Supporting Information

Red Algae-Derived Carrageenan Coatings for Marine Antifouling Applications

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Table S1. Previous and current approaches to fabricate marine antifouling polysaccharide coatings.

	Polysaccharide	Solid substrate	Coating layers	External equipment
Previous approach	Limited to carboxyl-containing polysaccharides	Specific substrates	Single layer coating	Not required
Current approach	Not limited to carboxyl-containing polysaccharides	Various substrates	Thickness-controllable multilayer coating	Required

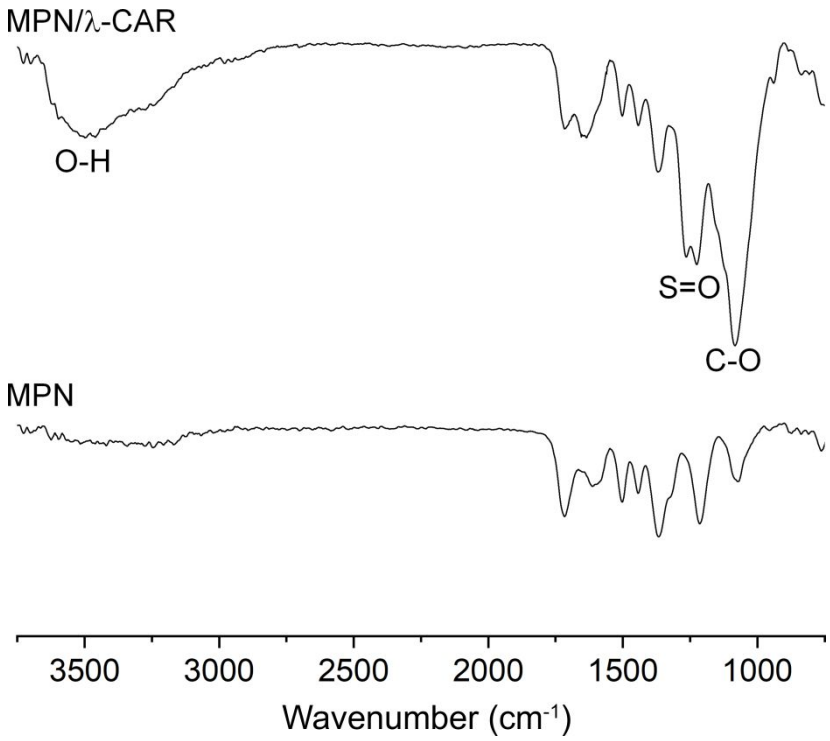


Figure S1. FT-IR spectra of MPN-coated and MPN/λ-CAR-coated Ti/TiO_2 surfaces. MPN, metal-polyphenol network; CAR, carrageenan.

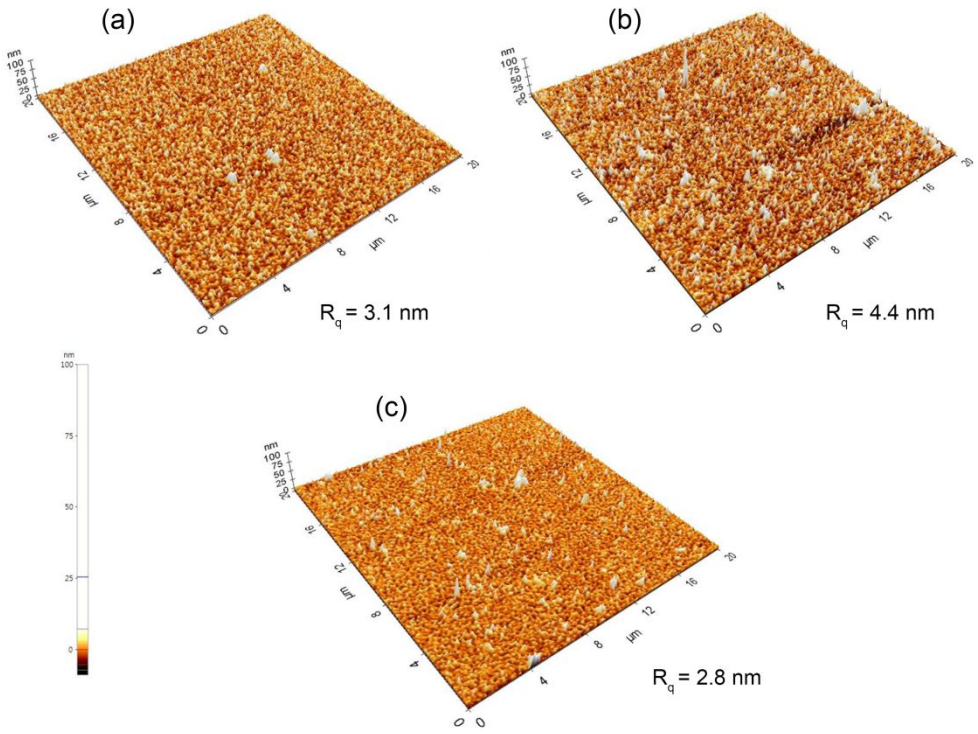


Figure S2. AFM images of (a) uncoated, (b) MPN-coated, and (c) MPN/λ-coated Ti/TiO_2 surfaces. MPN, metal-polyphenol network; CAR, carrageenan.

