



Supplementary Material for:

# Optimization of sulfonated polycatechol:PEDOT interpenetrating network energy storage performance by the morphology control

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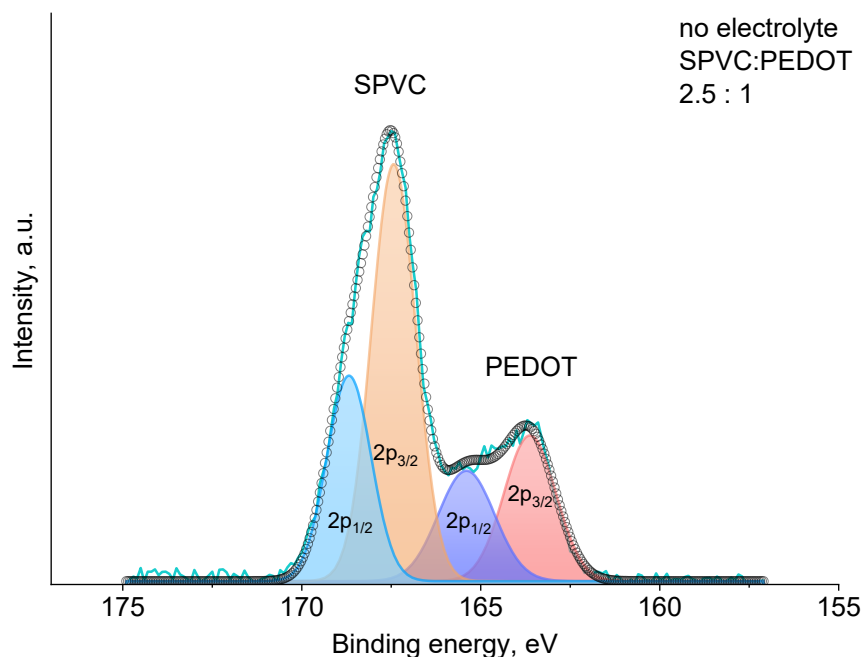
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**Figure S1.** Fitted XPS spectrum of the PEDOT:SPVC film, no NaClO<sub>4</sub>.

