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

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Electronic supplementary Information (ESI)

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Figure S1. Typical SEM images of Pt electro-deposited on glassy carbon.
Figure S2. Typical SEM image of the PtSn on glassy carbon ($\theta_{\text{Sn}} \sim 16\%$).
Figure S3. Cyclic voltammogram of Pt electrodeposited on glassy carbon in 0.5M H₂SO₄. The current value was normalized by the active area A_r of Pt (6.23 cm²); scan rate 20 mV s⁻¹.
Figure S4. The voltammograms of PtSn ($\theta_{Sn} \approx 17\%$) electrode in 0.1M n-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 0.1M n-BtOH+0.1M $H_2SO_4$ 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) 0.1M iso-BtOH + 0.1M H₂SO₄ (where the PtSn with θ_{Sn} ~15%), and (b) 0.1M EtOH + 0.1M H₂SO₄ (where the PtSn with θ_{Sn} ~20%). Current normalized by electrochemical active area of Pt for all electrodes. Scan rate: 50 mV s⁻¹.