

Supporting Information

Phosphorylcholine- and Cation- bearing Copolymer Coating with Superior Antibiofilm and
Antithrombotic Properties for Blood-contacting Devices

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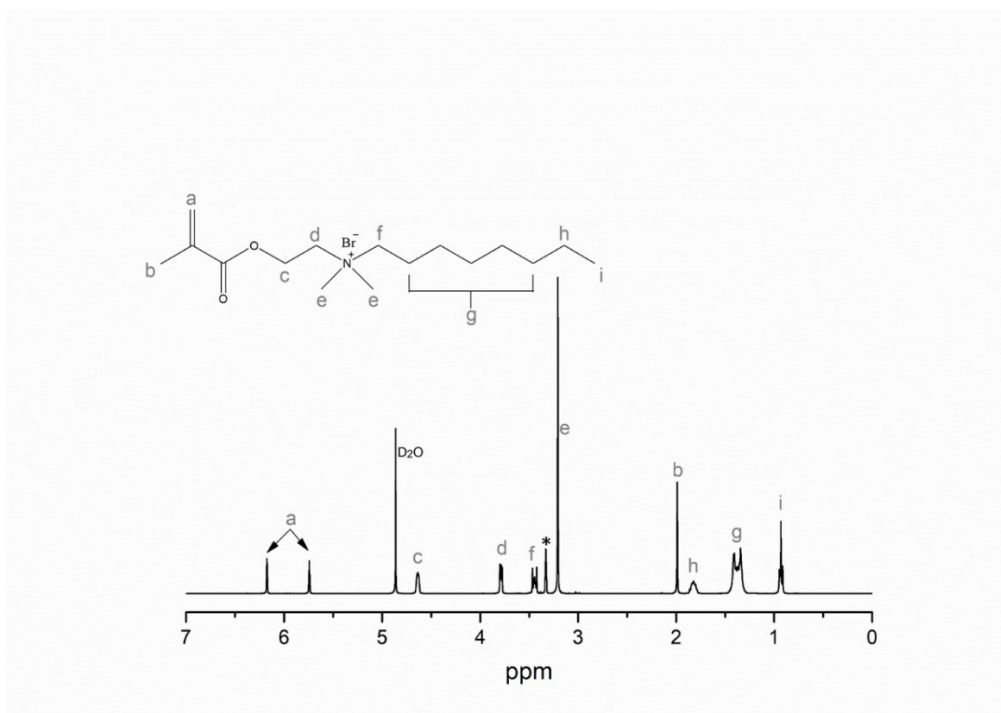


Figure S1. Chemical structure and ^1H -NMR spectra of QA monomer. *: Residual methanol.