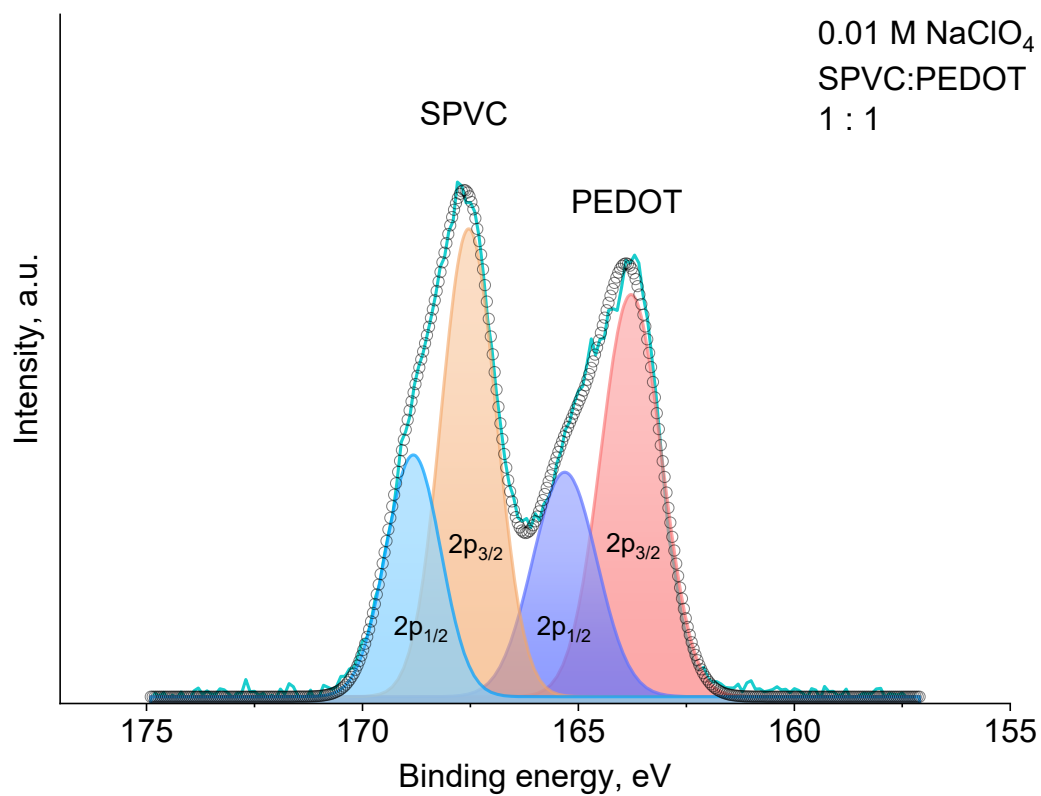


Figure S2. Fitted XPS spectrum of the PEDOT:SPVC film, 0.01 M NaClO<sub>4</sub>.

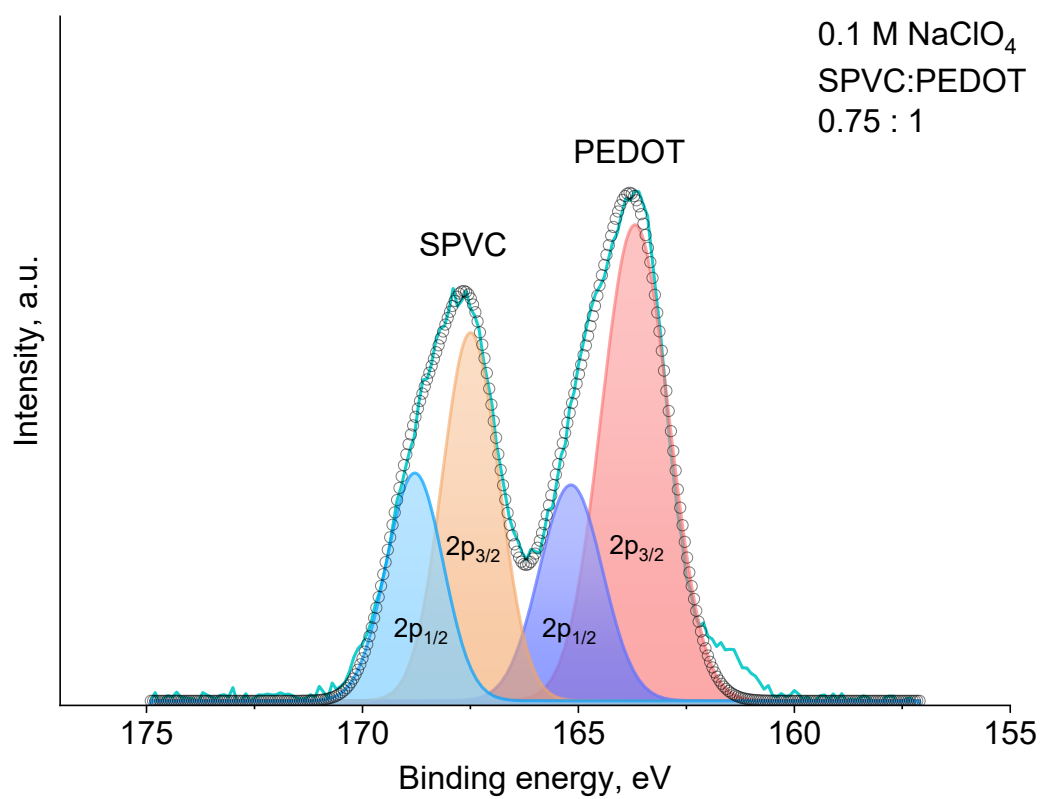


Figure S3. Fitted XPS spectrum of the PEDOT:SPVC film, 0.1 M NaClO<sub>4</sub>.

