

Supporting Information

Surface-initiated Polymerization of Mussel-inspired Dopamine for Hydrophilic Coatings

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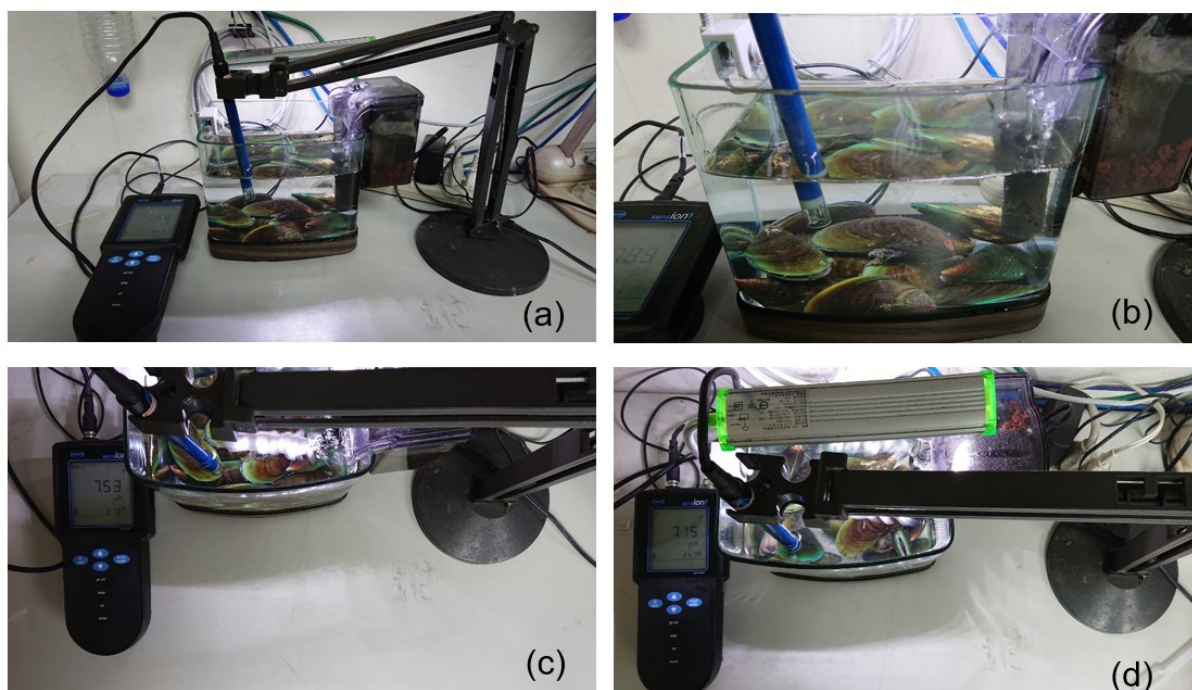


Fig. S1. (a) and (b): The mussels are kept in the aquarium and a pH meter is equipped to measure pH value. (c) and (d) show that pH value decrease from 7.53 to 7.15 after three days.

