

Supporting information

Supporting figures

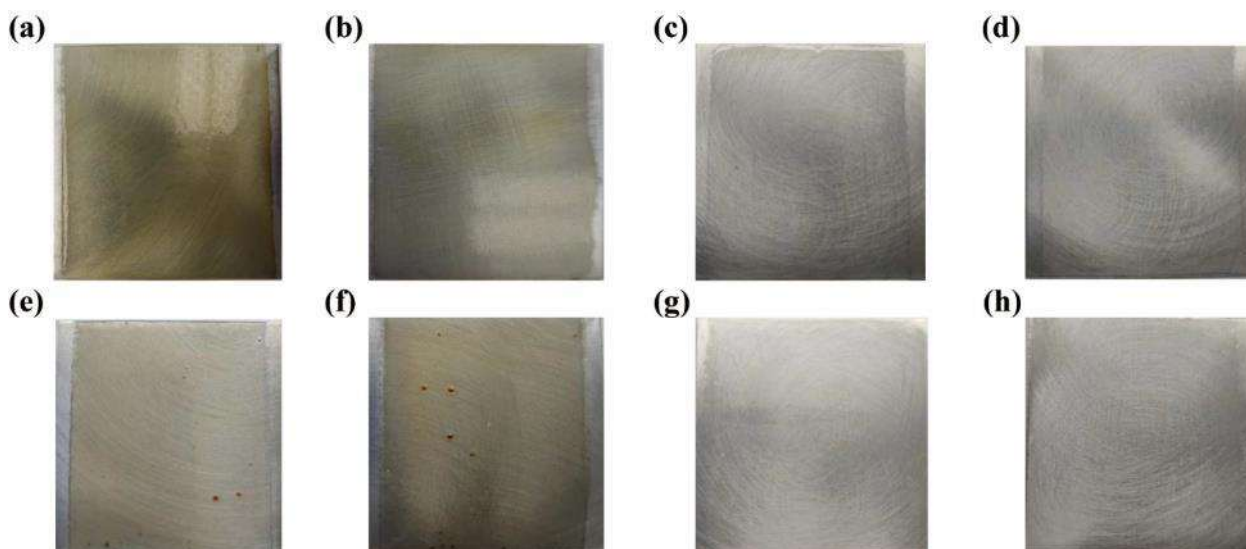


Figure S1 Digital photos of (a) MMA-BA coating, (b) St-BA coating, (e) Commercially available MMA-BA coating and (f) Commercially available St-BA coating on Q235 carbon steel; (c) MMA-BA coating, (d) St-BA coating, (g) Commercially available MMA-BA coating and (h) Commercially available St-BA coating on 5052 aluminum alloy

