Electronic Supplementary Material (ESI) for RSC Advances.

Self-healing anti-corrosion coatings based on polymers of intrinsic microporosity for the protection of aluminum alloy

Zhen Li, Benye Qin, Xiaoyong Zhang, Ke Wang, Yen Wei*, Yan Ji*

The Key Laboratory of Bioorganic Phosphorus Chemistry & Chemical Biology, Department of Chemistry, Tsinghua University, Beijing 100084, China.

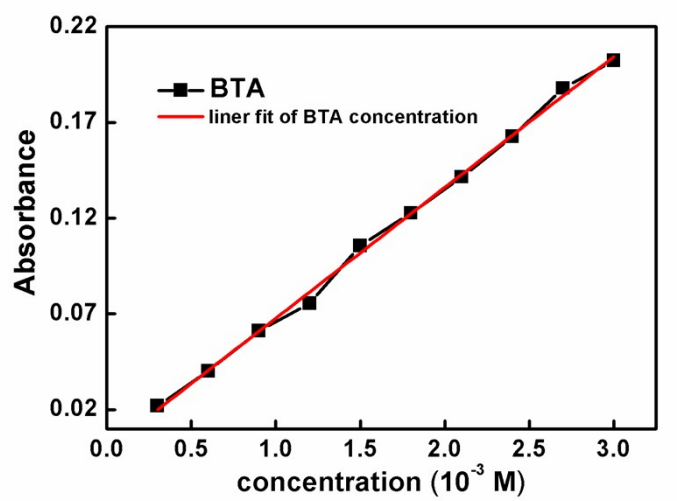

Fig. S1 Standard curves of BTA aqueous solution (range in concentration from 3* 10^{-4} M to 3 * 10^{-3} M). A fitting function was obtained as "Concentration (10^{-3} M) = 14.62 * Absorbance + 0.0104".

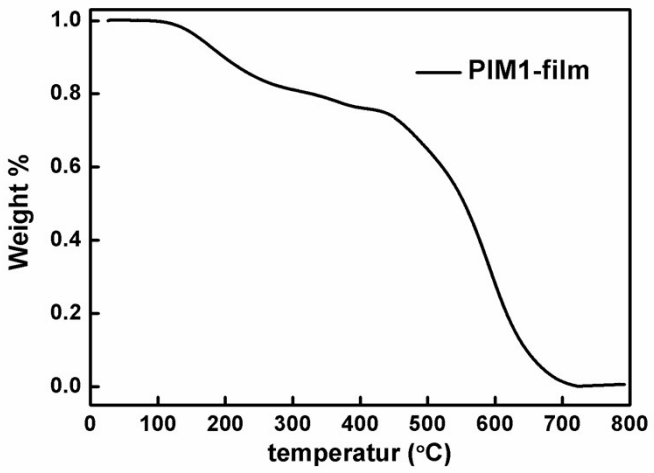

Fig. S2 TGA curves of PIM1 film in air.

