Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supplementary Material

Inhibited corrosion-promotion activity of graphene encapsulated in nanosized silicon oxide

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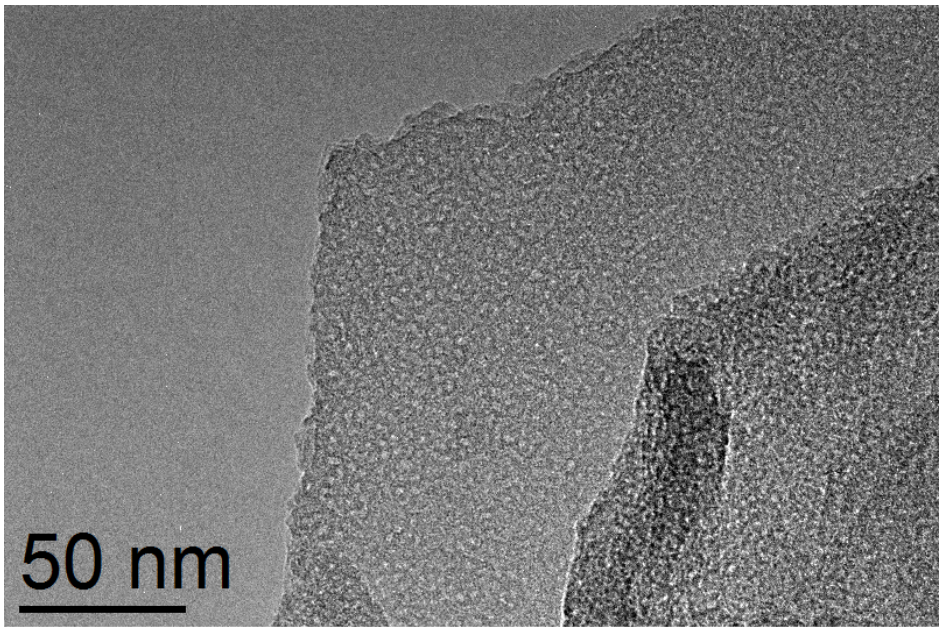

