

Development of a PtSn bimetallic catalyst for direct fuel cells using bio-butanol fuel

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Electronic supplementary Information (ESI)

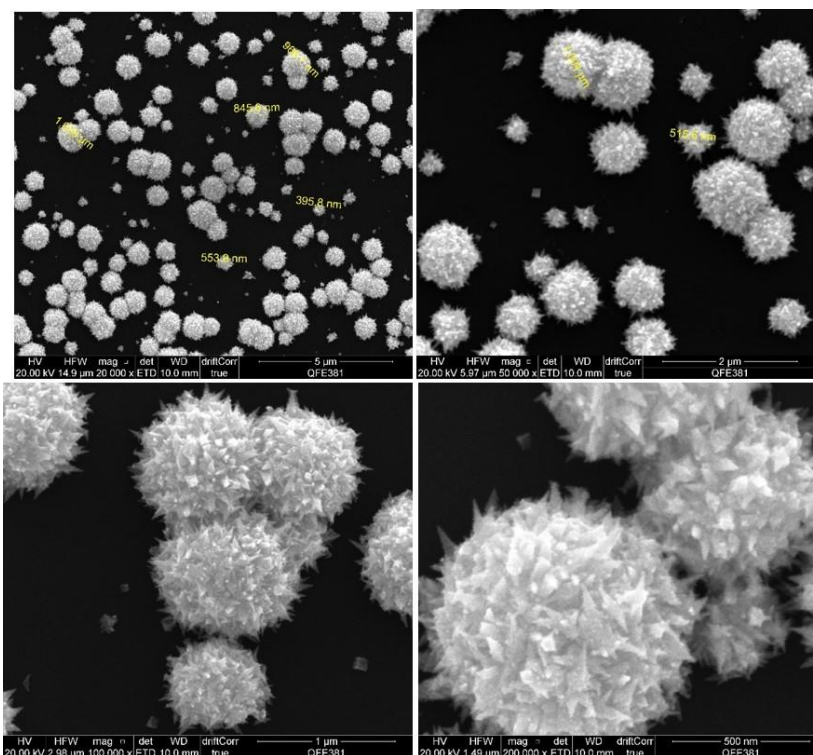


Figure S1. Typical SEM images of Pt electro-deposited on glassy carbon.

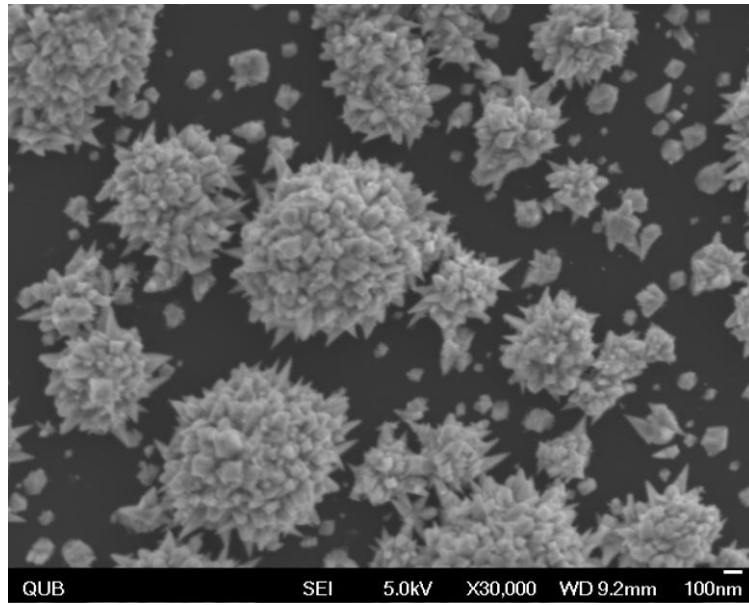


Figure S2. Typical SEM image of the PtSn on glassy carbon ($\theta_{Sn} \sim 16\%$).