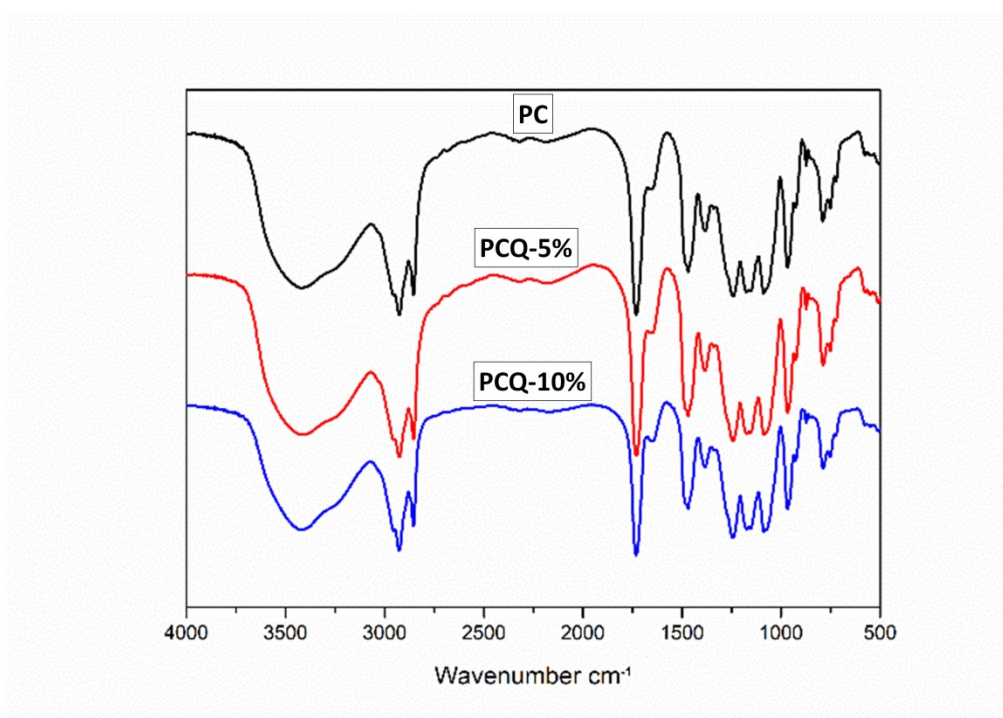


Figure S2. FTIR spectra of copolymers.

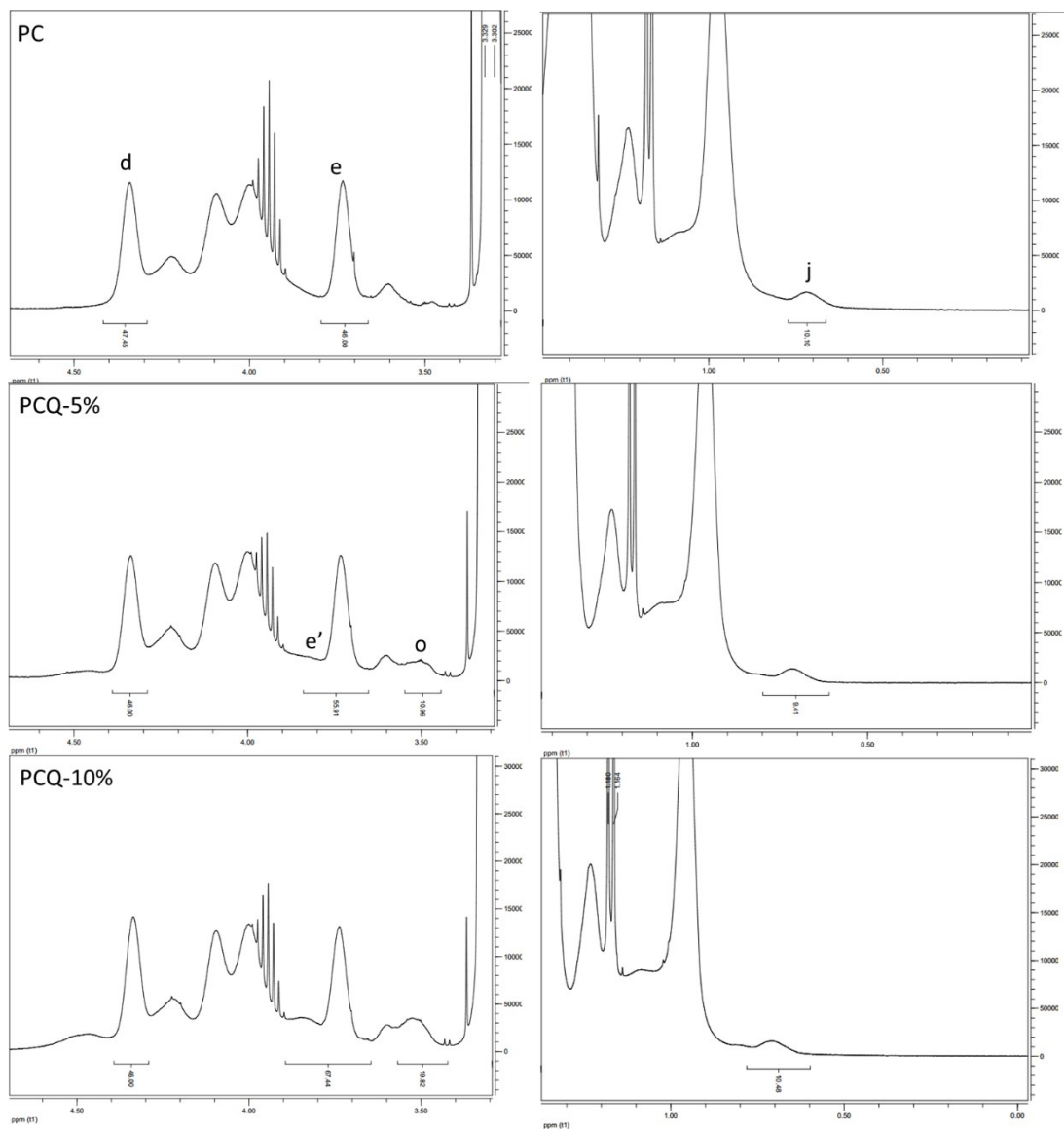


Figure S3. NMR spectra with Integral curve of characteristic peaks.