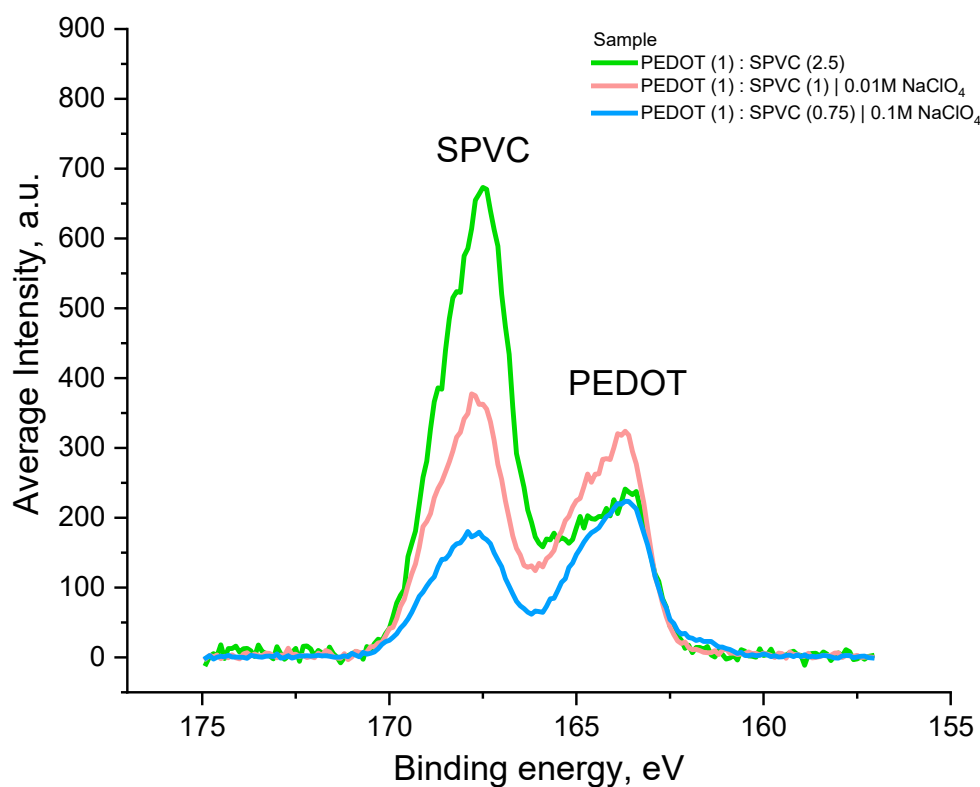


Figure S4. Overlaid XPS spectra of the PEDOT:SPVC with NaClO<sub>4</sub> additives.

