

Electronic Supplementary Information

Non-Precious Ir-V Bimetallic Nanoclusters Assembled on Reduced Graphene Oxide Nanosheets as Catalysts for the Oxygen Reduction Reaction

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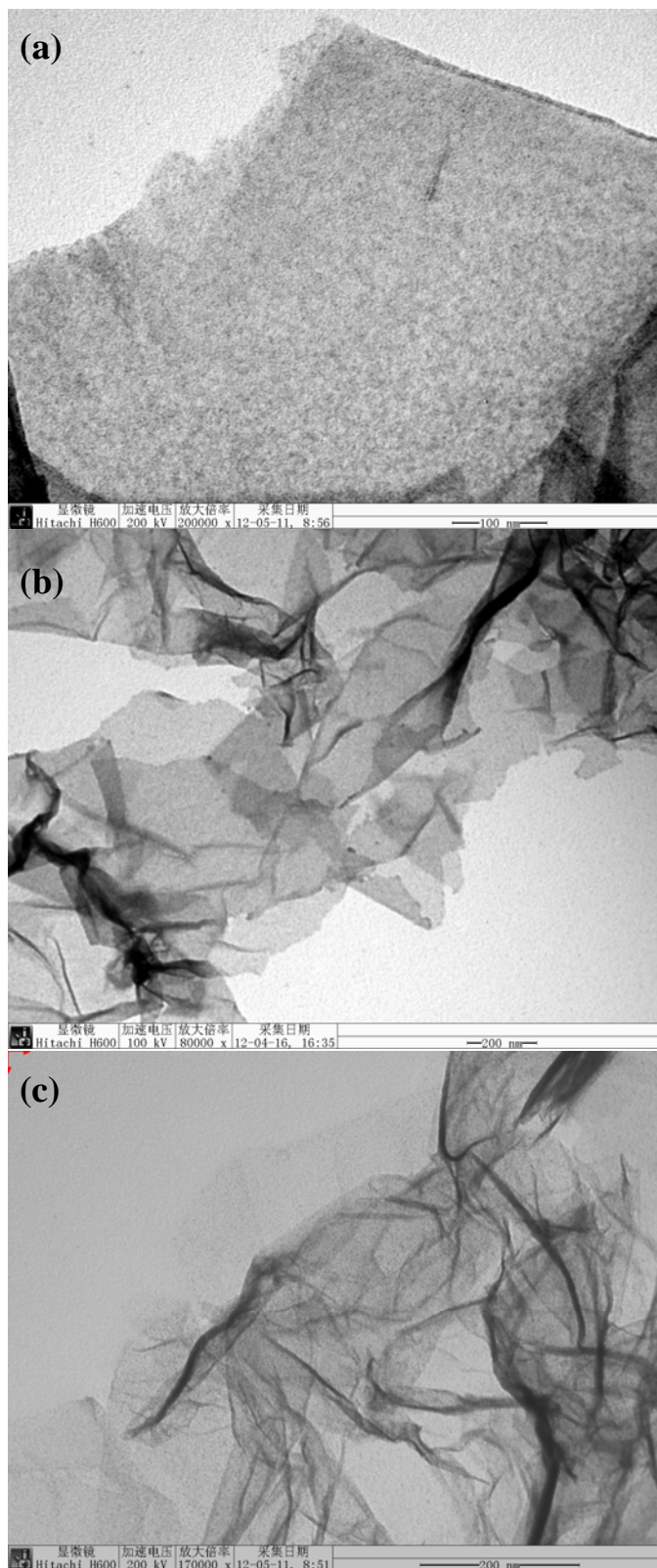


Fig. S1 TEM image of rGO-supported Ir_xV nanoclusters. (a) Ir₂₁V/rGO, (b) Ir₁₄V/rGO, (c)

Ir₁₁V/rGO.