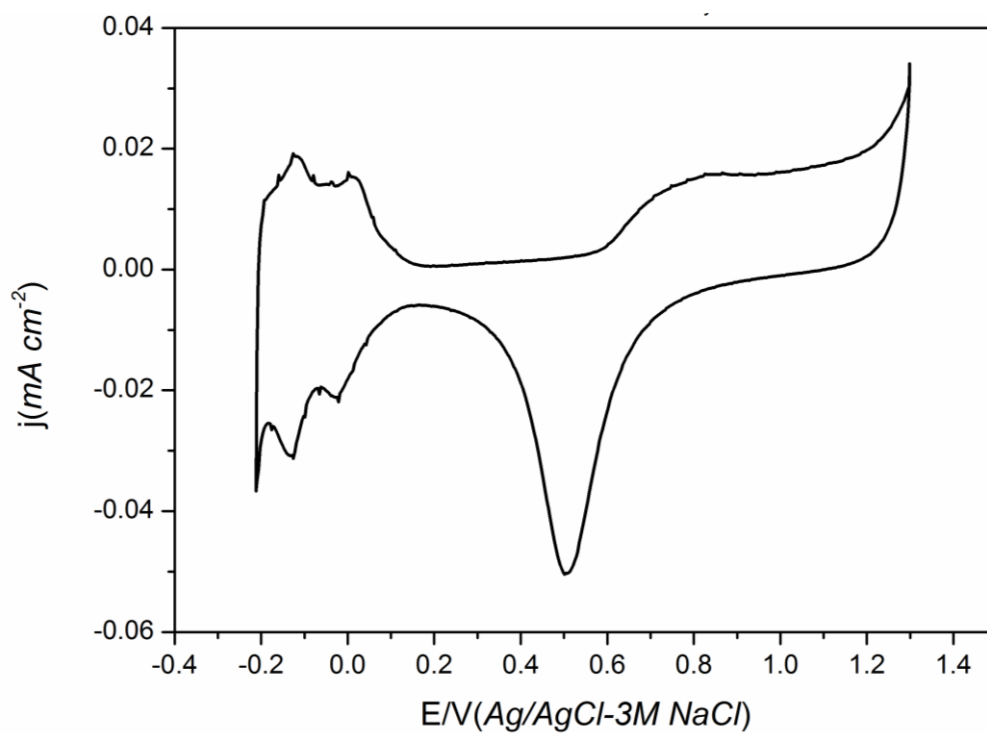


Figure S3. Cyclic voltammogram of Pt electrodeposited on glassy carbon in 0.5M H_2SO_4 . The current value was normalized by the active area A_r of Pt (6.23 cm^2); scan rate 20 mV s^{-1} .

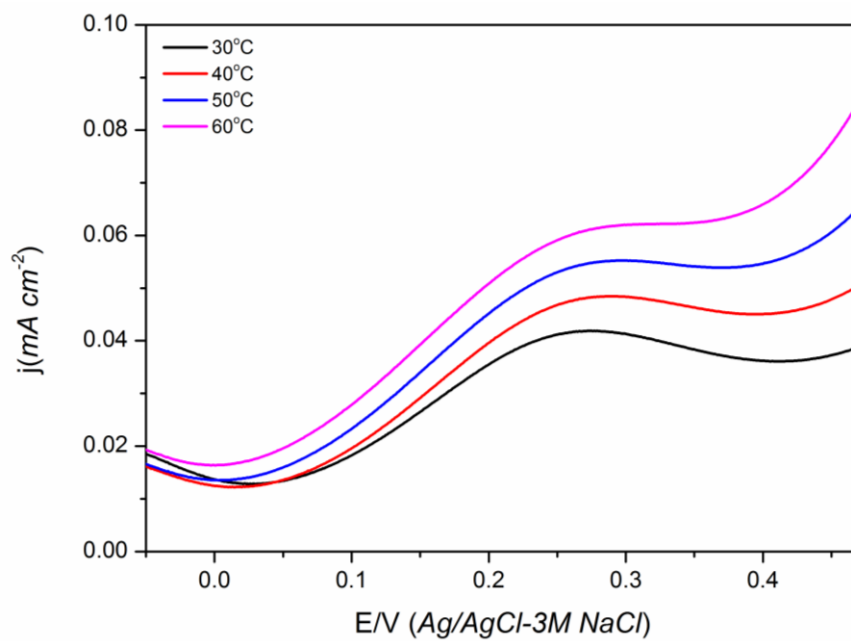


Figure S4. The voltammograms of PtSn ($\theta_{Sn} \sim 17\%$) electrode in $0.1M$ $n\text{-BtOH}$ + $0.1M$ H_2SO_4 at different temperatures. Scan rate: 50 mV s^{-1} .

