

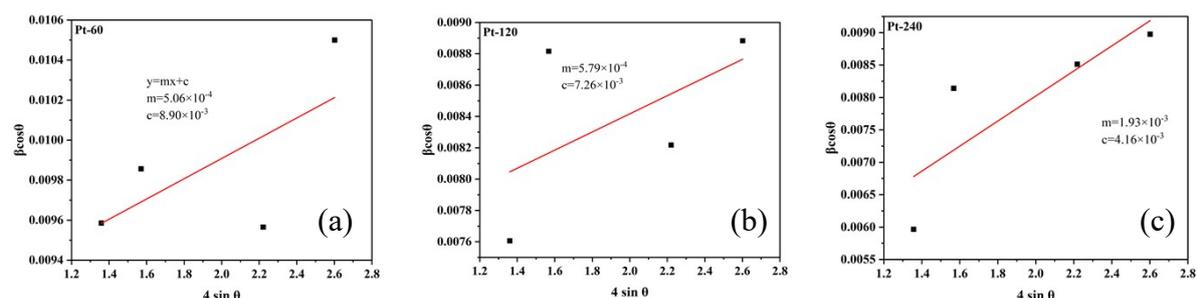
## Supplementary Information

### Enhancing Durability of Pt-Coated Titanium Porous Transport Layer for PEM Water Electrolysis using TiN Interlayers

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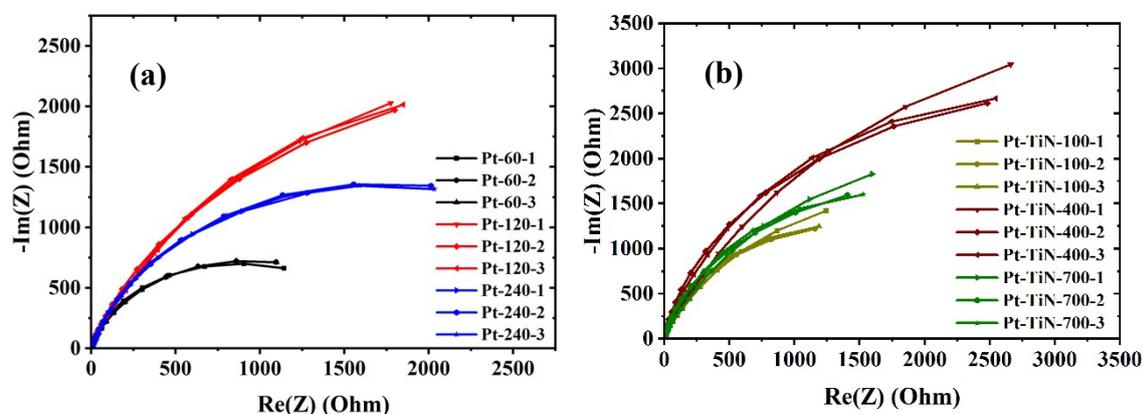
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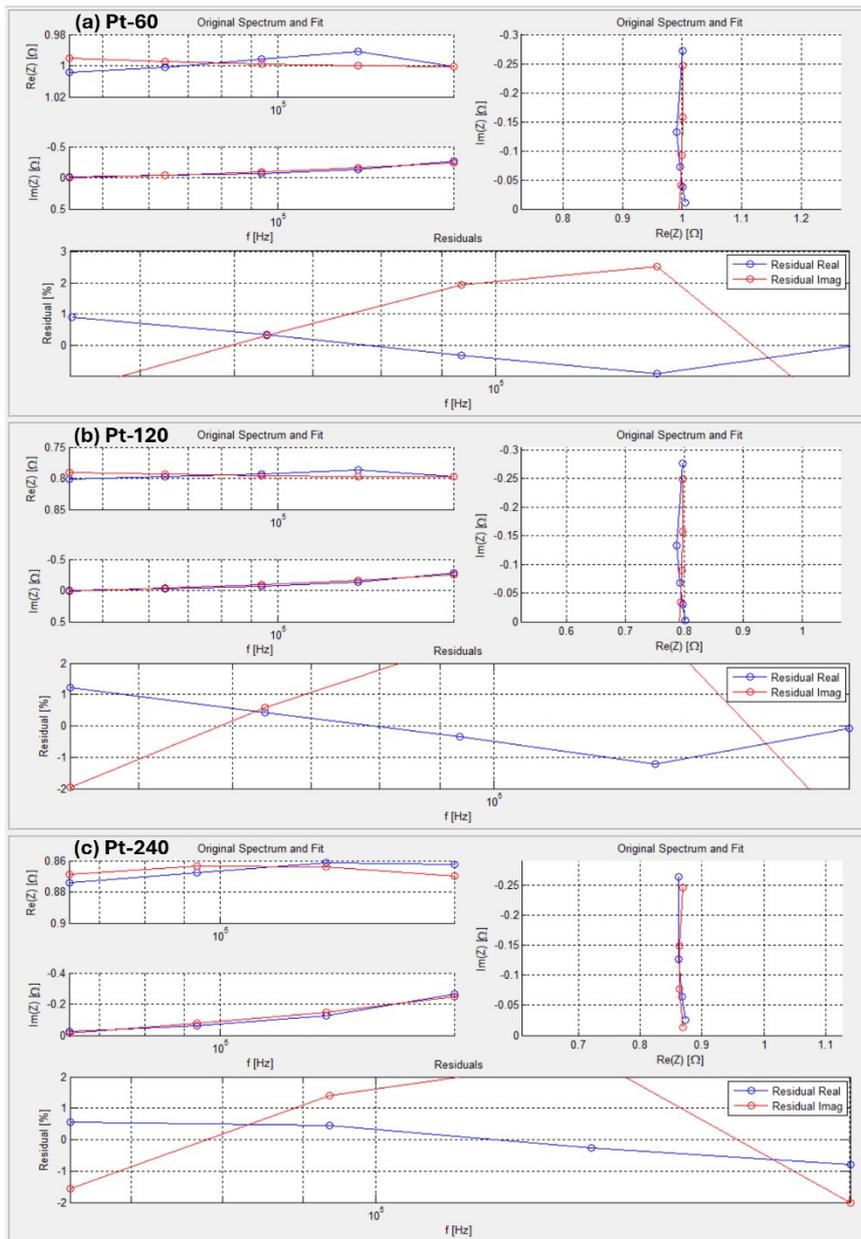
**Fig. S1** Williamson–Hall plots for Pt-coated samples sputtered at 60 W, 120 W, and 240 W (a), (b) and (c) respectively. The slope indicates lattice strain, and the intercept corresponds to crystallite size.