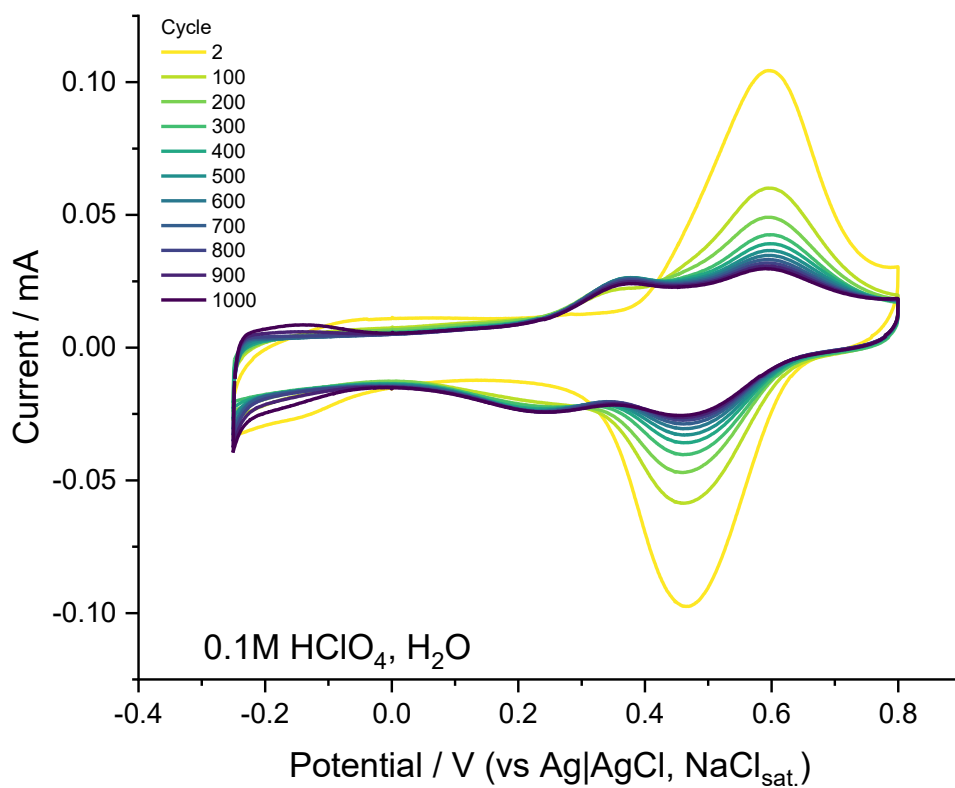


Figure S5. CV stability of PEDOT:SPVC, 20 mV s<sup>-1</sup>, 0.1 M HClO<sub>4</sub>.

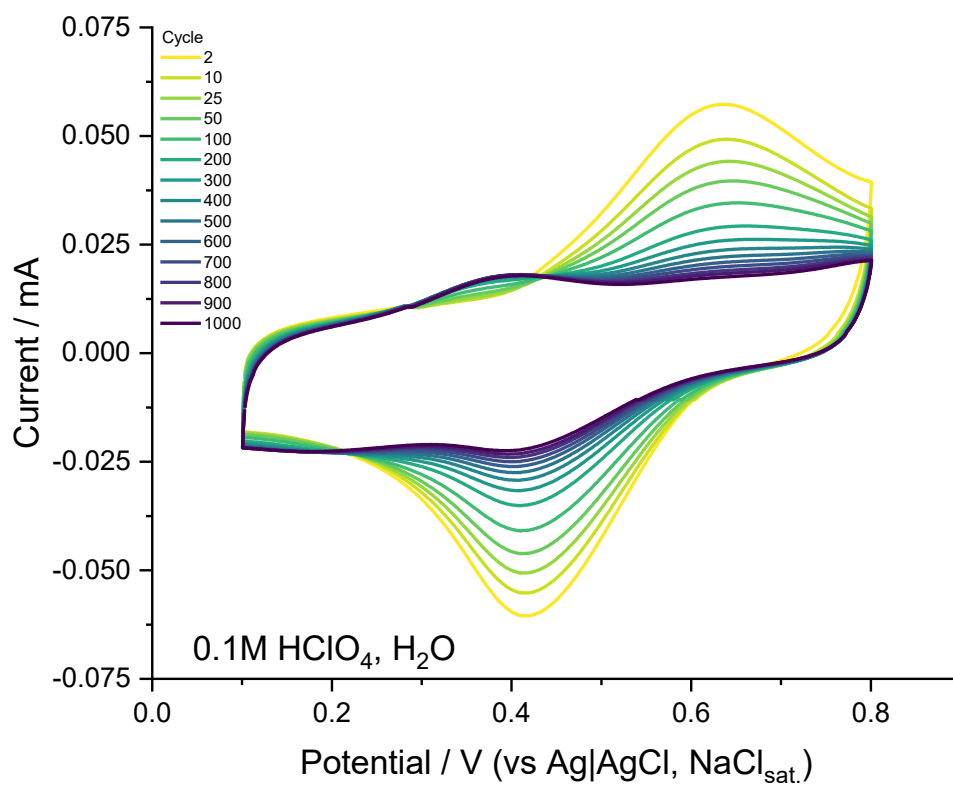


Figure S6. CV stability of PEDOT:SPVC, short range, 20 mV s<sup>-1</sup>, 0.1 M HClO<sub>4</sub>.