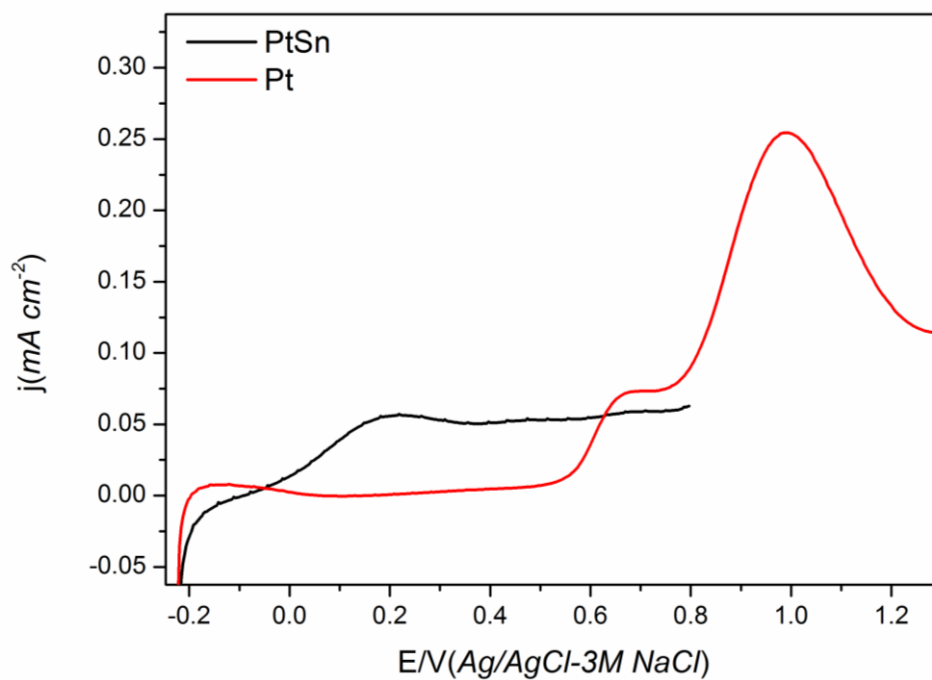


Figure S5. The voltammogram of a PtSn electrode with a high Sn coverage ($\theta_{\text{Sn}} \sim 55\%$) in $0.1\text{M } n\text{-BtOH} + 0.1\text{M } \text{H}_2\text{SO}_4$ solution; also shown is that of pure Pt electrode over a wider potential range. Scan rate 20 mV s^{-1} .

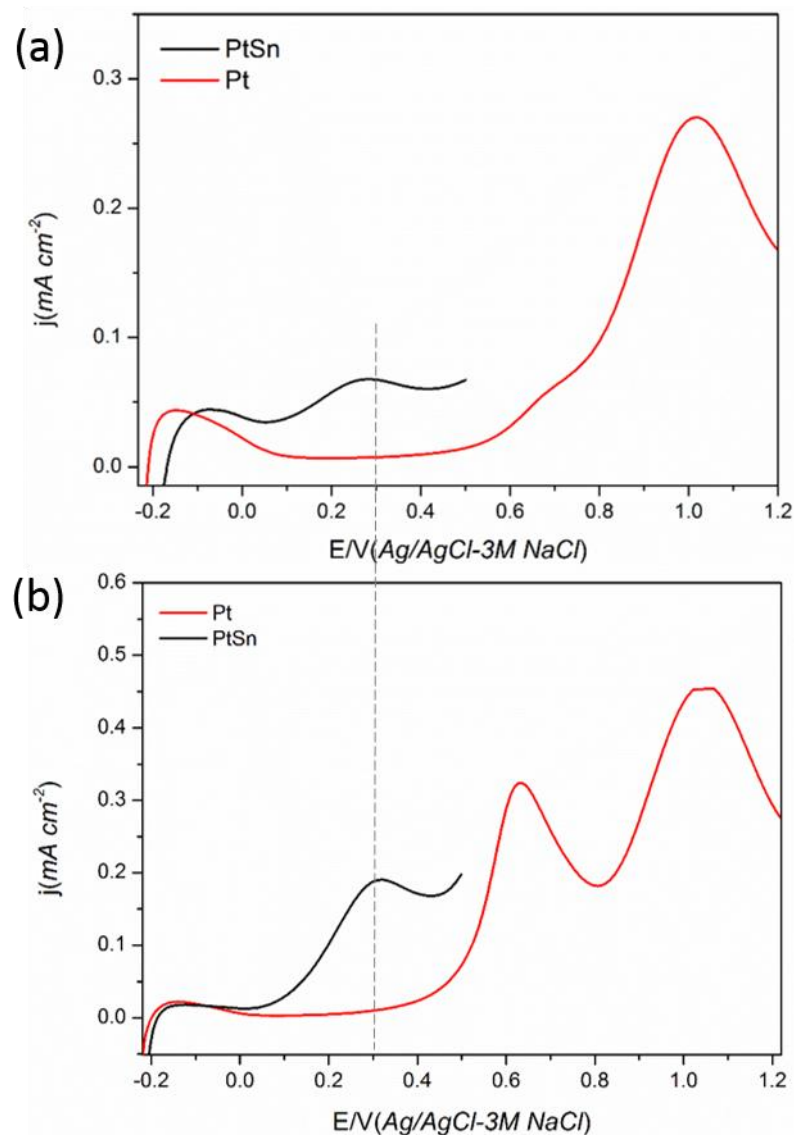


Figure S6. The voltammograms of Pt and PtSn electrodes in (a) $0.1\text{M iso-BtOH} + 0.1\text{M H}_2\text{SO}_4$ (where the PtSn with $\theta_{\text{Sn}} \sim 15\%$), and (b) $0.1\text{M EtOH} + 0.1\text{M H}_2\text{SO}_4$ (where the PtSn with $\theta_{\text{Sn}} \sim 20\%$). Current normalized by electrochemical active area of Pt for all electrodes. Scan rate: 50 mV s^{-1} .