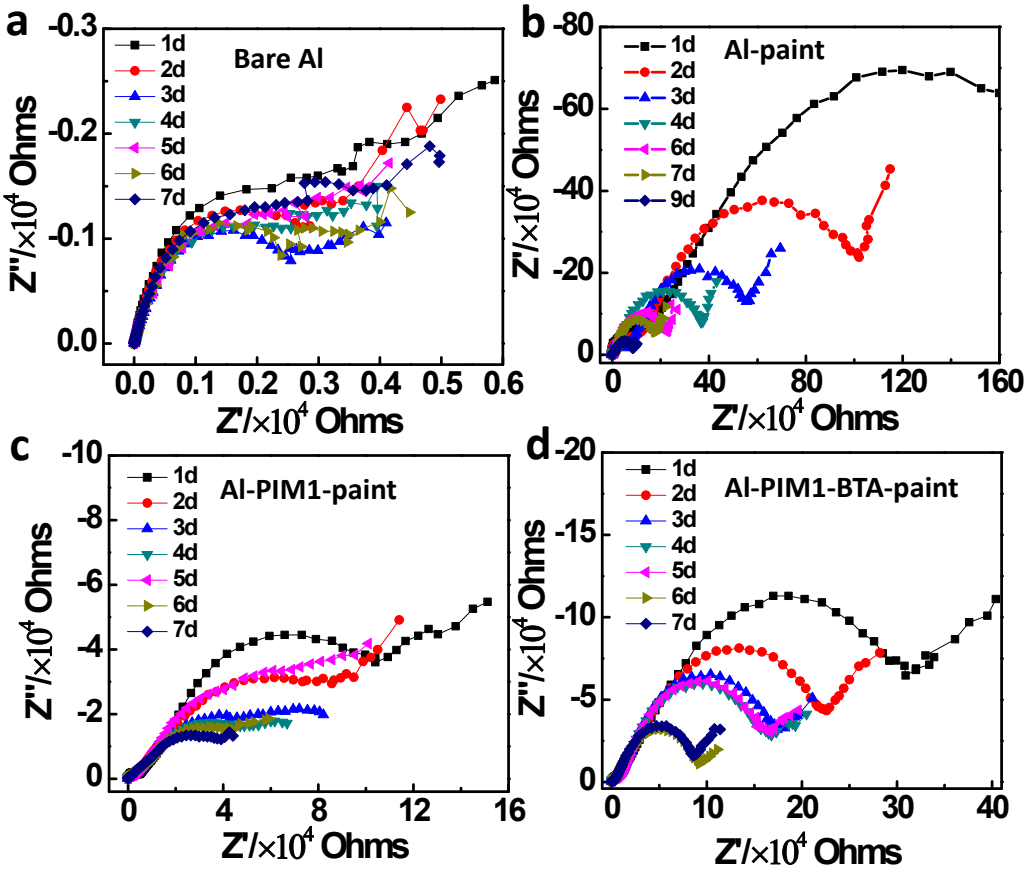

Fig. S3 Nyquist plots during 7 days' immersion for intact samples: (a) Bare Al; (b) Al-paint; (c) Al-PIM1-paint; (d) Al-PIM1-BTA-paint.

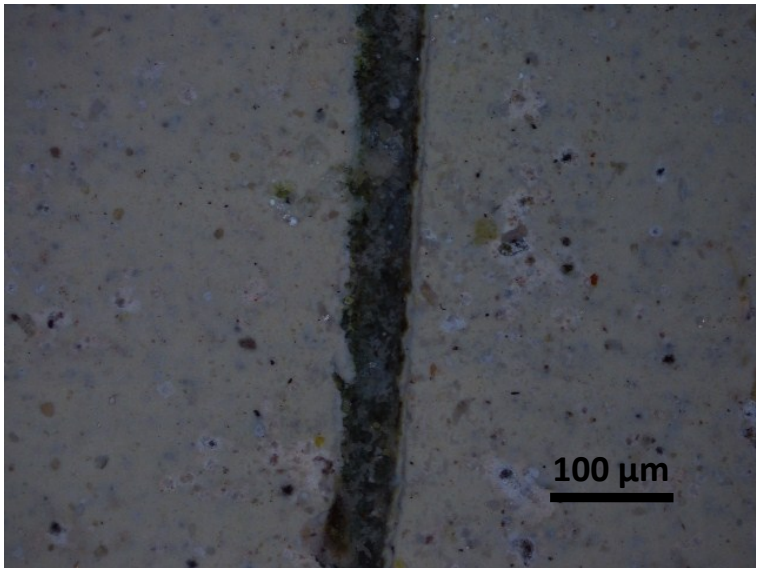

Fig. S4 The optical microscope photo of an Al-paint sample with scratches (after 4 weeks' saline immersion).