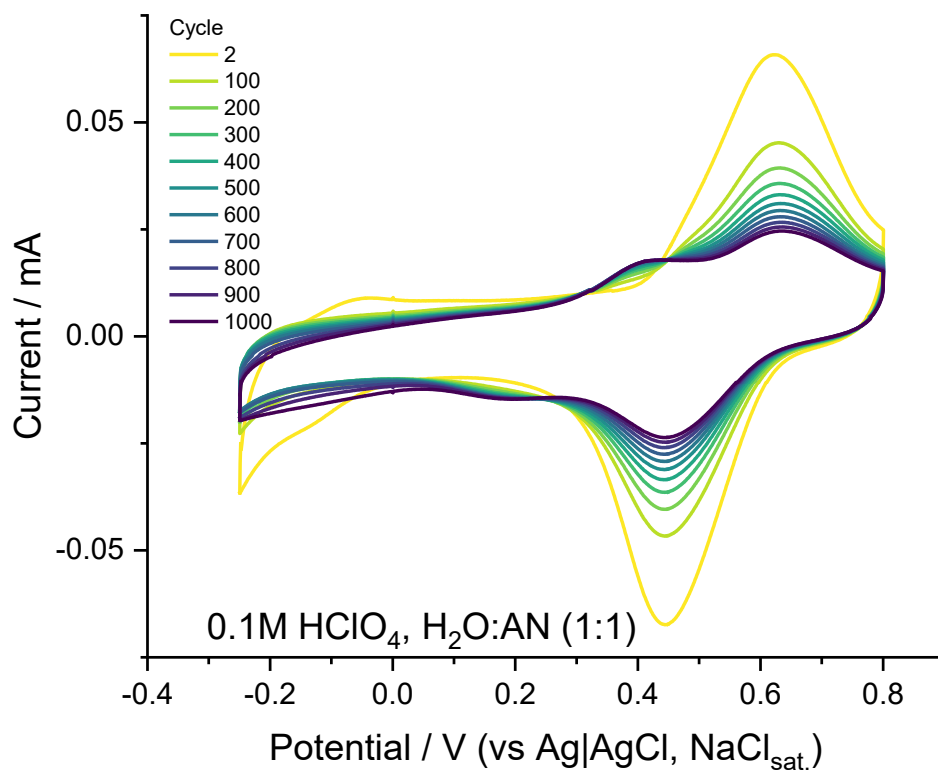


Figure S7. CV stability of PEDOT:SPVC, CH<sub>3</sub>CN additive, 20 mV s<sup>-1</sup>, 0.1 M HClO<sub>4</sub>.