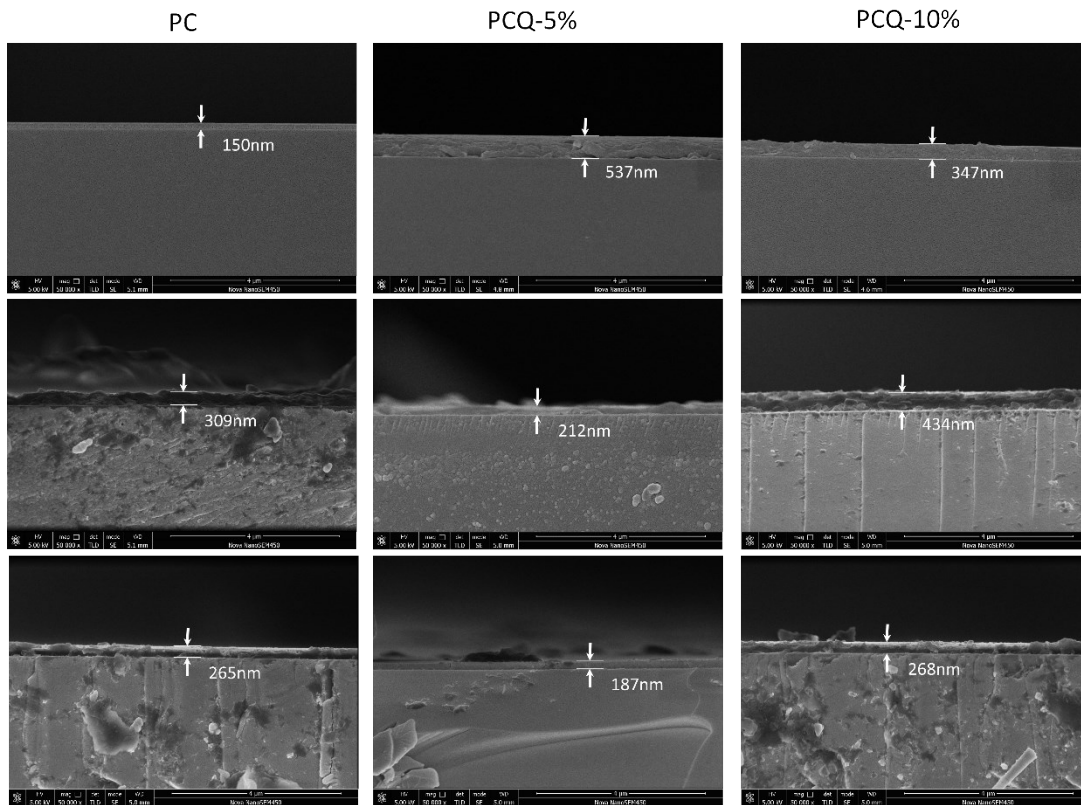


Figure S4. SEM cross-sectional images of the copolymer coatings.

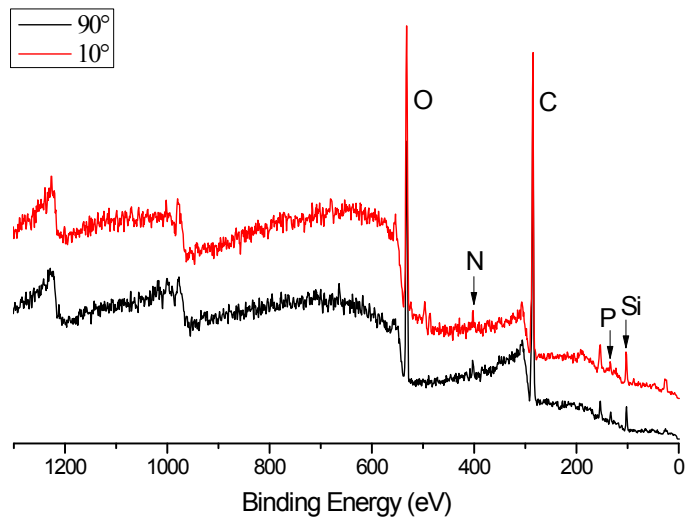


Figure S5. XPS spectra of PCQ-5% coating with different take off angel.