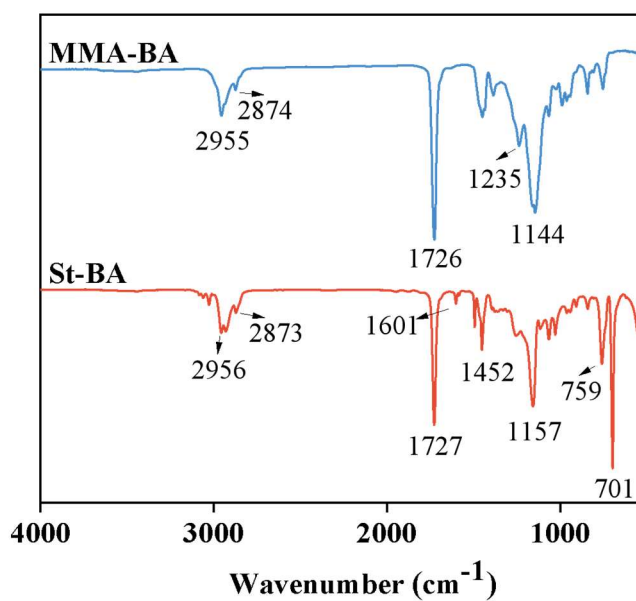


Figure S2 The FTIR spectra of MMA-BA and St-BA coatings

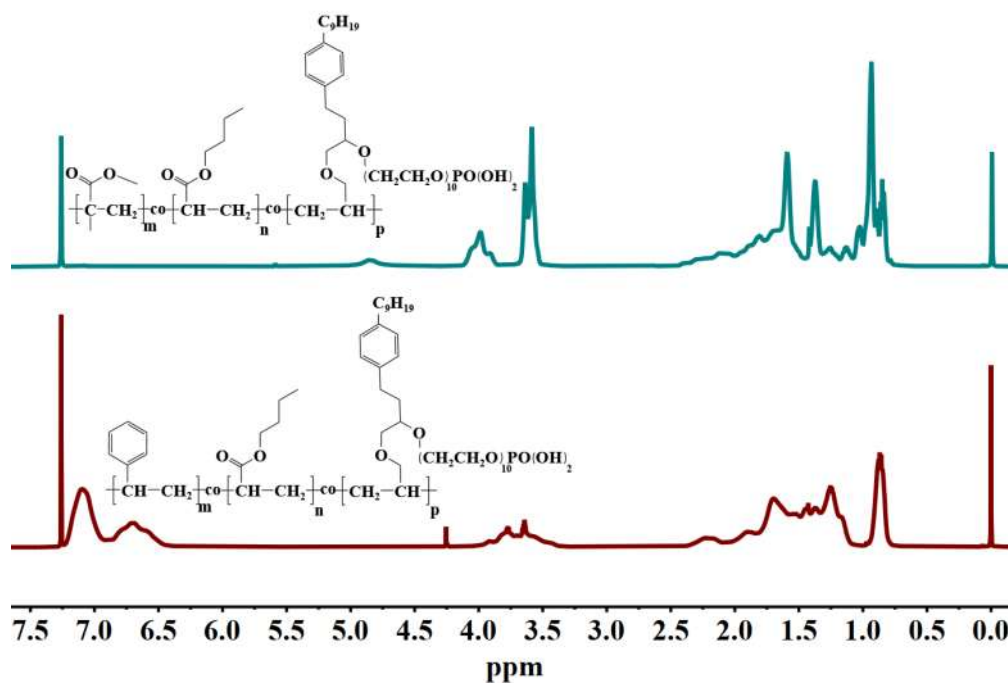


Figure S3 ^1H NMR spectra of MMA-BA and St-BA latexes

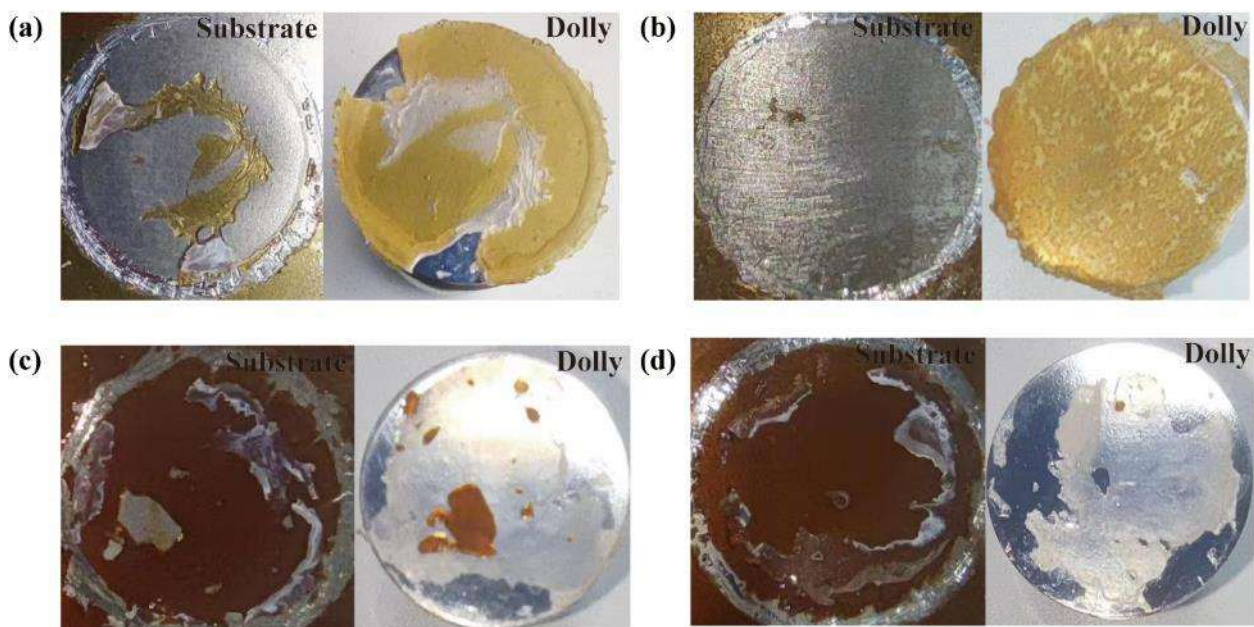


Figure S4 The fractures after the pull-off experiments in (a) MMA-BA coating. (b) St-BA coating. (c) Commercially available MMA-BA coating and (d) Commercially available St-BA coating coated on Q235 carbon steel

