

**ALD SnO<sub>2</sub> Protective Decoration Enhances the Durability of a Pt Based Electrocatalyst**

## **Electronic Supplementary Information**

### **ALD SnO<sub>2</sub> Protective Decoration Enhances the Durability of a Pt Based Electrocatalyst**

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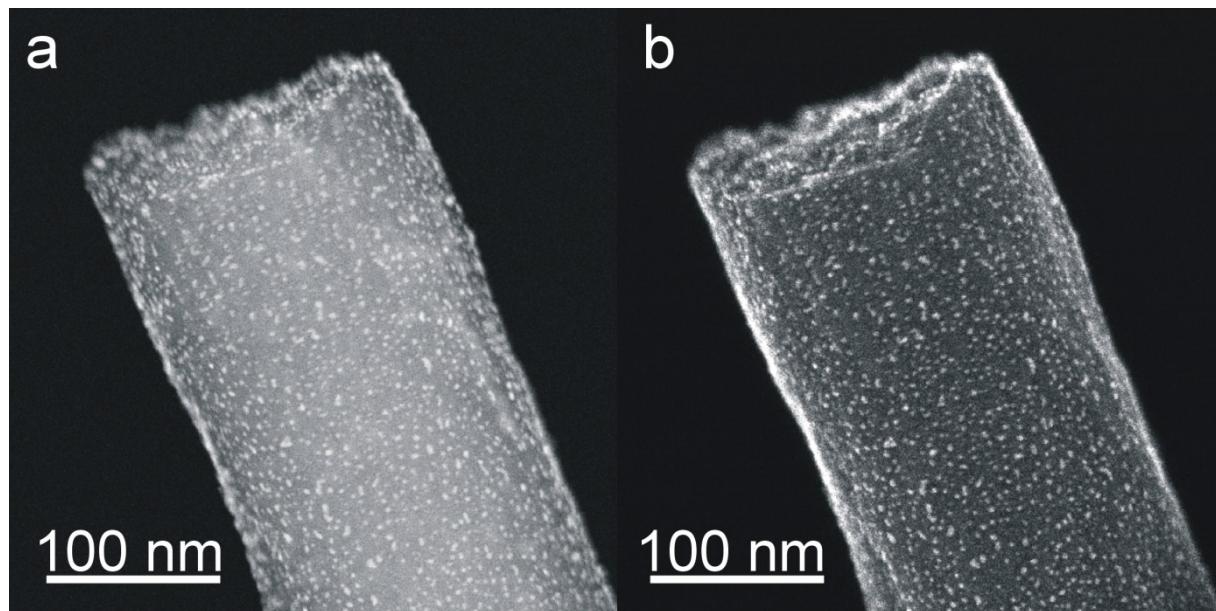
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**Table ESI.1.** Particle distribution calculated over 200 particles for each sample from TEM analysis.

Sample	Size (nm)
Pt/CF before CV	2.3 ± 1.0
Pt/CF after CV	7.0 ± 4.7
SnO <sub>2</sub> /Pt/CF before CV	2.5 ± 0.8
SnO <sub>2</sub> /Pt/CF after CV	4.9 ± 2.4

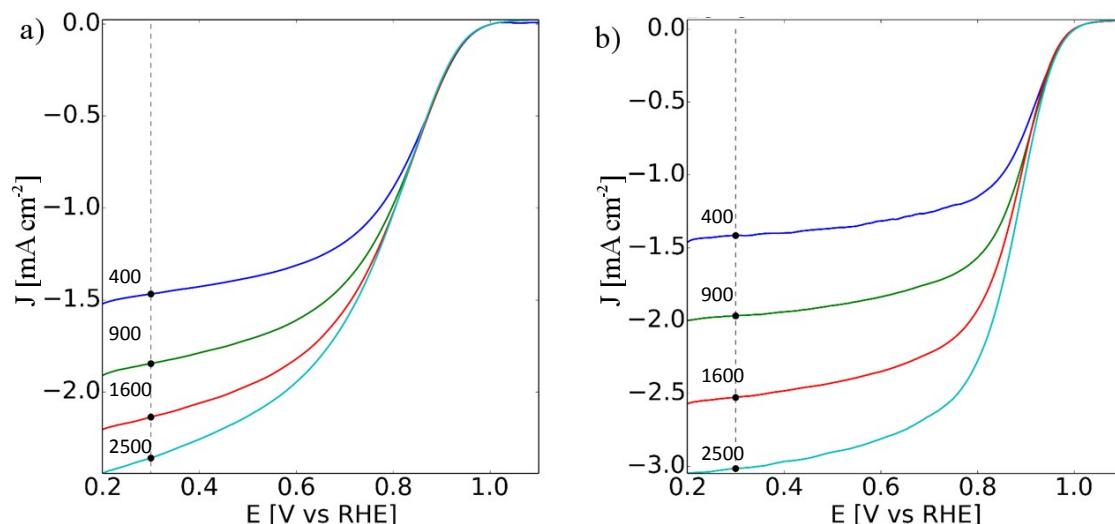


**Figure ESI.1.** a) Dark field STEM and b) EDS images of uncoated Pt/CFs before cyclic voltammetry.

**Table ESI.2.** Surface weight percentages of the various elements determined by XPS.

Element	at%	wt%
C (1s)	65	17.7
Pt (4f)	14.6	64.8
Sn (3d5)	4.3	11.6
O (1s)	16.1	5.9

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**Figure ESI.2.** ORR in a 0.5 M H<sub>2</sub>SO<sub>4</sub> solution saturated with O<sub>2</sub> at 400, 900, 1600 and 2500 RPM for a) uncoated b) SnO<sub>2</sub>-coated carbon fibers.

**Table ESI.3.** ORR mass activities at the peak potential 0.85 V and 0.9 V.

Catalyst	Mass Activity [A/g <sub>Pt</sub> ]	
	0.85 V	0.9 V
Pt/CF	85.3	26.2
SnO <sub>2</sub> /Pt/CF	135.4	30.7

**Table ESI.4.** Comparison of the response to accelerated degradation test of the unprotected and SnO<sub>2</sub> decorated electrocatalysts.

Catalyst	ECSA [m <sup>2</sup> /g <sub>Pt</sub> ]	Loss (%)
Pt/CF	8.3	69
SnO <sub>2</sub> /Pt/CF	18.2	37