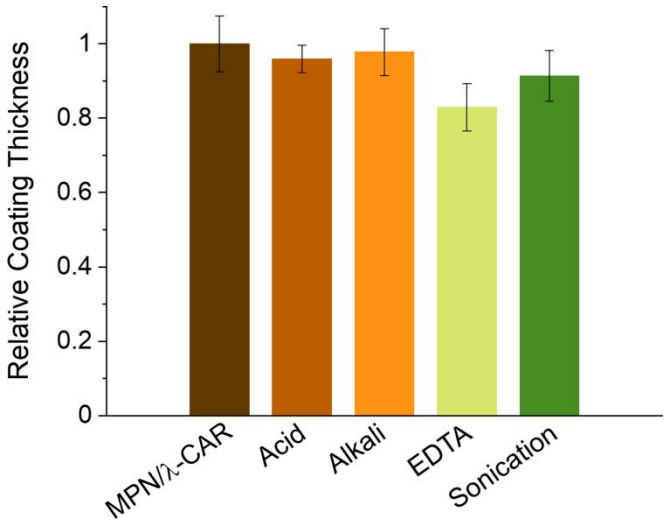
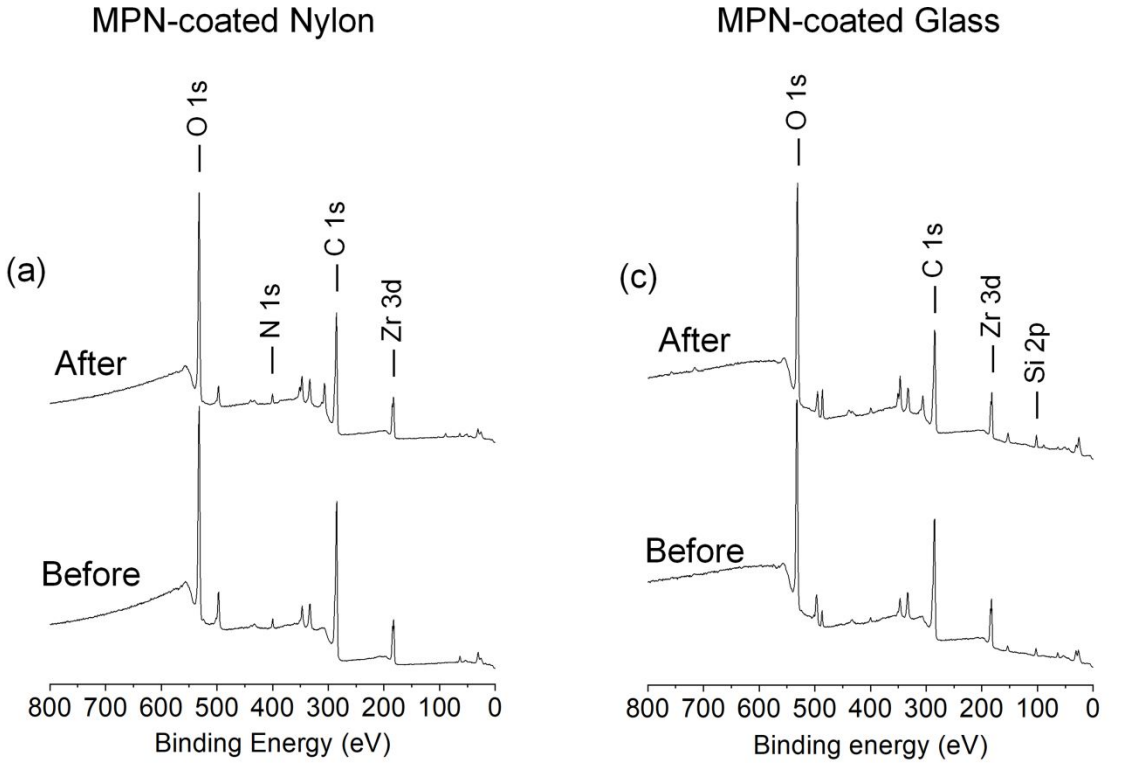


Figure S3. Relative thickness change of MPN/λ-CAR coatings after acid (10 mM HCl), alkali (10 mM NaOH), EDTA, and sonication treatments. MPN, metal-polyphenol network; CAR, carrageenan.



(b)

%	C 1s	N 1s	O 1s	Zr 3d
Before	62.65	1.32	33.51	2.52
After	59.84	1.53	35.83	2.80

(d)

%	C 1s	Si 2p	O 1s	Zr 3d
Before	57.89	2.55	36.76	2.79
After	54.59	4.38	38.16	2.87

Figure S4. XPS spectra (a and c) and atomic composition (%) (b and d) of MPN-coated Nylon and MPN-coated Glass surfaces before and after immersion in seawater for one week.