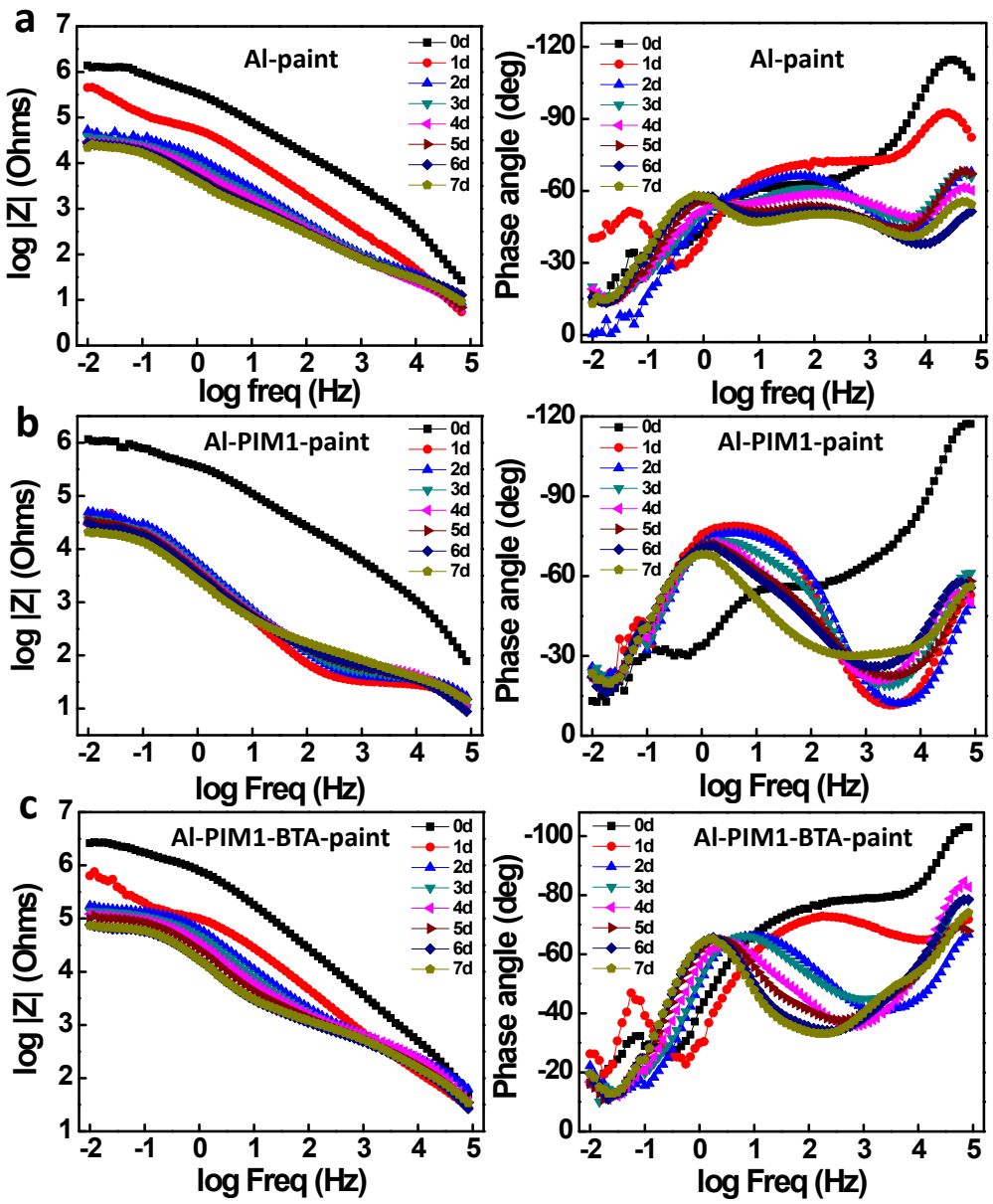

Fig. S5 Bode plots of different scratched samples (a) Al-paint; (b) Al-PIM1-paint; (c) Al-PIM1-BTA-paint during 7 days' immersion.