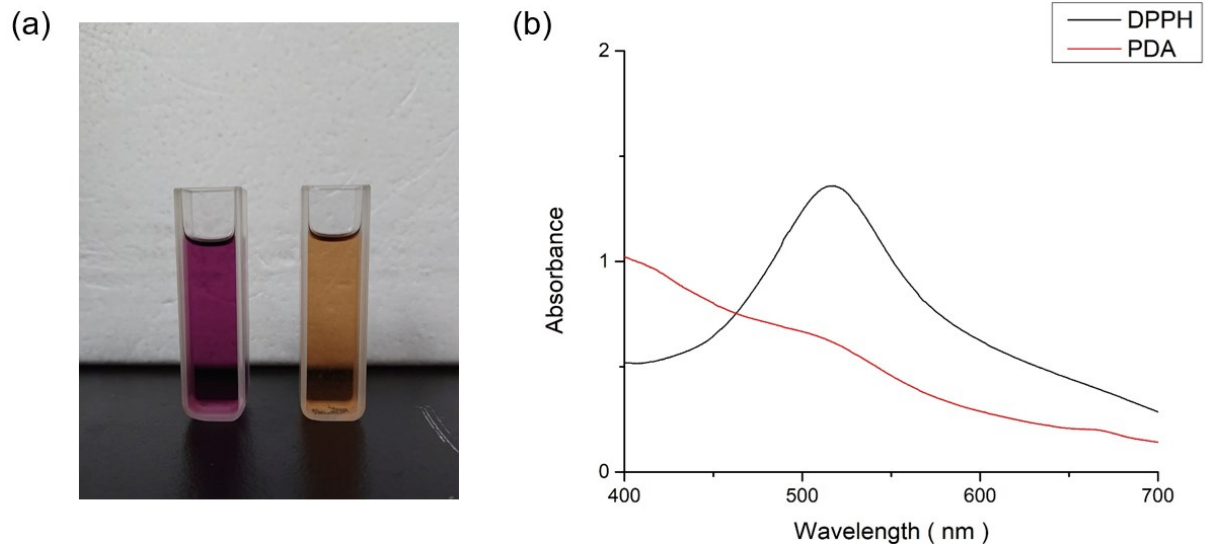


Fig. S2. (a) The optical image of DPPH test solution before and after addition of PDA to react in a qualitative test. The color changes from purple to light brown. (b) the absorbance intensity of UV-Vis decreases, indicating PDA has the ability to release free radicals to react with DPPH.

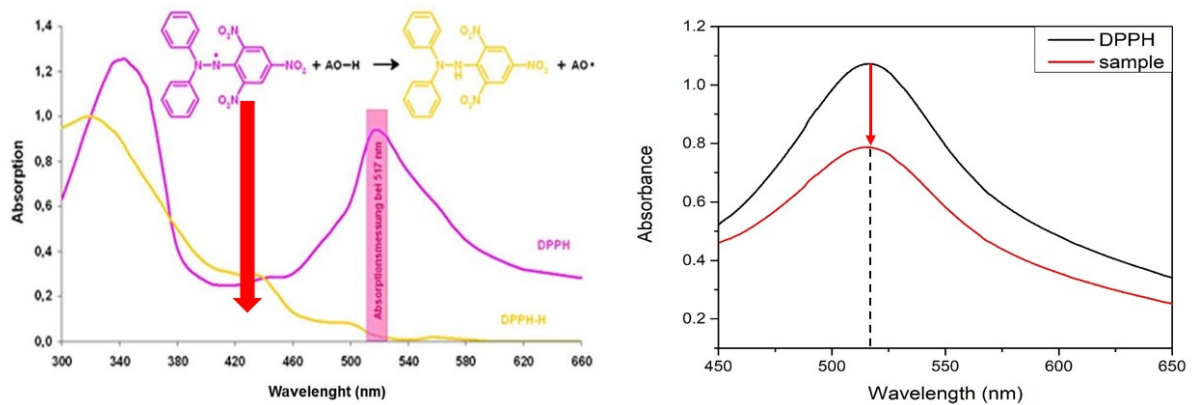


Fig. S3. Initiators release free radicals in the aqueous solution (sample) and reduce light absorption of DPPH. Structural change of DPPH results in the absorption decrease at 517 nm.

