

## Supplemental Information

### Highly effective anti-corrosion epoxy spray coatings containing self-assembled clay in smectic order

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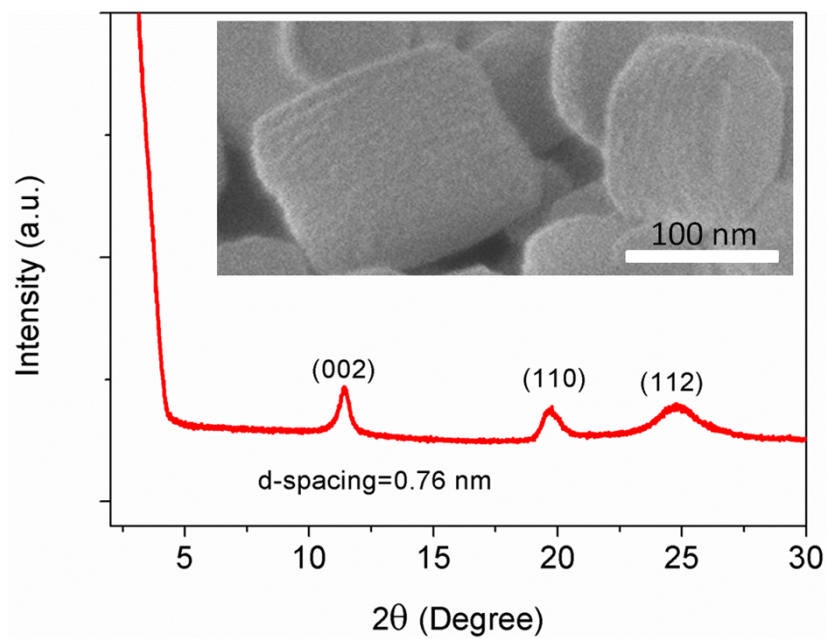
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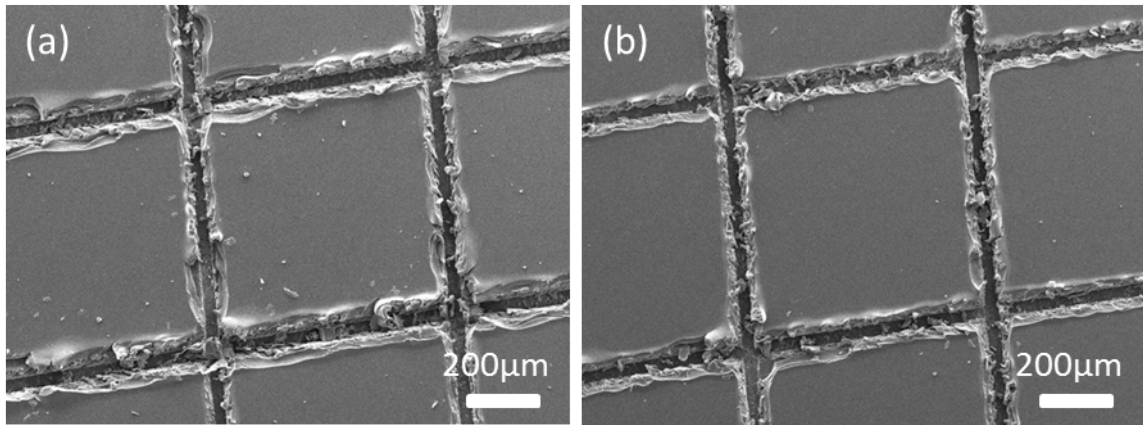
Supplemental Table S1. Summary of anti-corrosion properties of various polymer nanocomposites obtained from literature.