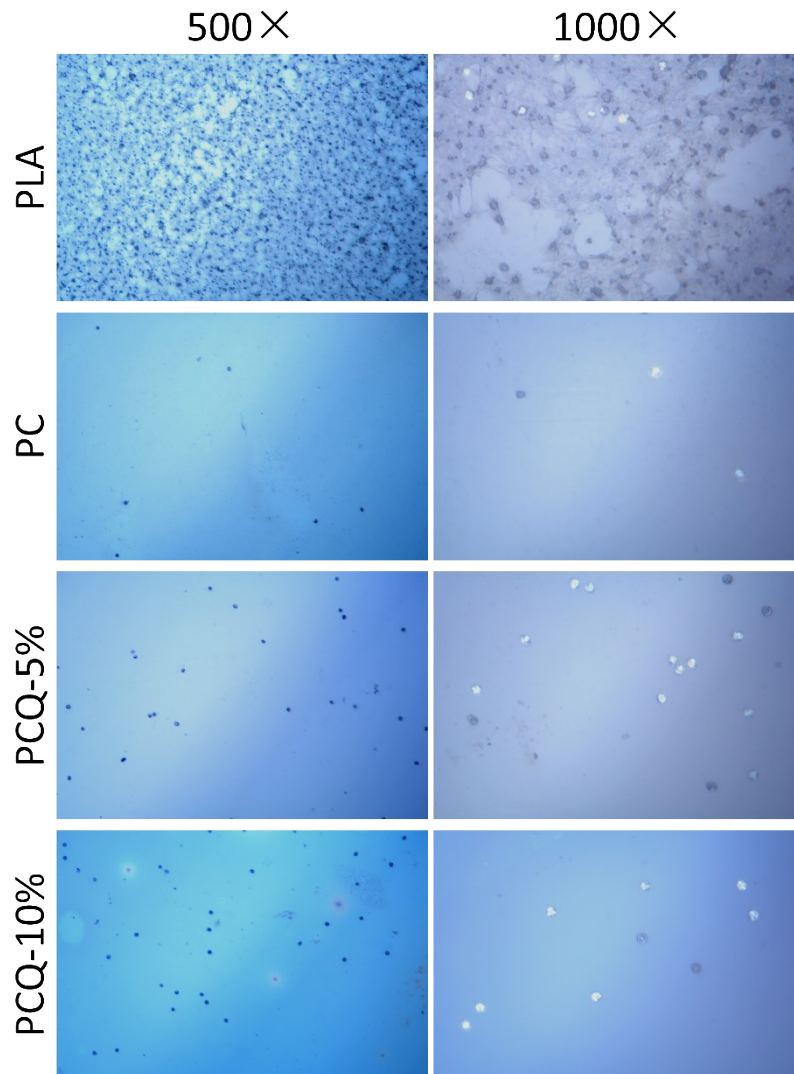


Figure S6. Optical microscope photograph of PLA surface after contact with whole blood for two hour. After two hours of whole blood testing, the PLA surface were mostly covered with activated platelet, red blood cells and even thrombus, while PC copolymer coating shown only few red blood cells. For PCQ-5% and PCQ-10% copolymer coatings, the adherent of red cells were increased compared with PC coating mainly due to the increased the zeta potential value, but no thrombus were formed.