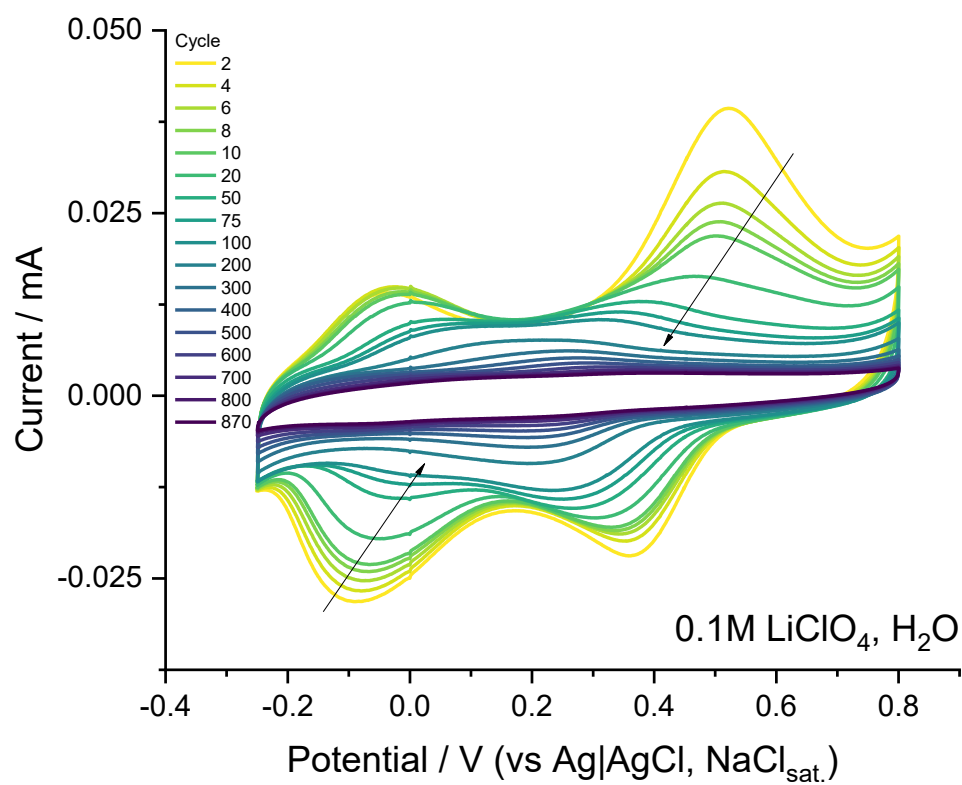


Figure S8. CV stability of PEDOT:SPVC, 20 mV s<sup>-1</sup>, 0.1 M LiClO<sub>4</sub>.

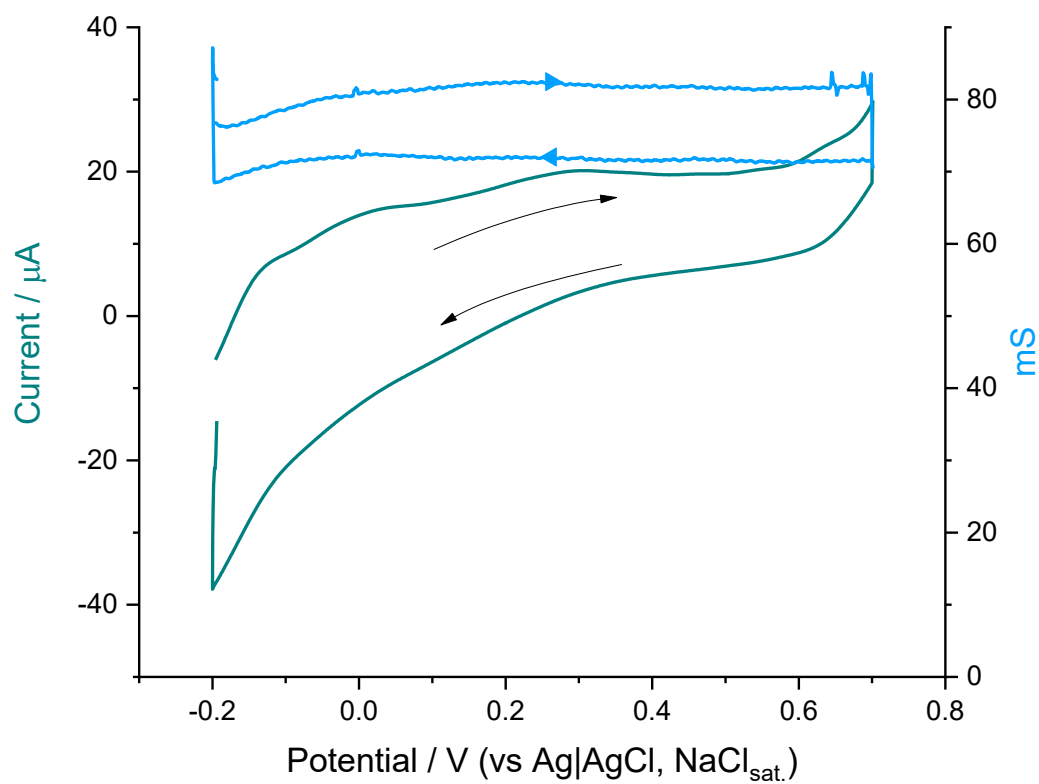


Figure S9. Conductance of the PEDOT:PSS film, 5 mV s<sup>-1</sup>, 0.1 M HClO<sub>4</sub>.