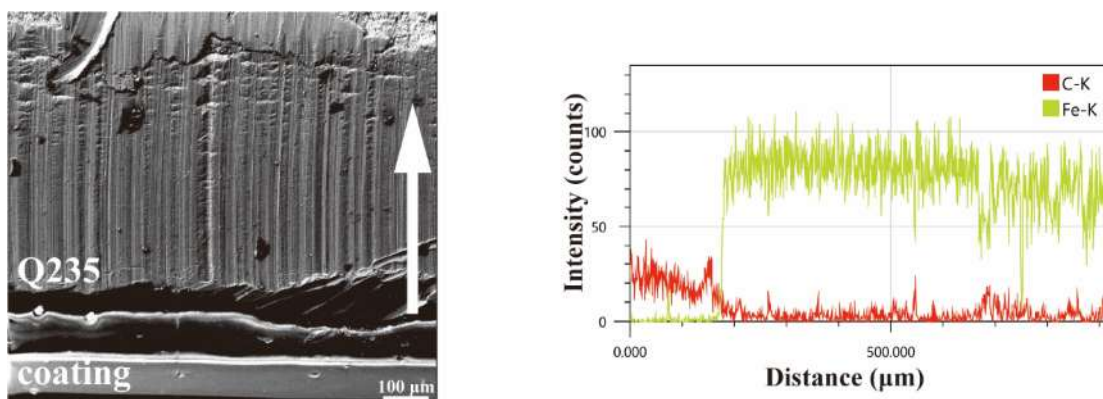


Figure S5 SEM diagram (left) and the corresponding element EDS diagram (right) of the MMA-BA coating on Q235 carbon steel

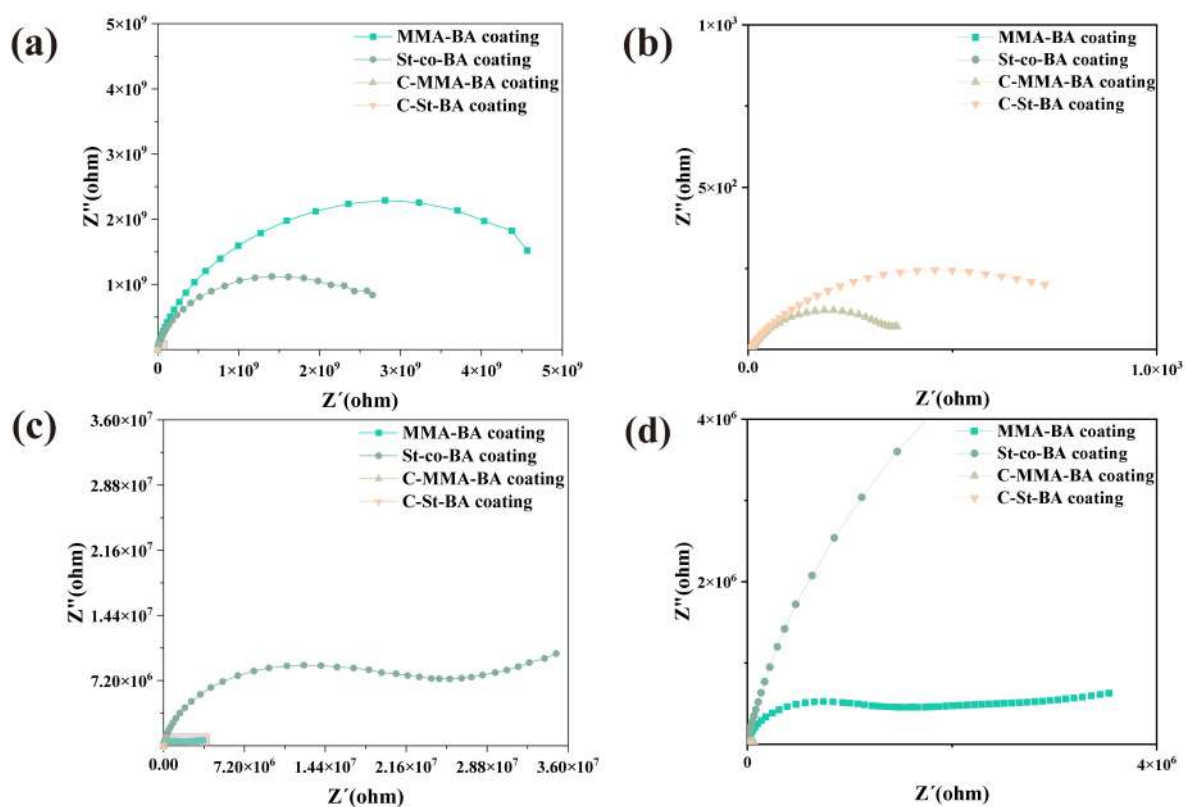


Figure S6 Nyquist plots of different coatings immersed in 3.5 wt% NaCl aqueous solution for 120 h. (a) Coatings on Q235 carbon steel; (b) An enlarged view of the Figure a; (c) Coatings on 5052-aluminum alloy; (d) An enlarged view of the Figure c