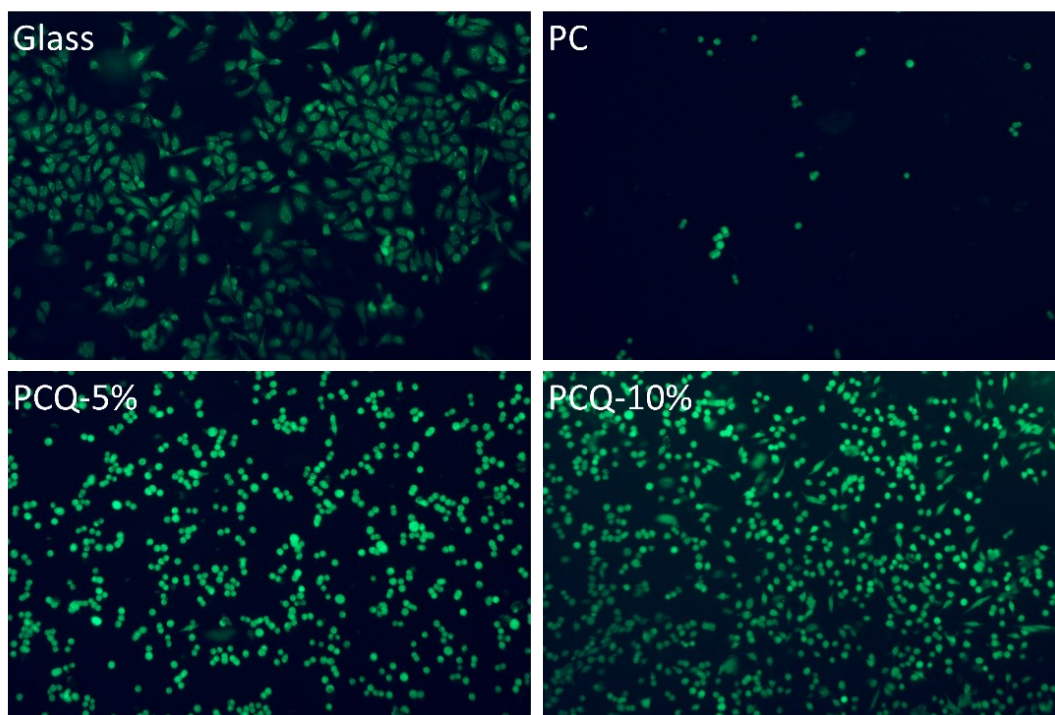


Figure S7. HUVECs morphology on surface coatings.

Table S1. Elemental analysis for the copolymers.

Sample	C (%)	N (%)	O (%)	P (%)	Si (%)	Br (%)
PC	76.25*/78.01**	1.43/1.62	20.58/17.91	1.43/1.55	0.31/0.91	0/0
PCQ-5%	75.79/76.44	1.73/2.1	20.46/18.49	1.42/1.89	0.31/0.84	0.31/0.24
PCQ-10%	75.32/75.81	2.02/2.42	20.33/18.64	1.41/2.01	0.31/0.66	0.61/0.46

*: Theoretical data is based on actual feed monomer ratios. **: actual data is based on XPS analysis.

Table S2. Integral value of characteristic peaks.

Copolymer	d	e+e'	o	j
PC	47.45	46.00	0	10.10
PCQ-5%	46.00	55.91	10.96	9.41
PCQ-10%	46.00	67.44	19.82	10.48

Table S3. XPS dates of PCQ-5% coating with different take off angel.

Take off angel	C (%)	N (%)	O (%)	P (%)	Si (%)	Br (%)
90°	74.06	1.96	21.05	1.77	0.84	0.33
10°	62.75	1.67	27.54	1.29	6.6	0.15

Table S4. APTT and TT of coatings.

Samples	APTT (s)	TT (s)
Glass	27.8±0.7	16.8±0.2
PC	26.9±0.3	17.0±0.2
PCQ-5%	26.5±0.3	17.1±0.2
PCQ-10%	26.1±0.1	18.4±0.8

Table S5. XPS dates of the coatings on PLA substrate.

Sample	C (%)	N (%)	O (%)	P (%)	Si (%)
PLA	85.38	0.44	13.49	0	0.7
PC	77.51/76.73*	1.73/1.5	18.08/18.06	2.15/1.83	0.53/1.87
PCQ-5%	76.46/76.74	2.09/2.15	18.61/18.31	2.19/2.1	0.65/0.7
PCQ-10%	73.86/76.45	2.58/2.16	20.09/18.68	2.49/2.11	0.61/0.6

* atom content after 7 days washing with water.