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Supporting Information

Comparison study of surface-initiated hydrogel coatings with distinct side-chains for improving biocompatibility of polymeric heart valves

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Supplementary figures

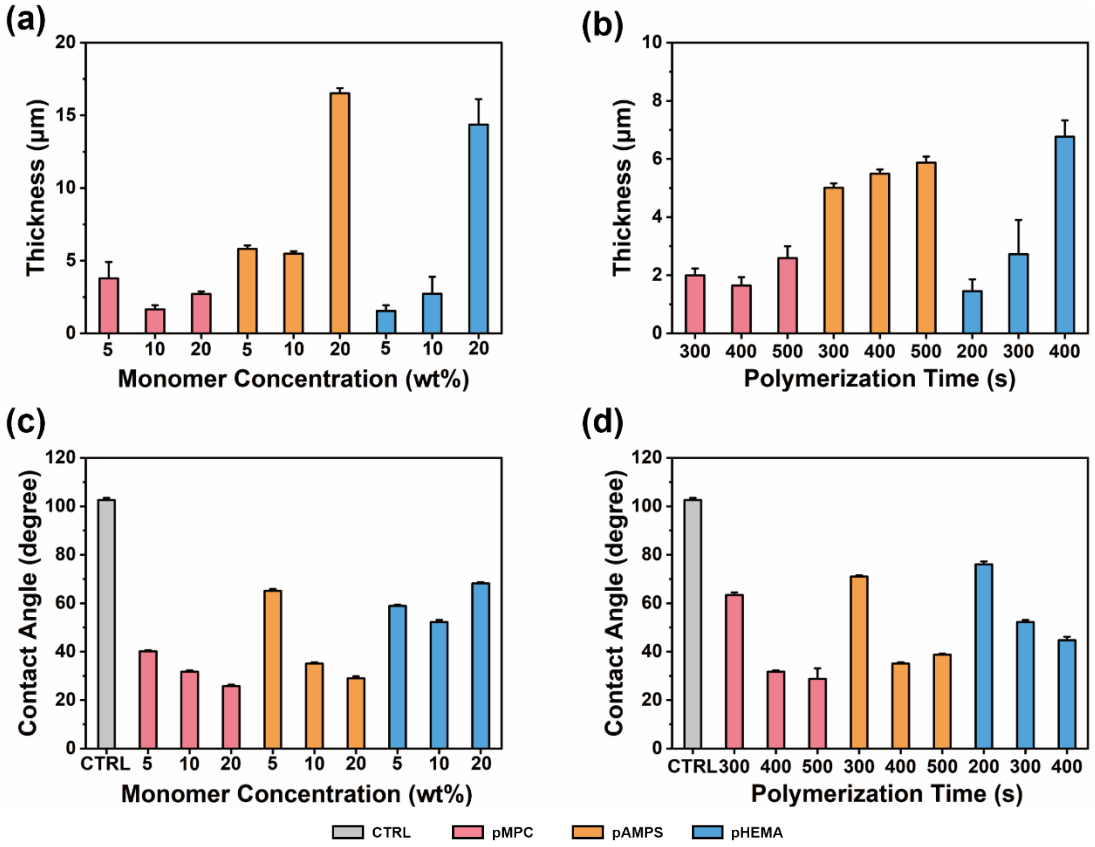

Fig. S1. Water contact angle and thickness of hydrogel coatings under different monomer concentration and polymerization time. (a) The thickness of the hydrogel coatings with different monomer concentration. The polymerization time was 400 s. (b) The thickness of the hydrogel coatings with different polymerization time. The monomer concentration was 10 wt %. The thickness of the hydrogel coating was obtained by measuring the thickness of the hydrogel through CLSM. (c) The contact angle of the hydrogel coatings with different monomer concentration. The polymerization time was 400 s. (d) The contact angle of the hydrogel coatings with different polymerization time. The monomer concentration was 10 wt %. n=5.

