SUPPORTING INFORMATION

Catalytic Activity of Platinum Monolayer on Iridium and Rhenium Alloy Nanoparticles for the Oxygen Reduction Reaction

Hiroko I. Karan, Kotaro Sasaki, Kurian Kuttiyel, Carrie A. Farberow,
Manos Mavrikakis and Radoslav R. Adzic

Corresponding authors: Hiroko Karan, karanfamily@gmail.com
Department of Physical, Environmental and
Computer Sciences Medgar Evers College, The City
University New York, 1638 Bedford Ave., Brooklyn,
N.Y. 11225
Radoslav Adzic, Adzic@bnl.gov, Brookhaven National
Laboratory, Upton, NY 11973

XRD pattern from IrRe (1:1) and from Ir₃Re₁.

The XRD for IrRe shows nearly no peaks (amorphous) while for Ir₃Re₁ it shows a broad peak around 42 degrees.

Fig. S1. XRD pattern of carbon supported IrRe nanoparticles (with Cu K α radiation) synthesized by annealing at 400 °C in H₂ atmosphere for 1 h.

Fig. S2. XRD pattern of carbon supported Ir₃Re₁ nanoparticles (with Cu K α radiation) synthesized by annealing at 400 °C in H₂ atmosphere for 1 h.

Fig. S3. Voltammetry curves for the underpotential deposition of Cu on carbon-supported Ir_7Re_3 nanoparticles in 50 mM H_2SO_4 with 50 mM Cu^{2+} ; sweep rate 5 mV/sec (blue curve), and for the Ir_7Re_3 nanoparticles in 0.1 M HClO_4 without Cu^{2+} sweep rate 50mV/sec (red curve). For comparison, the current for UPD of Cu is magnified 5 times. The charge associated with UPD of Cu is determined to be 1.6 mC, which is approximately double of the charge from hydrogen desorption on the surface of Ir_7Re_3 nanoparticles.