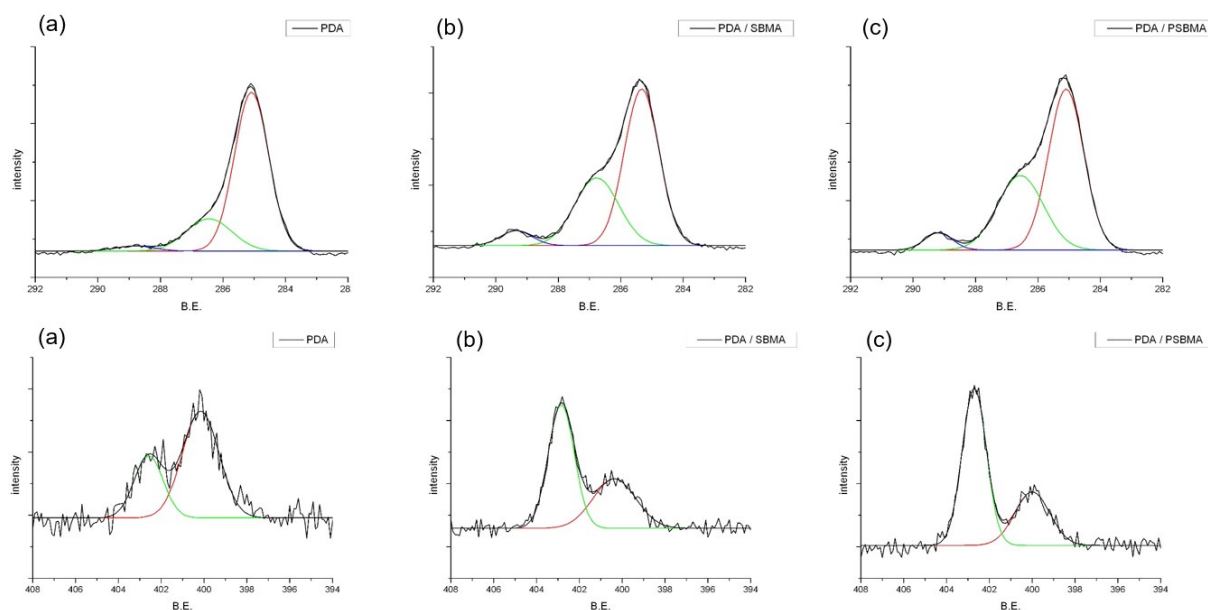


Fig. S4. Deconvolution of high resolution XPS spectra of sample surfaces after polymerization in (a) DA, (b) DA/SBMA, and (c) DA/PSBMA solution.

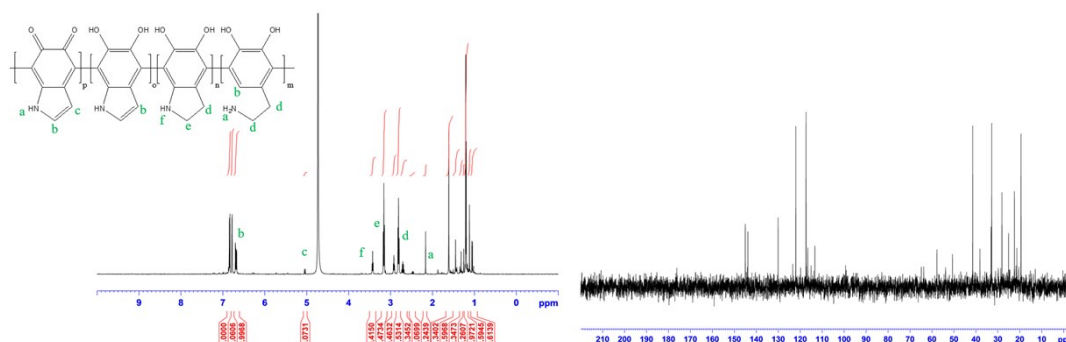


Fig. S5. A homopolymer was synthesized in a similar process, and the polydopamine precipitation was dispersed in D_2O under sonication after rinsing several times. The related 1H -NMR spectrum (a) shows the corresponding protons in the complicated polymer structure, and its ^{13}C -NMR spectrum (b) is also showing the corresponding carbon at 30 ppm (sp^3 hybridization) and 120-170 ppm (sp^2 hybridization), compared to the NMR spectra in the literature. [S1-2]

*S1: M. L. Alfieri, L. Panzella, S. L. Oscurato, M. Salvatore, R. Avolio, M. E. Errico, P. Maddalena, A. Napolitano, M. d'Ischia, *Biomimetics* 2018, 3, 26.

*S2: J. Liebscher, R. Mrówczyński, H. A. Scheidt, C. Filip, N. D. Hädade, R. Turcu, A. Bende, S. Beck, *Langmuir* 2013, 29, 33, 10539–10548.

Table S1. Water contact angles for CA coating on variety of hydrophobic substrates

Target substrate	WCA before modification	WCA after modification
Natural rubber	121.67±3.20	104.77±8.11
PTFE	99.60±0.95	86.97±5.80
PVC	90.87±0.21	84.07±0.96
TPU	104.6±1.57	84.23±1.80
PS	89.8±4.71	77.57±2.59