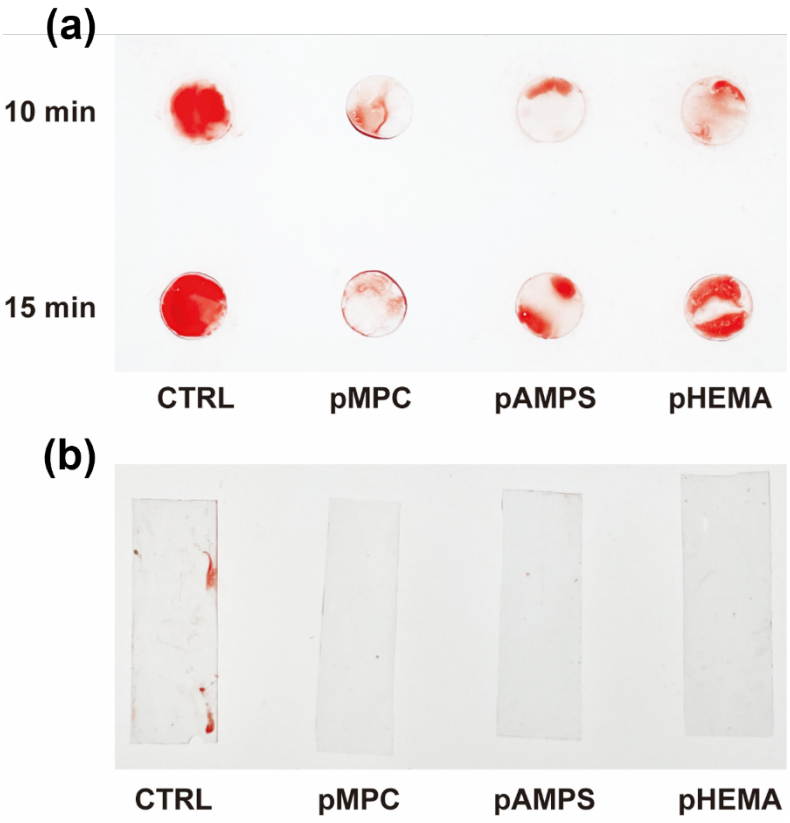

Fig. S2. Blood compatibility of hydrogel coatings. (a) The whole blood coagulation test of substrate and different hydrogel coatings (pMPC, pAMPS, pHEMA) in 10 min and 15 min. (b) The chandler loop whole blood circulation test of substrate and different hydrogel coatings (pMPC, pAMPS, pHEMA). n=3.