Anticorrosion Coating	Filler Loading	Testing solution	Coating Thickness	I <sub>corr</sub> Decrease	E <sub>corr</sub> Increase	Citation
<b>This work</b>	<b>11 wt.%</b>	<b>7 wt.% NaCl</b>	<b>14 μm</b>	<b>80%</b>	<b>950%</b>	<b>This work</b>
Epoxy/MMT	5 wt.%	5 wt.% NaCl	34 μm	94%	17%	Ref. [S1]
PANI/MMT	1 wt.%	3.5 wt.% NaCl	NA	15%	3%	Ref. [S2]
PMMA/MMT	6.9 wt.%	5 wt.% NaCl	113 μm	95%	83%	Ref. [S3]
PANI/Graphene	0.5 wt.%	3.5 wt.% NaCl	31 μm	63%	10%	Ref.[S4]
PANI/Clay	0.5 wt.%	3.5 wt.% NaCl	29 μm	90%	17%	Ref. [S4]
Epoxy/SiO <sub>2</sub>	3 wt.%	5 wt.% NaCl	23 μm	95%	34%	Ref. [S5]
PS/GO	1.5 wt.%	3.5 wt.% NaCl	27 μm	99%	48%	Ref. [S6]
Epoxy/Graphene	1 wt.%	3.5 wt.% NaCl	115 μm	90%	39%	Ref. [S7]
Epoxy/Clay	5 wt.%	3.5 wt.% NaCl	30 μm	33%	16%	Ref. [S8]
PI/Clay	3 wt.%	3.5 wt.% NaCl	25 μm	56%	34%	Ref. [S9]
PI/SiO <sub>2</sub>	5 wt.%	3.5 wt.% NaCl	NA	70%	25%	Ref. [S10]
Epoxy/SiO <sub>2</sub>	1.4 wt.%	3.5 wt.% NaCl	50 μm	99%	10%	Ref. [S11]
Polybenzoxazine/SiO <sub>2</sub>	5 wt.%	3.5 wt.% NaCl	5 μm	NA	31%	Ref. [S12]

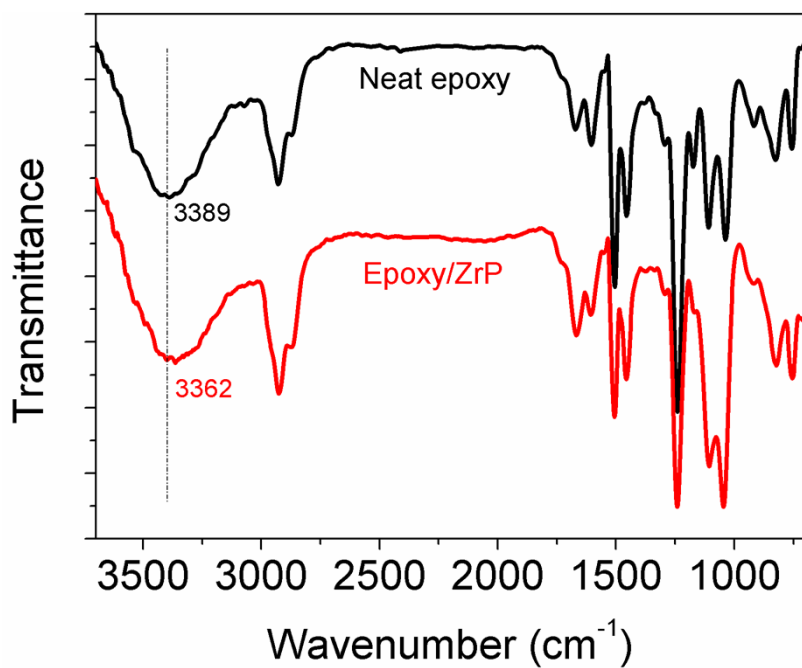
Note: The values of I<sub>corr</sub> decrease and E<sub>corr</sub> increase are defined as follows: I<sub>corr</sub> decrease = (I<sub>corr neat polymer</sub> - I<sub>corr nanocomposite</sub>)/I<sub>corr neat polymer</sub>, E<sub>corr</sub> increase = |(E<sub>corr nanocomposite</sub> - E<sub>corr neat polymer</sub>)/E<sub>corr neat polymer</sub>|.



Supplemental Fig. S1 XRD of pristine ZrP nanoplatelets. Inset is the SEM image of pristine ZrP stacks.



Supplemental Fig. S2 SEM images of (a) neat epoxy coating and (b) smectic epoxy/ZrP coating on the aluminium substrates after testing for evaluating adhesion according to ASTM standard D 3359-02.



Supplemental Fig. S3 Fourier-Transform Infrared spectra (FTIR) of neat epoxy and smectic epoxy/ZrP nanocomposites.

### Supplemental Reference:

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