Supplementary Information

High-Transparency, Weather-Resistant Nanocomposite Coatings from Shear-Aligned 2D Unit-Cell-Thick Perovskite for Wooden Artifact Preservation

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a College of Materials Science and Engineering, Taiyuan University of Technology, Taiyuan 030024, China.

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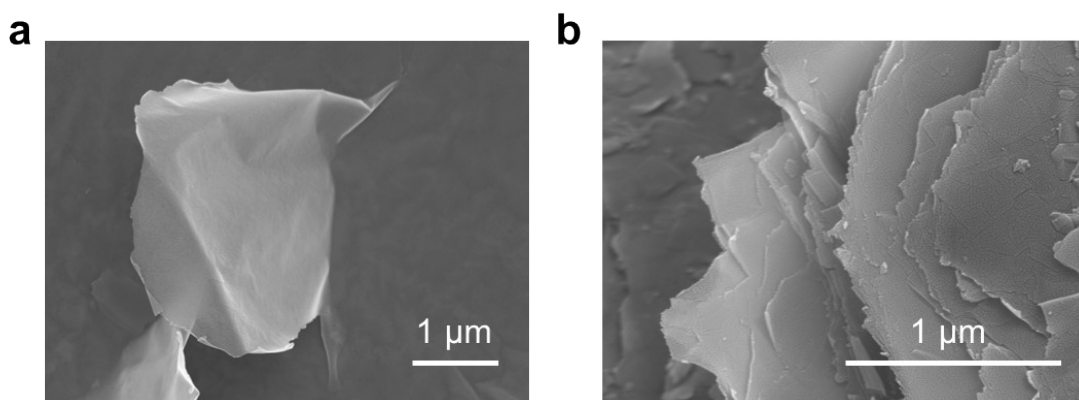
†These authors contributed equally.

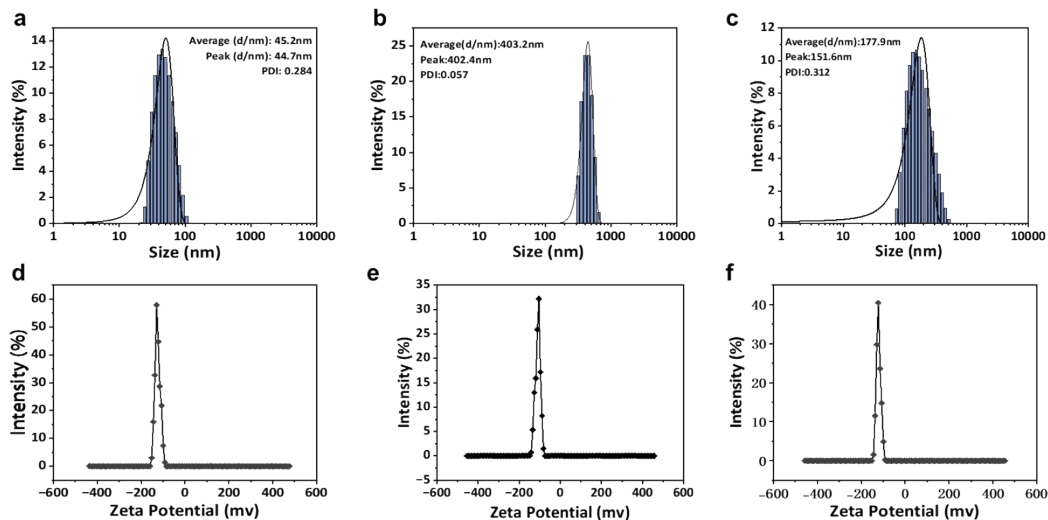**Table S1.** The variation of resin viscosity with different PNS contents

| PNS Contents (wt%)	0	1	2	3	4
Viscosity (mpa·s)	171.3	189.7	215.4	232.2	247.9
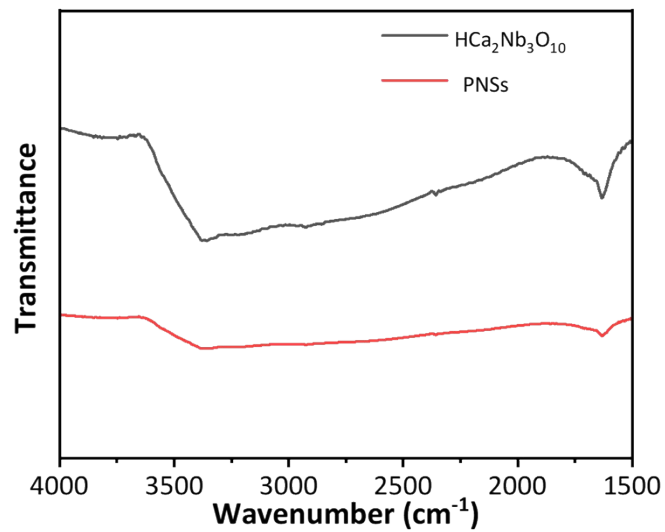
**Figure S1.** Fourier Transform Infrared (FTIR) spectroscopy spectra of $HCa_2Nb_3O_{10}$ and PNSs.

