Corrosion resistance of layer-by-layer assembled polyvinylpyrrolidone/polyacrylic acid and amorphous silica films on AZ31 magnesium alloys

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ESI Figure 1. (a) Cross-sectional image of the SiO2/(PVP/PAA)5 film and (b) the corresponding elemental mapping of the Si element.

ESI Figure 2. (a) 3D optical profilometry images of nanoscratches made on the SiO2/(PVP/PAA)5 film; (b) relationships between depth/load and sliding displacement for the SiO2/(PVP/PAA)5 film.

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ESI Figure 3. $I_{\text{corr}}$ of the similar coatings and their substrates compared with the SiO$_2$/(PVP/PAA)$_5$ film.

ESI Figure 4. Schematic illustrations of the deposition mechanisms of the (a) (PVP/PAA)$_5$ and (b) SiO$_2$/(PVP/PAA)$_5$ coatings on the AZ31 substrate.

ESI Figure 5. Schematic illustration of the corrosion mechanism of the SiO$_2$/(PVP/PAA)$_5$ film on the AZ31 substrate in HBSS.