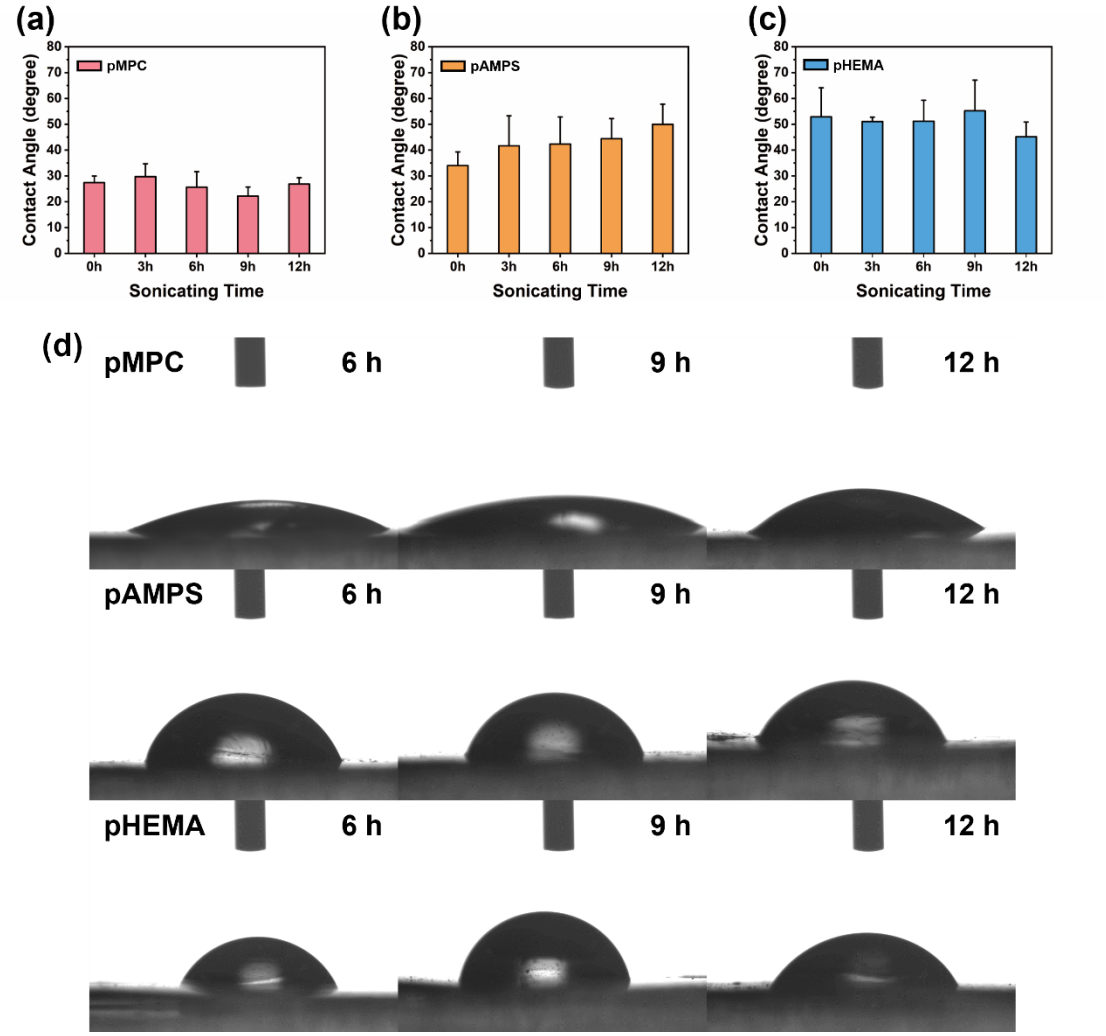

Fig. S3. Water contact angle of hydrogel coatings after 12 hours of sonication. (a) The water contact angle of the pMPC coating after 0h, 3h, 6h, 9h, 12h of sonicating. (b) The water contact angle of the pAMPS coating after 0h, 3h, 6h, 9h, 12h of sonicating. (c) The water contact angle of the pHEMA coating after 0h, 3h, 6h, 9h, 12h of sonicating. (d) The images of water contact angle of hydrogel coatings (pMPC, pAMPS, pHEMA) after 6h, 9h, 12h of sonicating. n=3.

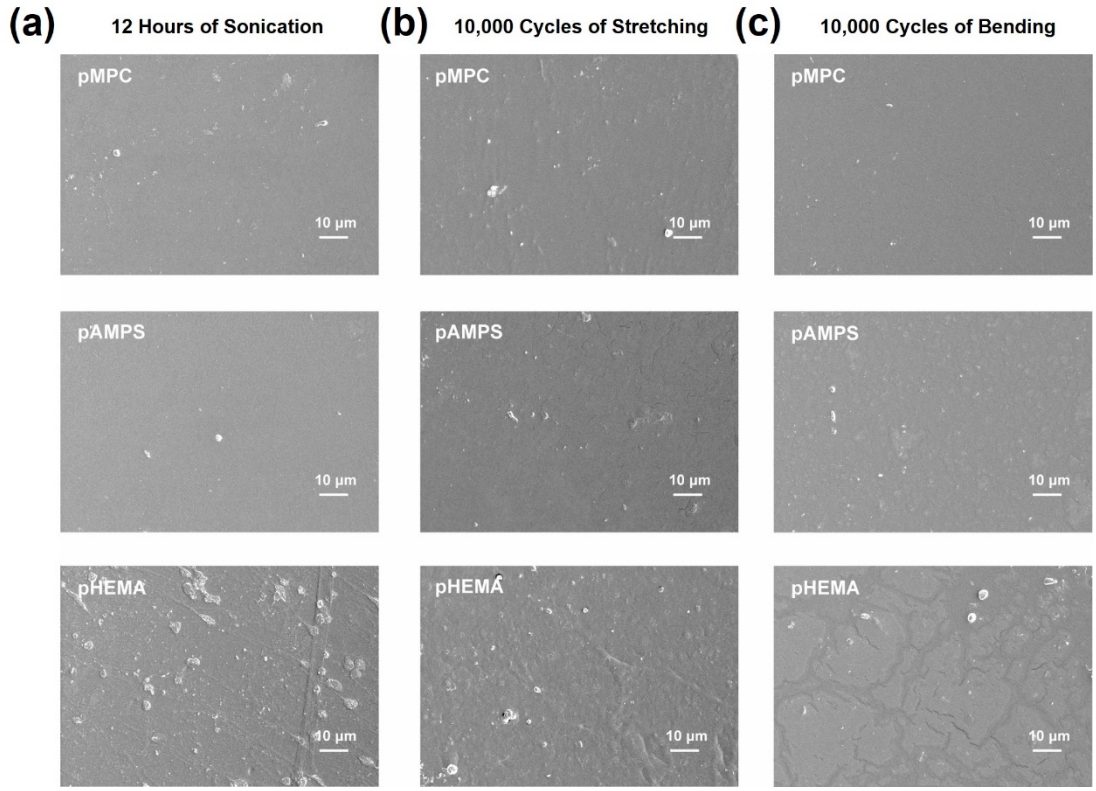

Fig. S4. Platelets adhesion of hydrogel coatings under dynamic stress. (a) The SEM images of platelets adhesion of different hydrogel coatings (pMPC, pAMPS, pHEMA) after 12 hours sonication. (b) The SEM images of platelets adhesion of different hydrogel coatings (pMPC, pAMPS, pHEMA) after 10,000 cyclic stretching. (c) The SEM images of platelets adhesion of different hydrogel coatings (pMPC, pAMPS, pHEMA) after 10,000 cyclic bending. n=3.