**Figure S2.** Scanning electron microscopy (SEM) images of the PNSs.

Figure S3. Dynamic Light Scattering (DLS) size distribution histogram and Zeta potential distribution diagram for AR, PNS and PNS-AR aqueous solutions with 3 wt% PNS content.
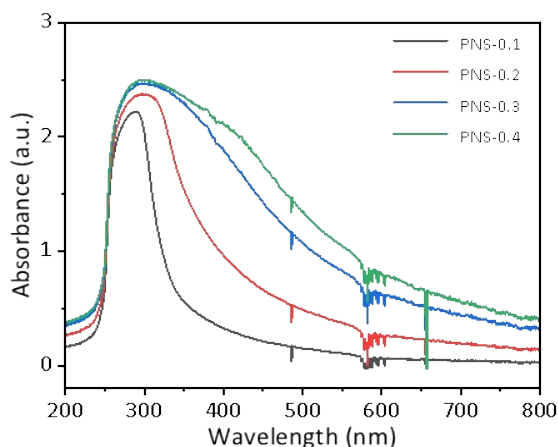
Figure S4. UV-Vis absorption spectra of PNS dispersion in water with different PNS contents.
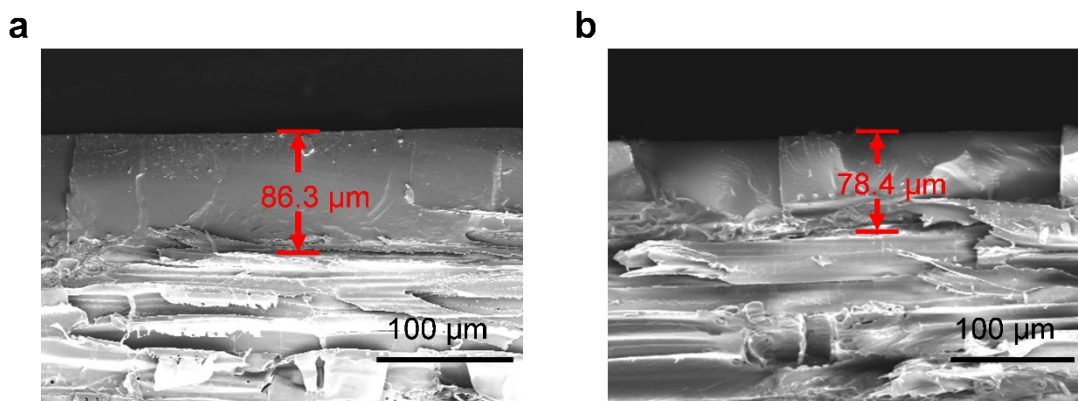
Figure S5. SEM images of the cross-sections of wooden blocks with (a) AR and (b) PNS-AR coatings.
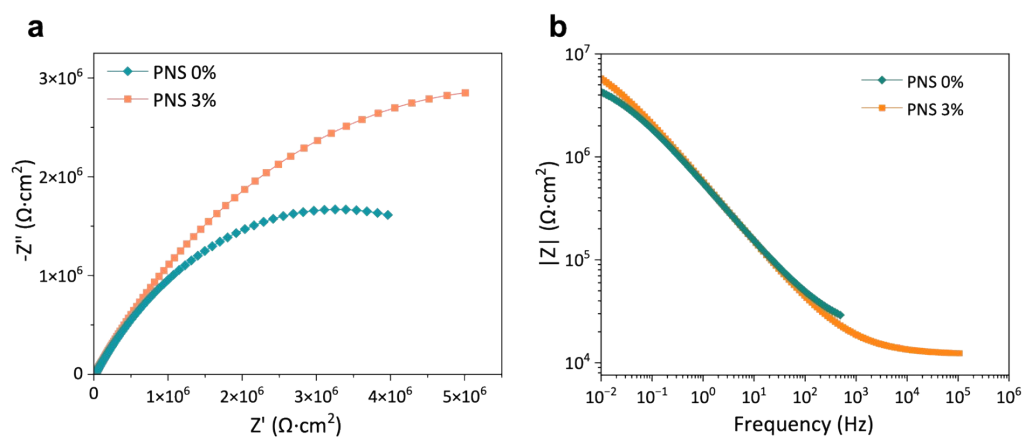
Figure S6. Electrochemical impedance spectroscopy (EIS) analysis of the composite coatings. (a) Nyquist plot showing the higher impedance of the PNS-AR coating compared to the AR coating. (b) Bode plot demonstrating the increased impedance modulus at low frequency for the PNS-AR coating, indicating superior electrochemical protection.