Figure S1. Magnified TEM image shows GSs have a mesoporous structure

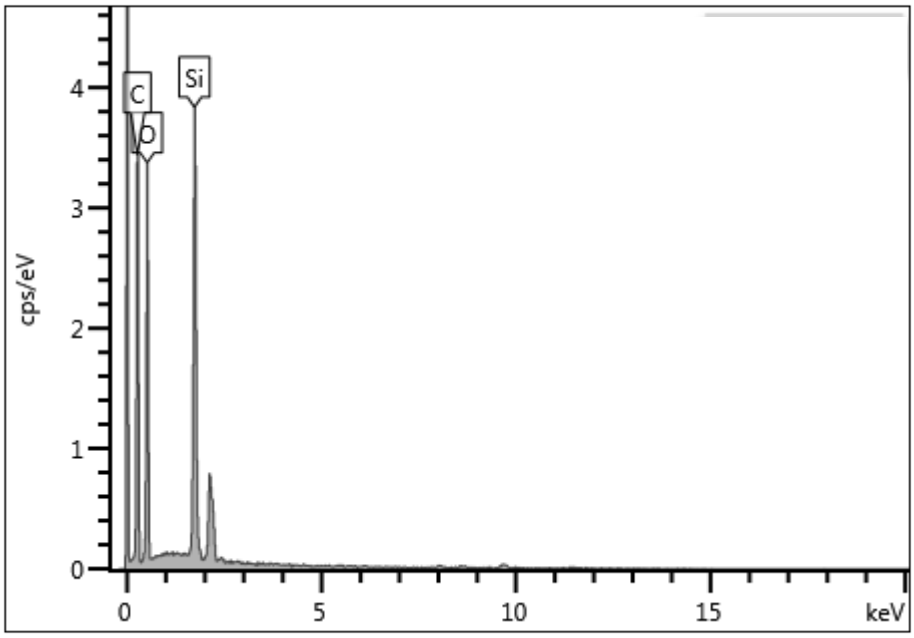

Figure S2. EDX spectrum of GSs

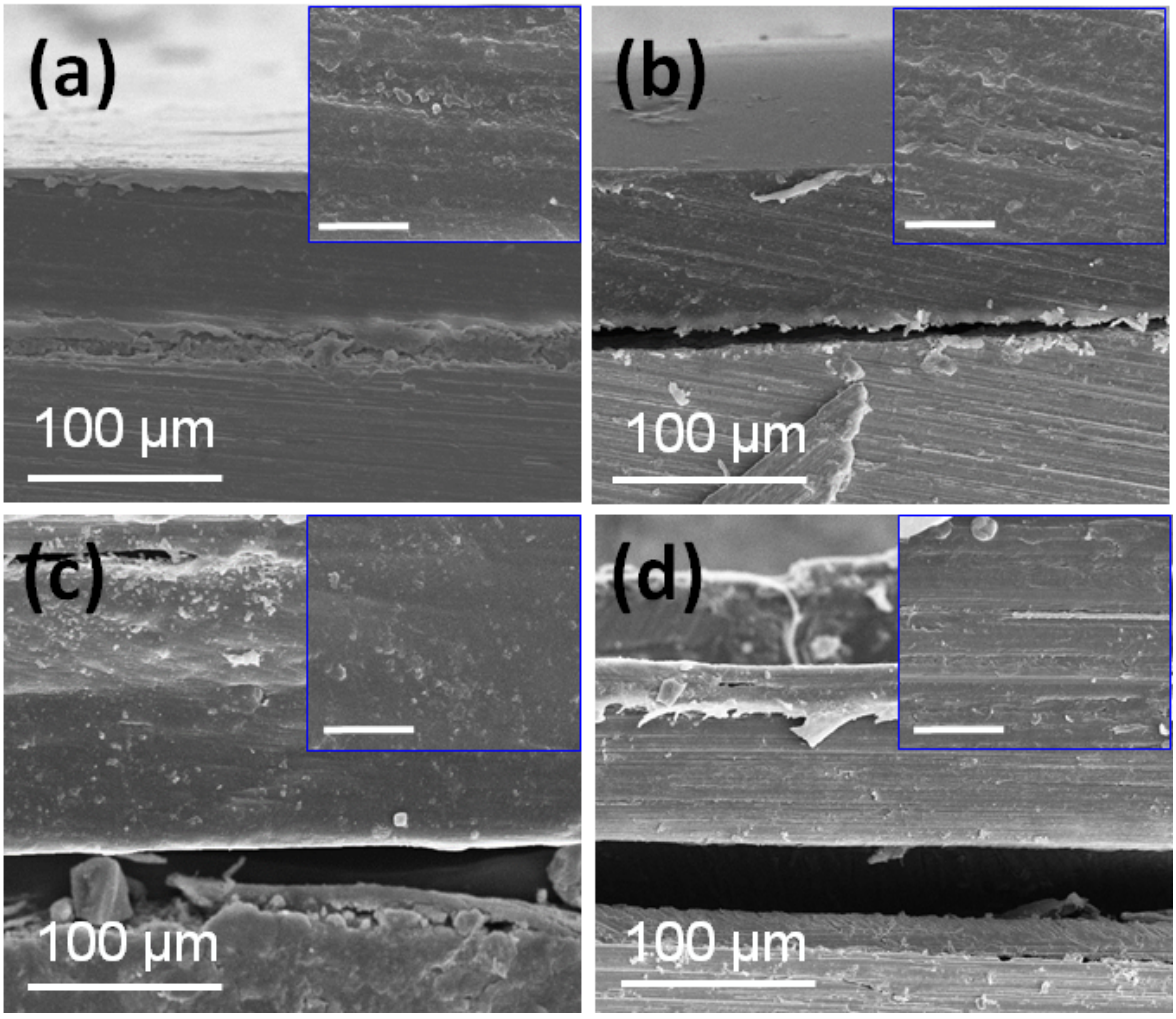

Figure S3. SEM images of cross-section of (a) $GS_{0.025}$, (b) $GS_{0.05}$, (c) $GAP_{0.15}$ and (d) $GAP_{0.2}$. Inset: Magnified SEM images of cross-section (bar=10 µm).