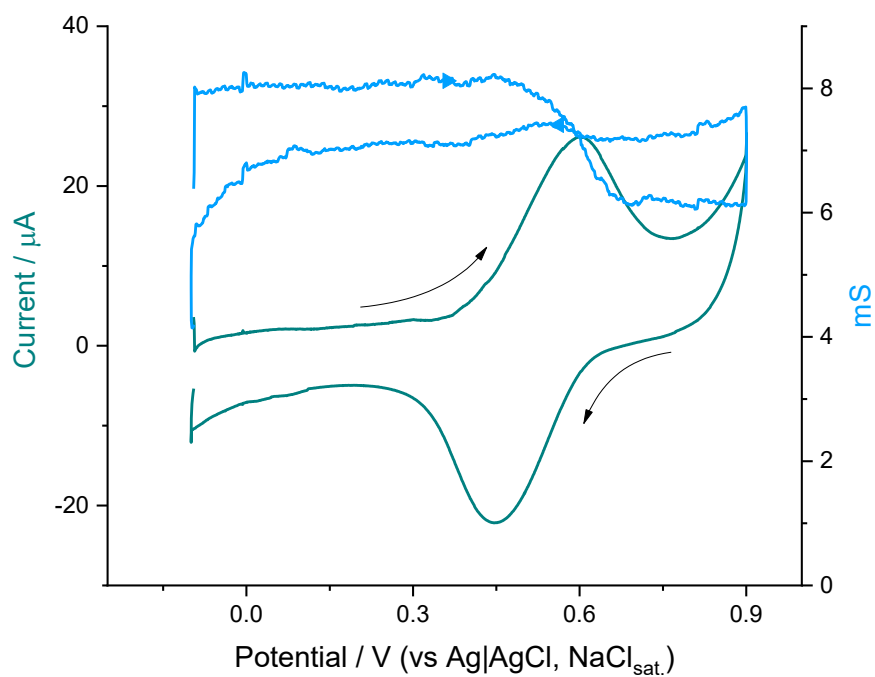


Figure S10. Conductance of the PEDOT:SPVC film,  $5 \text{ mV s}^{-1}$ ,  $0.1 \text{ M HClO}_4$ .