**Table S1** Intercept, slope, calculated crystallite size, and lattice strain for Pt-coated samples derived from Williamson–Hall analysis.

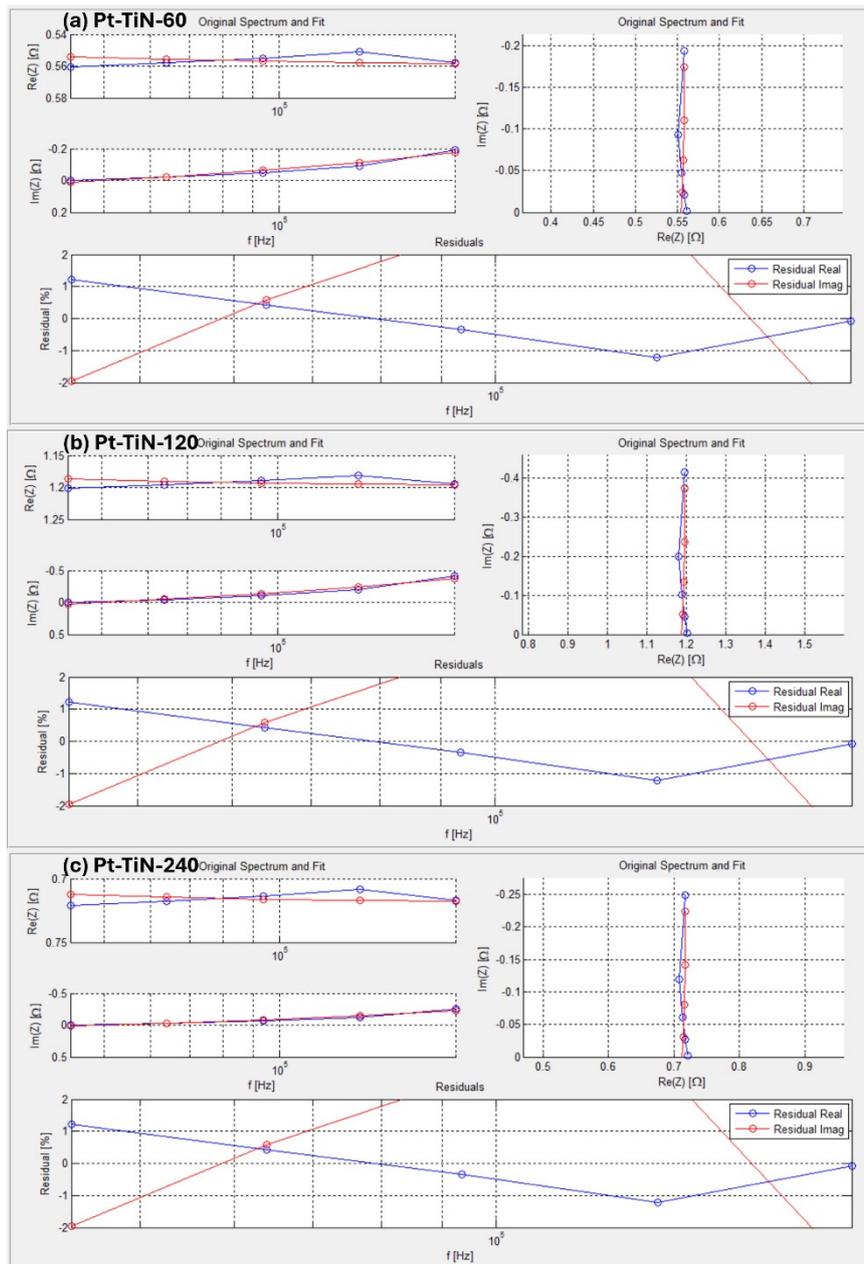
	Intercept	Slope	Crystallite size (nm)	% Stain
<b>Pt-60</b>	$8.9 \times 10^{-3}$	$5.06 \times 10^{-4}$	15.58	0.051%
<b>Pt-120</b>	$7.26 \times 10^{-3}$	$5.79 \times 10^{-4}$	18.99	0.058%
<b>Pt-240</b>	$4.16 \times 10^{-3}$	$1.93 \times 10^{-3}$	33.01	0.193%