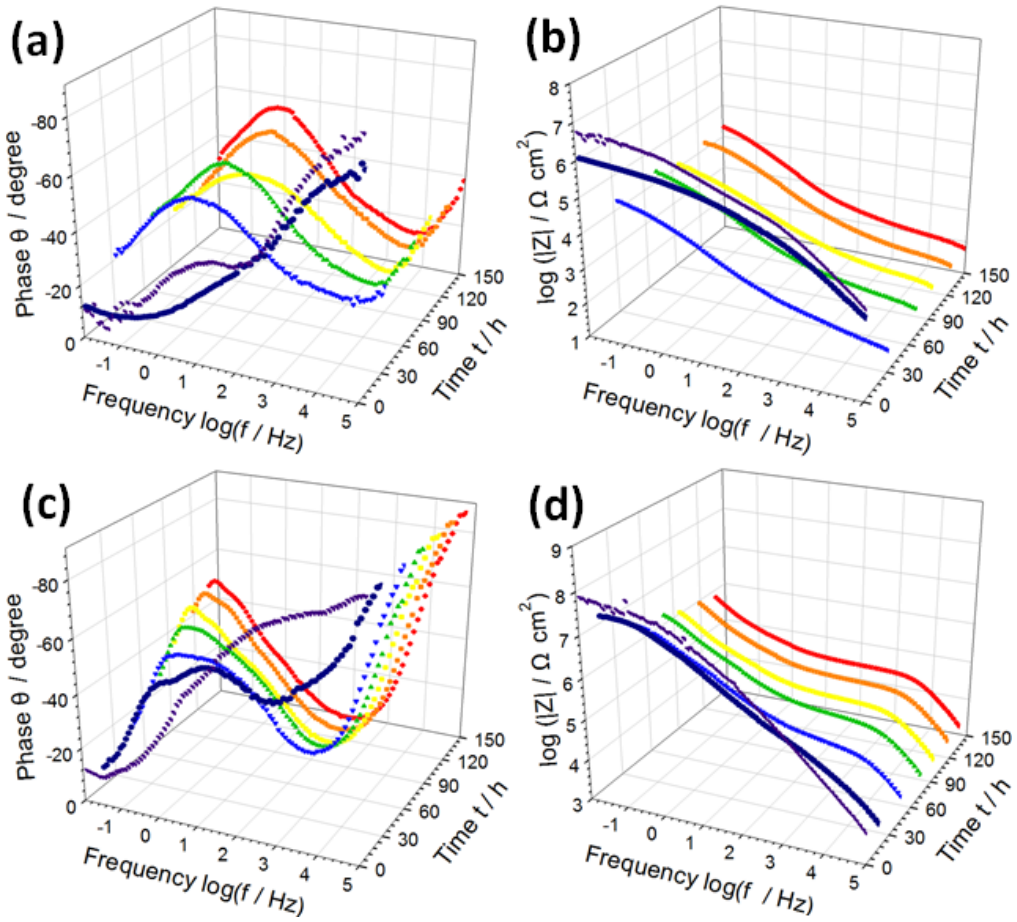

Figure S4. Bode plots of different PVB coating systems reinforced with (a)(b) SiO_2 nanoparticles and (c)(d) the mixture of SiO_2 and rGO.

