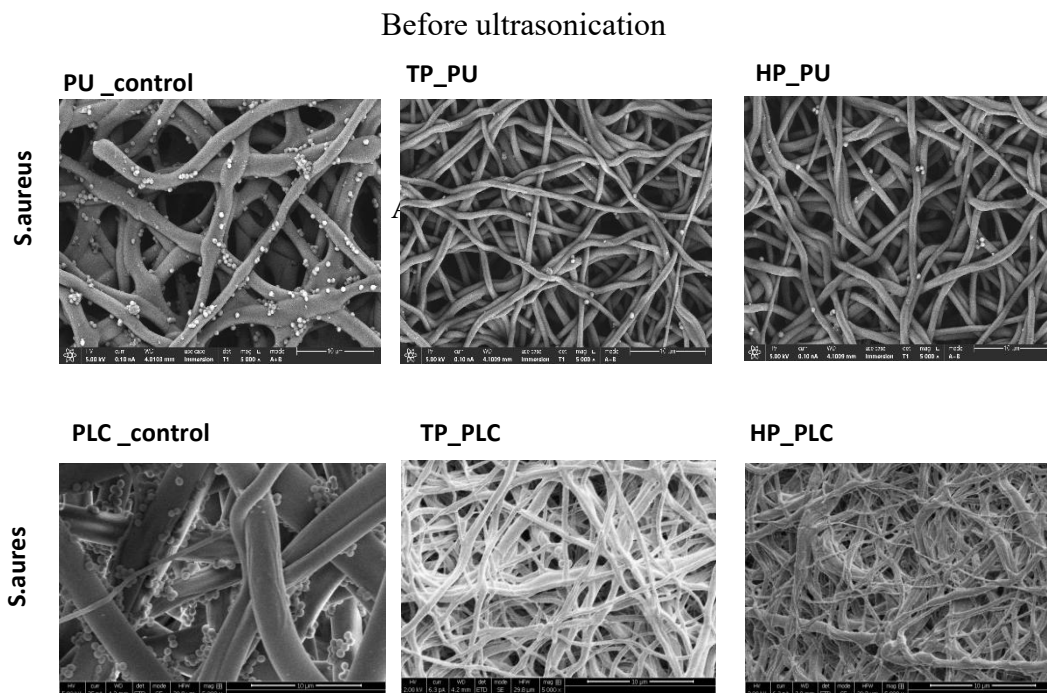
**Table S1.** Fluorine and oxygen atomic concentrations and corresponding F/O ratios for TP- and HP-functionalized PU and PLC scaffolds before and after 8 weeks of immersion in PBS, as determined by XPS. Values reflect measurements on different specimens at each time point due to the destructive nature of XPS. Nitrogen was not measured for PLC samples.

Sample	F 1s [at%]	O 1s [at%]	F/O ratio
	(initial → 8 wks)	(initial → 8 wks)	(initial → 8 wks)
TP_PLC	1.85 → 1.66	16.01 → 24.07	0.115 → 0.069
HP_PLC	0.55 → 0.18	15.17 → 26.35	0.036 → 0.007
TP_PU	1.22 → 2.33	16.16 → 19.03	0.076 → 0.123
HP_PU	1.71 → 4.26	14.70 → 23.15	0.116 → 0.184

The Nitrogen quantification was not performed for PLC samples due to an oversight in acquisition settings. However, fluorine indication from the fluorinated phenylalanine moieties in both peptides—served as a reliable marker for peptide presence.

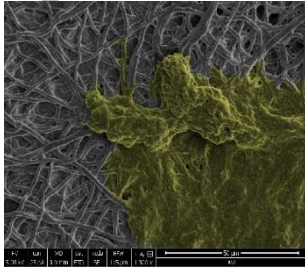
**Table S2.** Atomic concentration of Fluorine present on the surface before and after treatment of proteinase K at a high concentration of 1mg/ml

Peptide on the surface of PU scaffold	Before treatment (%)	After 4 hrs. of treatment (%)
Tripeptide	3.41	0.56
Hexapeptide	2	0.32

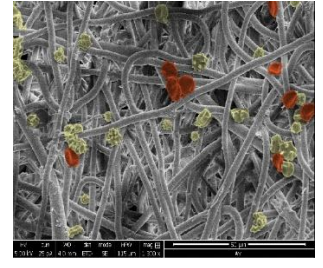
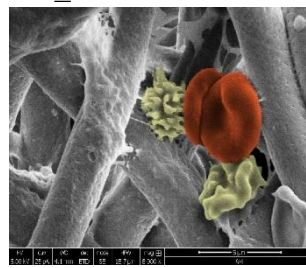


**Fig S4.** SEM analysis of *S.aureus* adhesion onto the polymer surfaces of PU and PLC and respective peptide-coated surface.

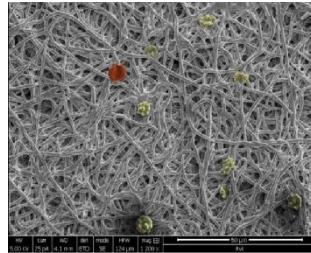
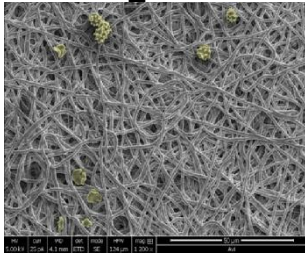
TP\_PU



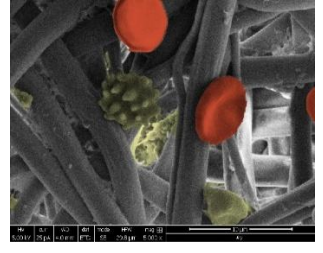
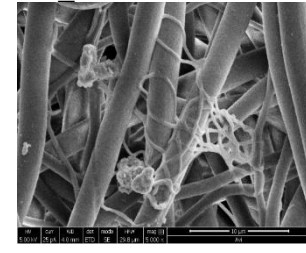
TP\_PLC



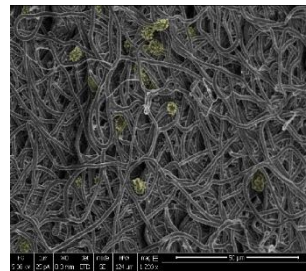
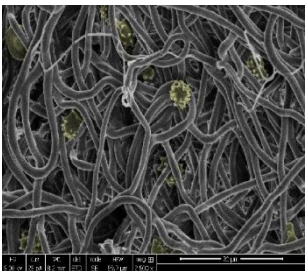
HP\_PU



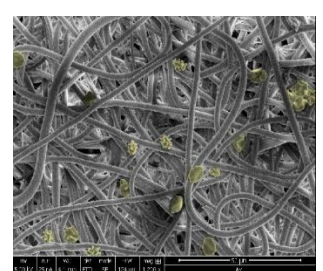
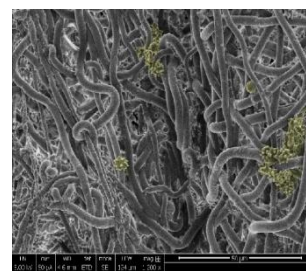
HP\_PLC



PU\_Control



PLC\_Control



**Fig S5.** SEM analysis of platelets on the polymer surfaces of PU and PLC and the respective peptide-coated surface