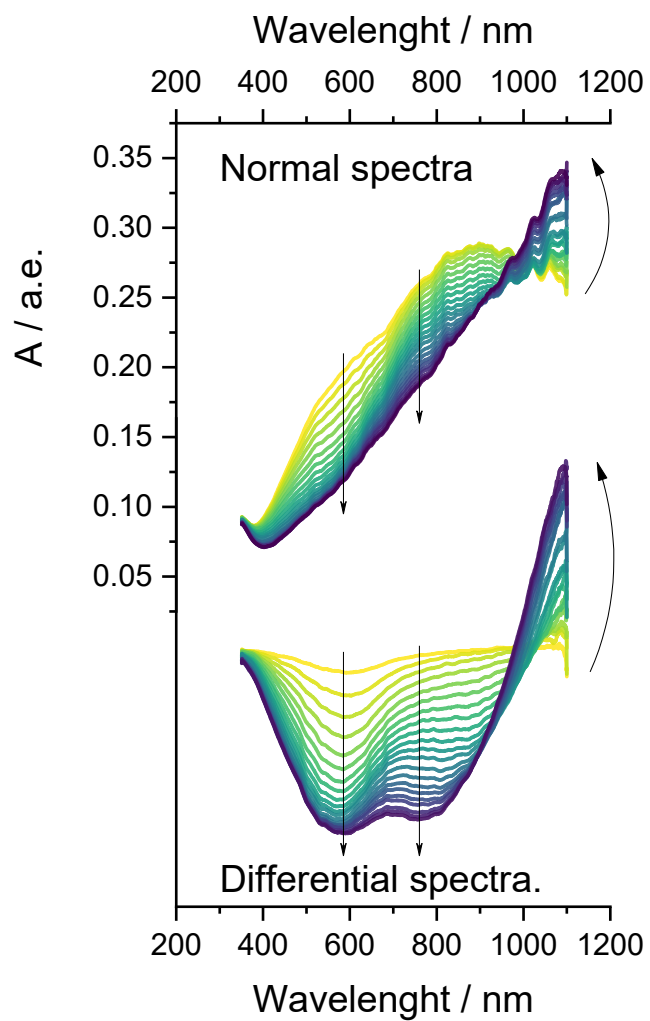
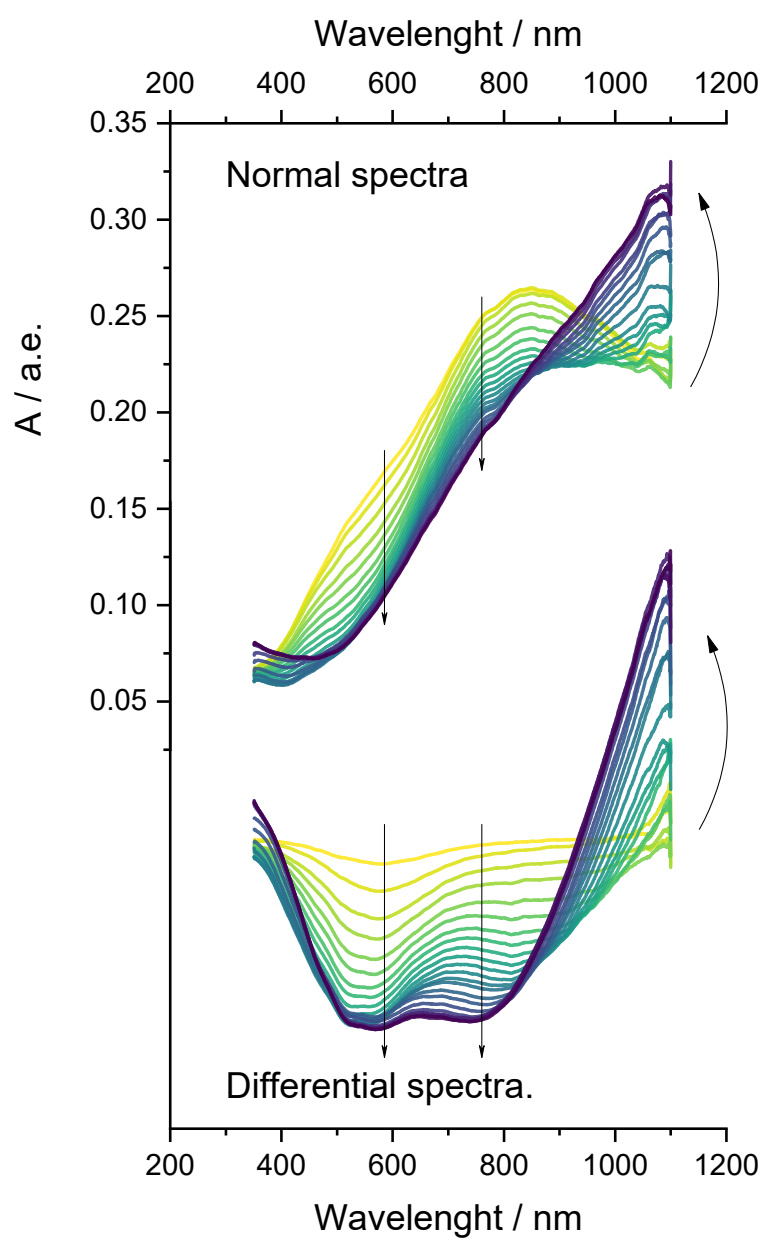


Figure S11. Potential-dependent UV-Vis spectra of PEDOT:PSS,  $0.1 \text{ M HClO}_4$ .



**Figure S12.** Potential-dependent UV-Vis spectra of PEDOT:SPVC, 0.1 M HClO<sub>4</sub>.