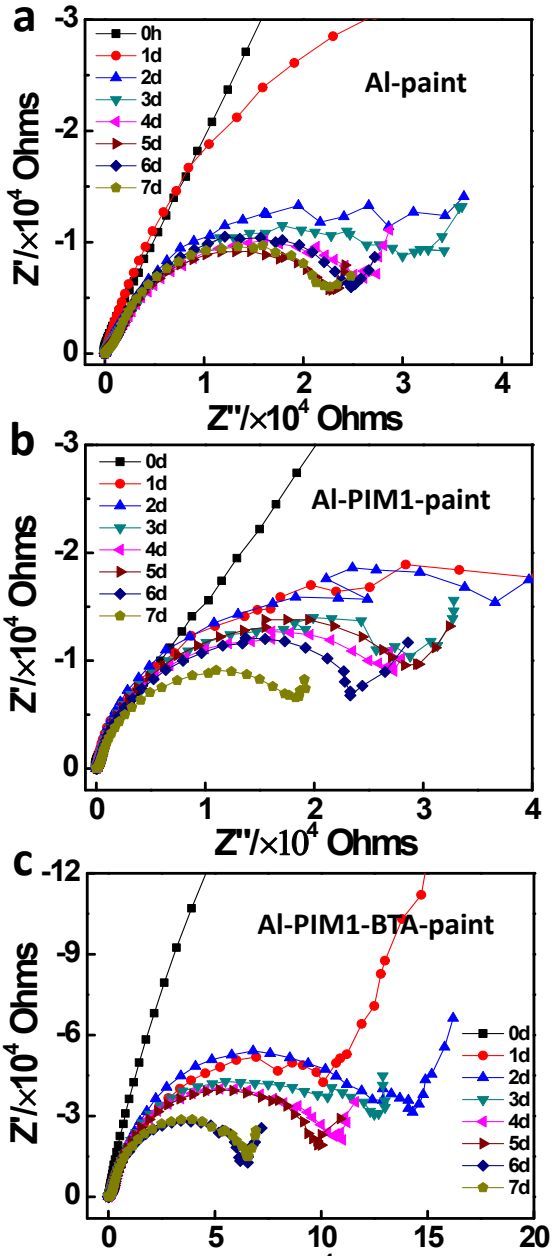

Fig S6. Nyquist plots of different scratched samples (a) Al-paint; (b) Al-PIM1-paint; (c) Al-PIM1-BTA-paint during 7 days' immersion.

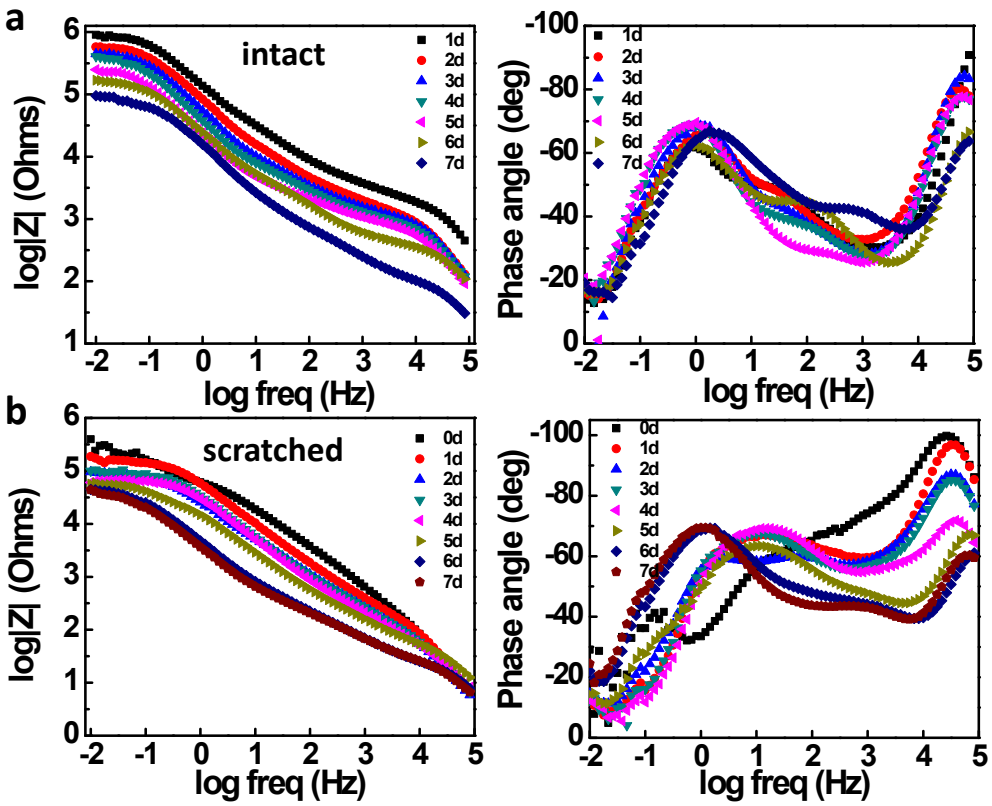

Fig S7. Bode plots of Al-paint-BTA samples during 7 days' immersion: (a) intact sample; (b) scratched sample.

	corrosion potential (V)	corrosion current (A)
paint	-0.700	3.66×10^{-6}
PIM-paint	-0.683	1.47×10^{-6}
PIM-BTA-paint	-0.642	4.72×10^{-7}

Table S1. Corrosion potential and corrosion current of all scratched samples after 7 days' immersion.