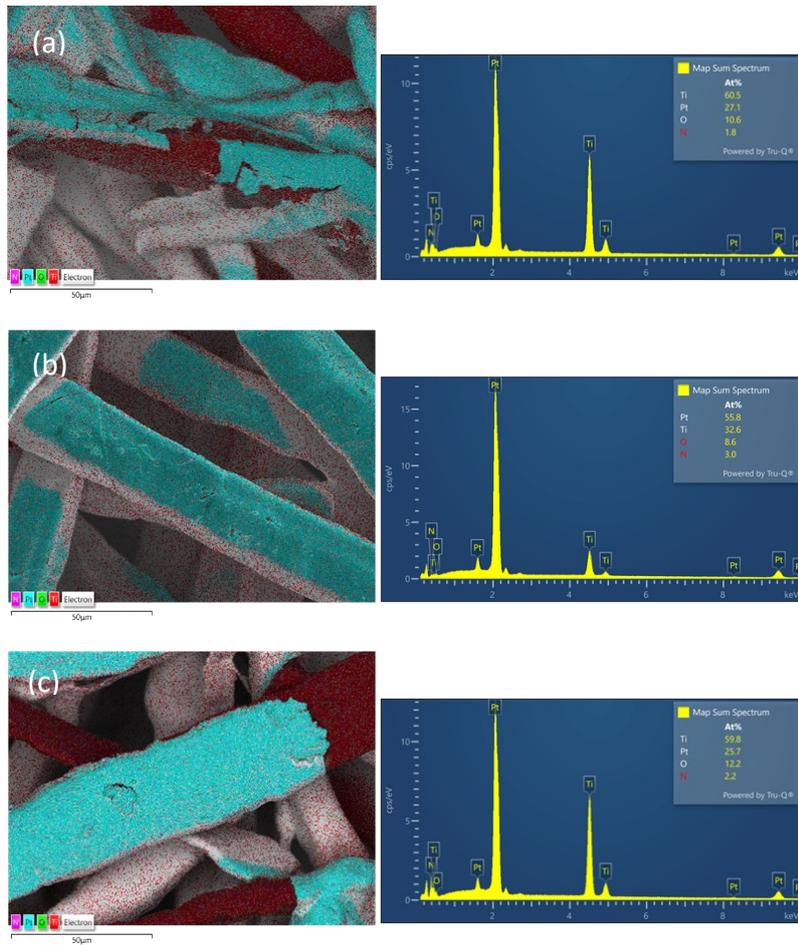
**Fig. S2** Triplicate EIS measurement (a) Pt coated sample with different sputter power (b) Pt-120 coated PTL with different thickness of TiN interlayer



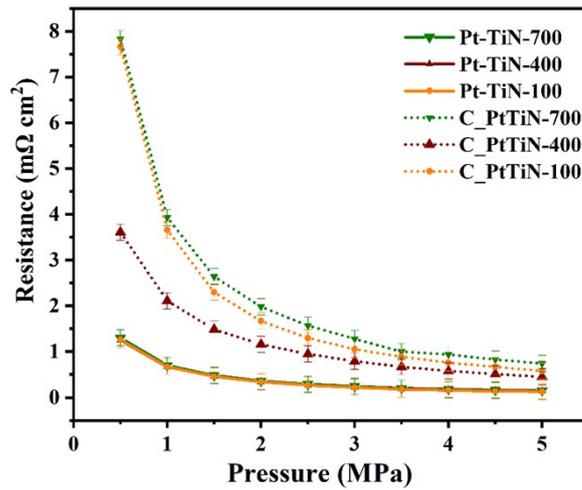
**Fig. S3** Residual plots obtained from Kramers-Kronig test of (a) Pt-60, (b) Pt-120, (c) Pt-240.



**Fig. S4** Residual plots obtained from Kramers-Kronig test of (a) Pt-TiH-100, (b) Pt-TiN-400, (c) Pt-TiN-700.



**Fig. S5** EDS color mapping of Pt-coated Ti-felt with TiN interlayer after 15hrs of CA (a) Pt-TiN-100 (b) Pt-TiN-400 (c) Pt-TiN-700. Right side of each is the Atomic % of the



**Fig. S6** ICR plots of Pt coated Ti Felt with TiN interlayer before and after corrosion rest.