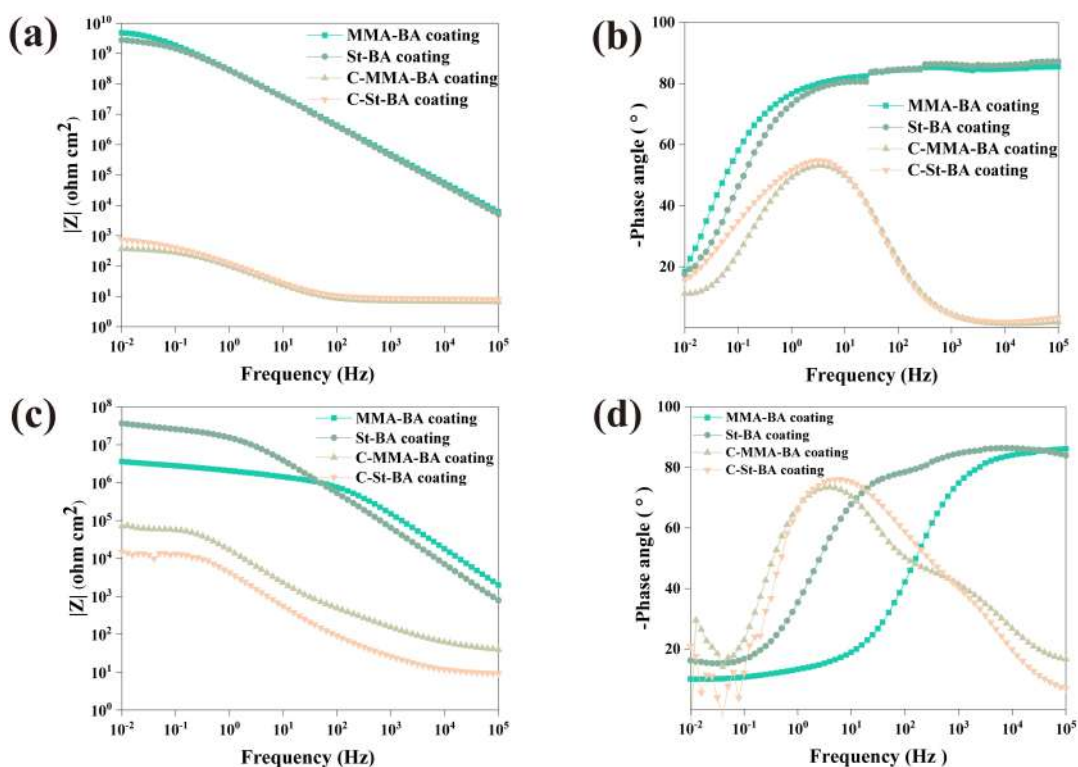


Figure S7 Bode plots of different coatings immersed in 3.5 wt% NaCl aqueous solution for 120 h. (a, b) Coatings on Q235 carbon steel; (c, d) Coatings on 5052 aluminum alloy

Table S1 Formulations for MMA-BA and St-BA latex preparation

Step	Component	MMA-BA latex	St-BA latex
Seed emulsion polymerization	MMA	31.300 g	—
	St	—	31.300 g
	BA	31.300 g	31.300 g
	SLDED	0.630 g	0.630 g
	KPS	0.313 g	0.313 g
	NaHCO ₃	1.035 g	1.035 g
Pre-emulsion formation and polymerization	Monomer (MMA/BA or St/BA)	59.550 g	59.550 g
	ANPEO ₁₀ -P ₁	2.526 g	2.526 g
	KPS	0.163 g	0.163 g

Table S2 Appearance, calcium ion stability, gel content, solid content and conversion rate of MMA-BA and St-BA latexes

	Appearance	Calcium ion stability	Gel content	Solid content	Conversion rate
MMA-BA latex	Milky white	Pass	1.207%	50.22%	99.95%
St-BA latex	Milky white	Pass	1.348%	49.44%	98.34%

Table S3 The molecular weights of MMA-BA and St-BA latexes

	Number-average molecular weight/(g·mol ⁻¹)	Mass average molar mass/(g·mol ⁻¹)
St-BA latex	396733	731815
MMA-BA latex	281118	682999