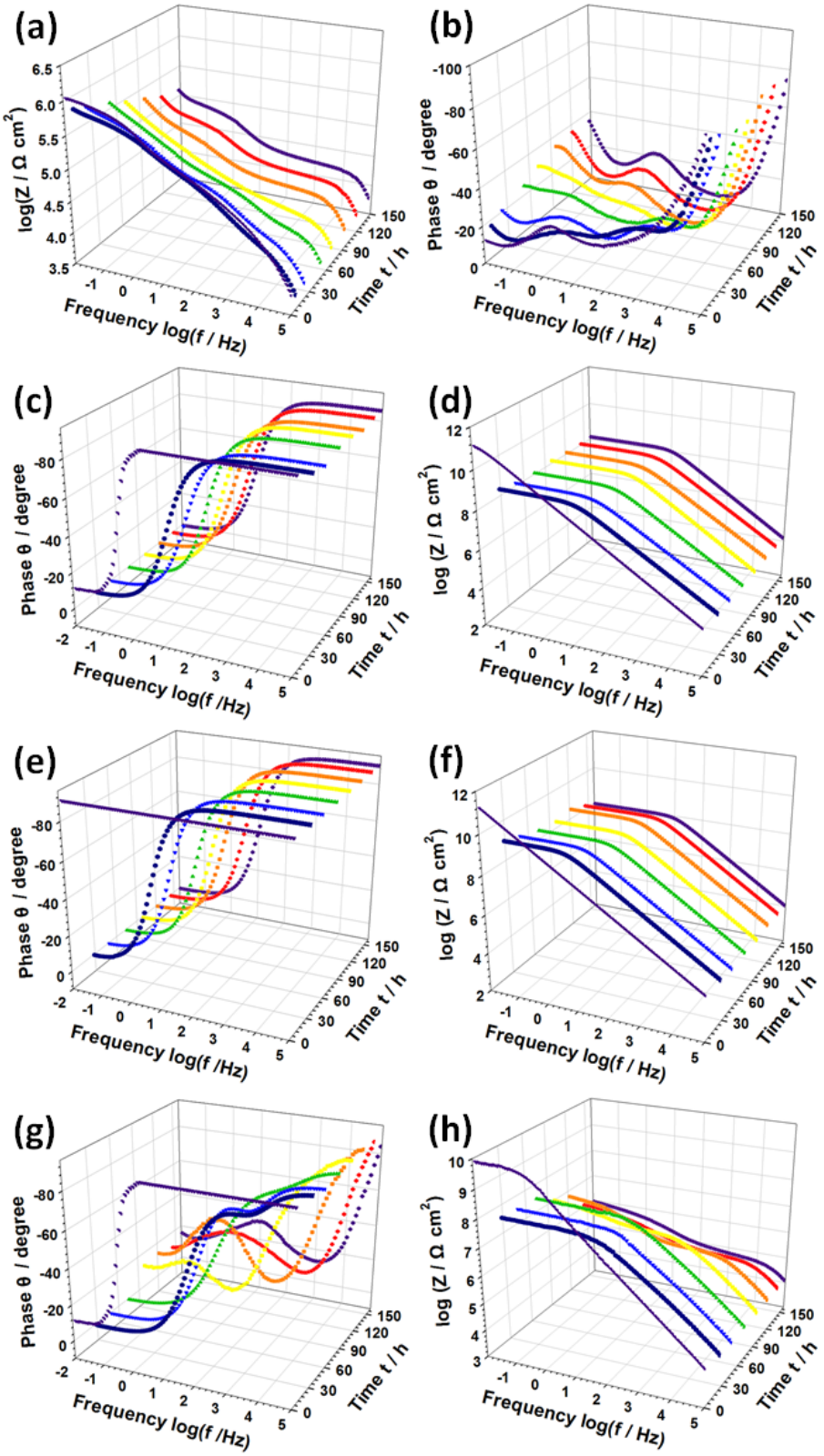

Figure S5. Bode plots of different coating systems. (a)(b) $GS_{0.025}$, (c)(d) $GS_{0.05}$, (e)(f) $GS_{0.15}$, (g)(h) $GS_{0.2}$

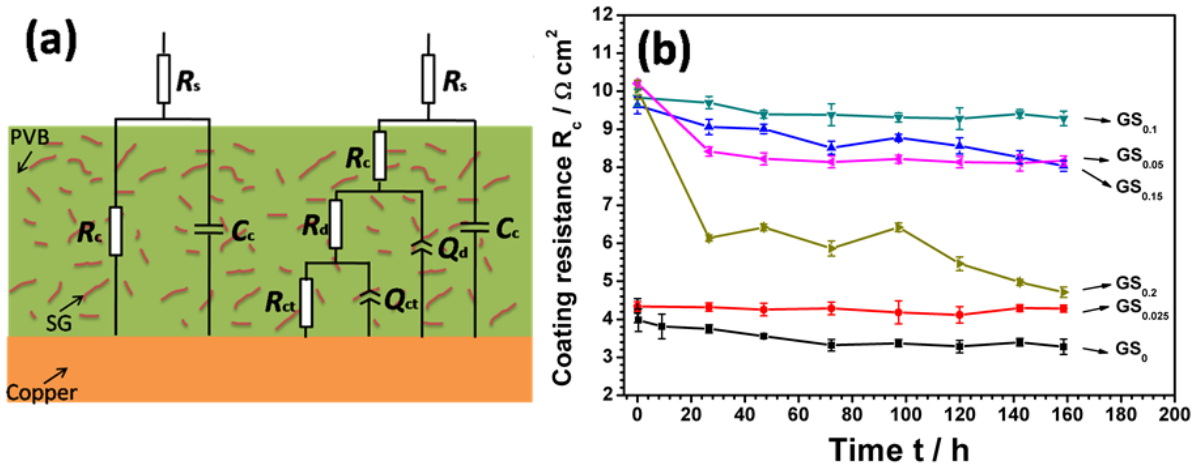

Figure S6. (a) Equivalent circuits. The circuit on the left is suitable for a coating with high anticorrosion performance, while the one on the right can be applied to fit the results of a failed coating. (b) The fitting results of the coating resistances of different coatings.