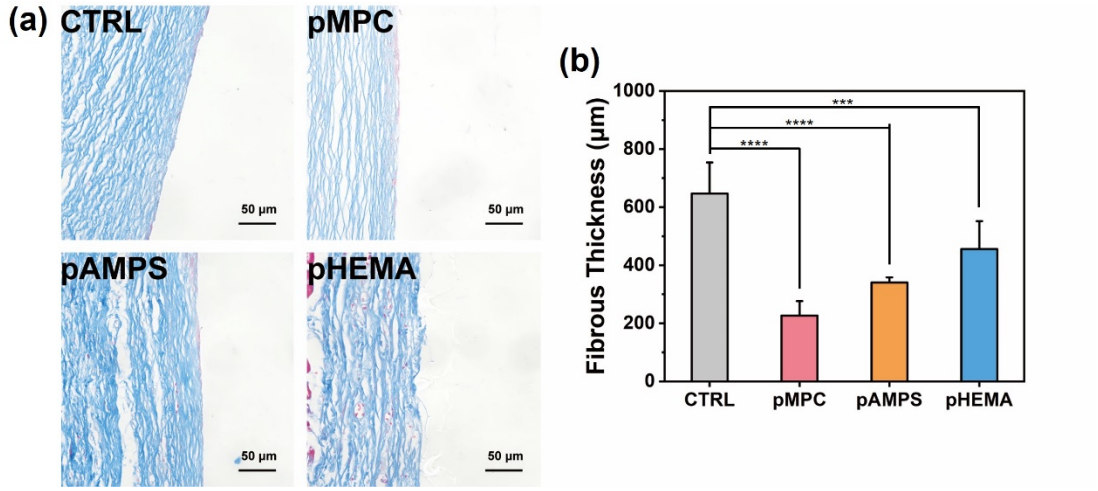

Fig. S5. Capsule formation of hydrogel coatings in SD rats model. (a) The Masson staining of tissue and implanted samples (CTRL, pMPC, pAMPS, pHEMA) after 30-day implantation. (b) The fibrous thickness of substrate and different hydrogel coatings (pMPC, pAMPS, pHEMA) after 30-day implantation. The p value was evaluated (CTRL vs pMPC, pAMPS, pHEMA). **p<0.01, ***p<0.001, ****p<0.0001. n=5.

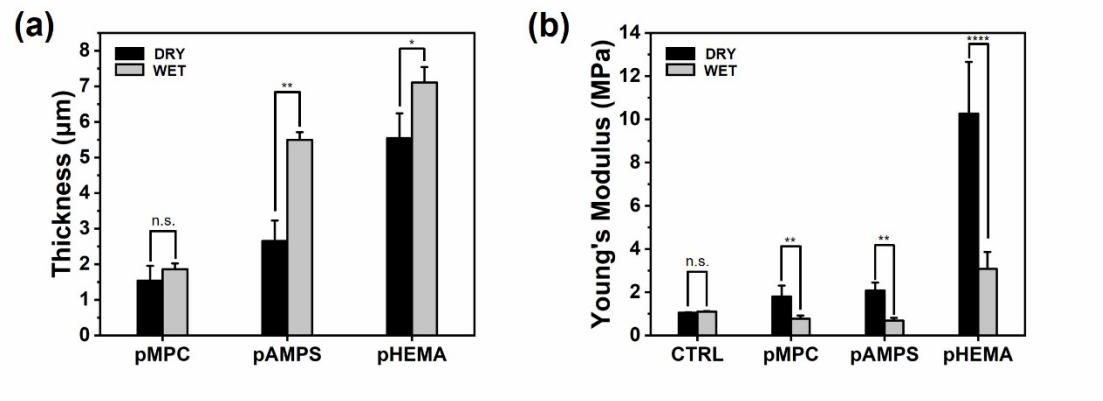

Fig. S6. Swelling behavior of the hydrogel coatings. (a) The thickness of the hydrogel coatings (pMPC, pAMPS, pHEMA) before and after swelling. The polymerization time was 400 s and the monomer concentration was 10 wt %. (b) The surface Young's modulus of substrate and different hydrogel coatings (pMPC, pAMPS, pHEMA). The p value was evaluated. $^{*}p<0.05$, $^{**}p<0.01$, $^{****}p<0.0001$. n.s. was considered as not significant. n=3.