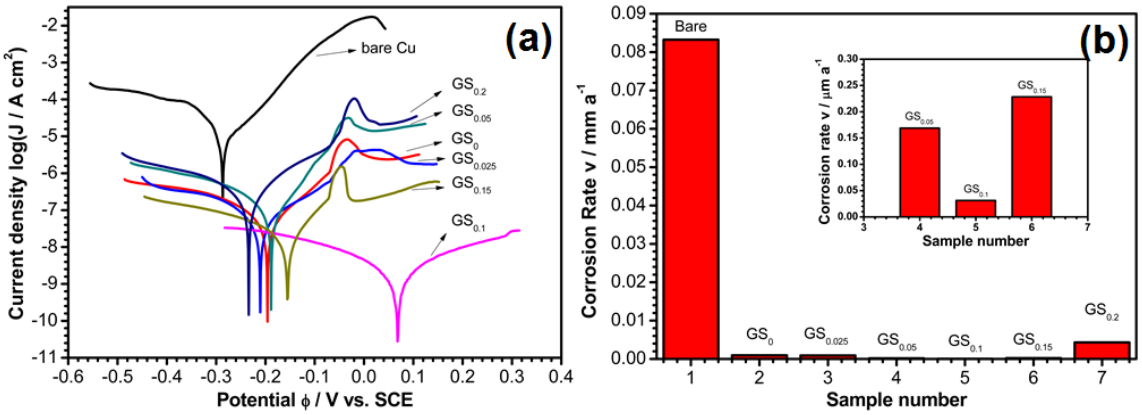

Figure S7. Polarization curves of different coatings after immersing in 3.5 wt.% NaCl aqueous solution for 1 day. (a) Polarization curves. (b) Calculated corrosion rates.

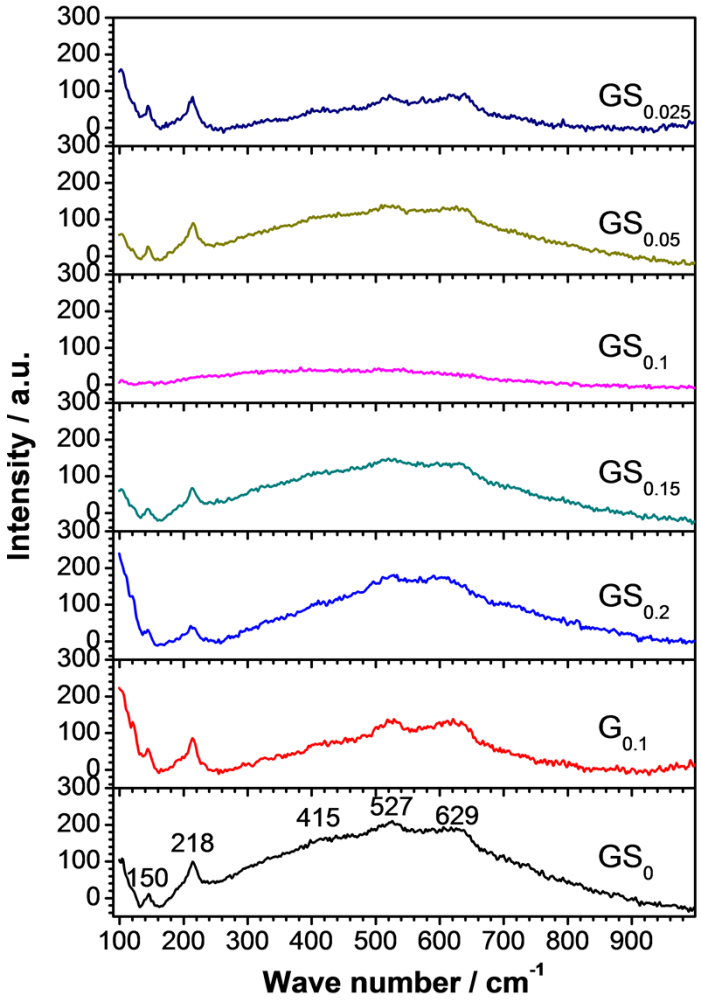

Figure S8. Raman spectra of the copper substrates beneath different coatings

References

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