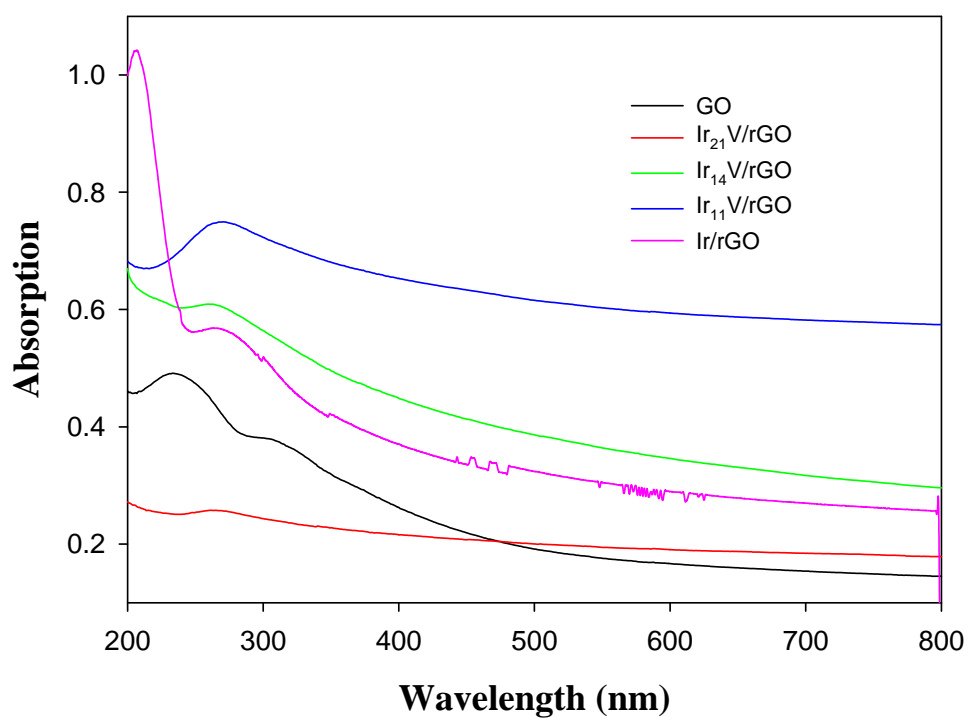


Fig. S2 UV-Vis absorption spectra of GO and the Ir_xV/rGO hybrids.

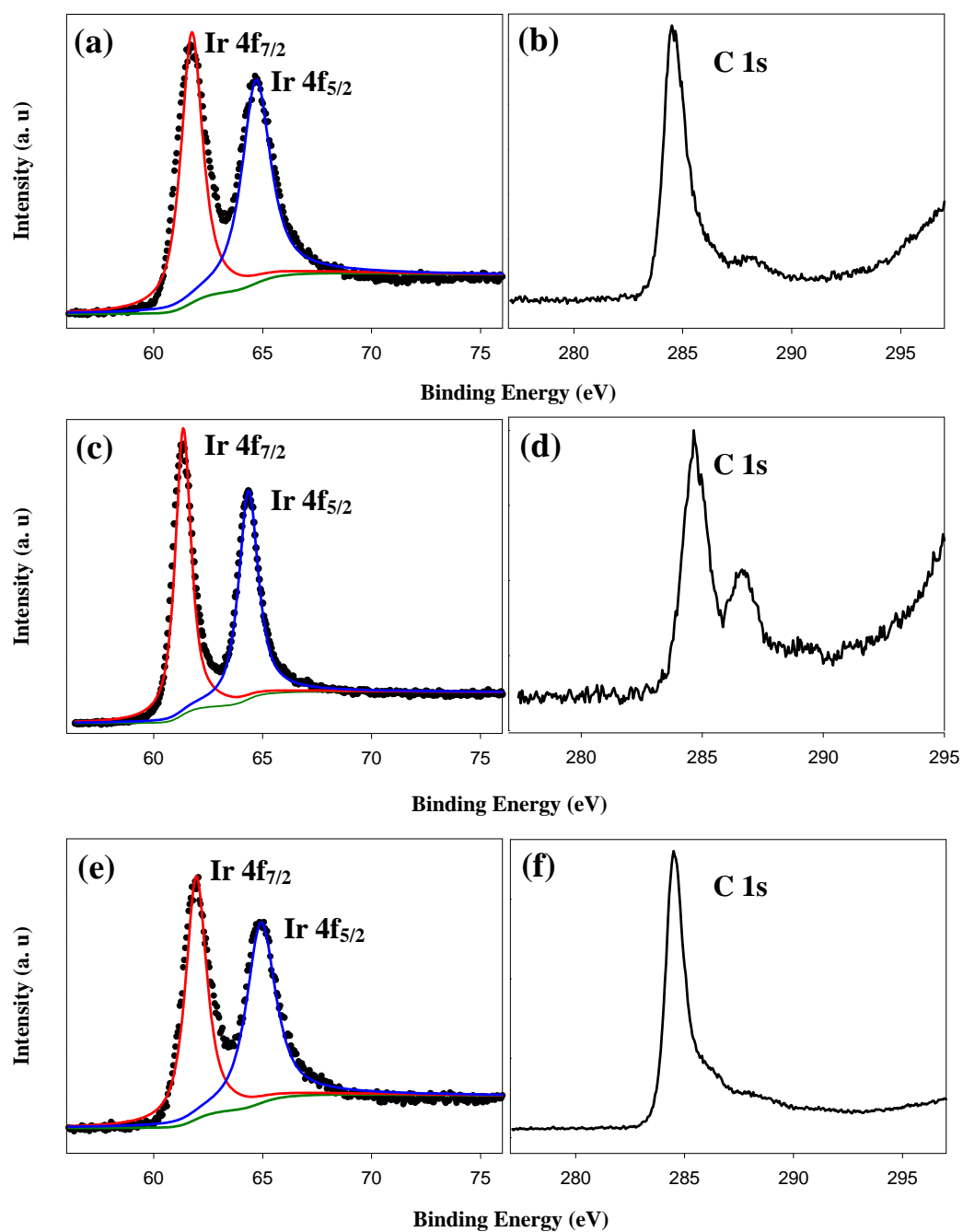


Fig. S3 Ir 4f and C 1s XPS spectra of Ir_xV nanoclusters supported on rGO. (a, b) Ir₂₁V/rGO; (c, d) Ir₁₄V/rGO; (e, f) Ir₁₁V/rGO.

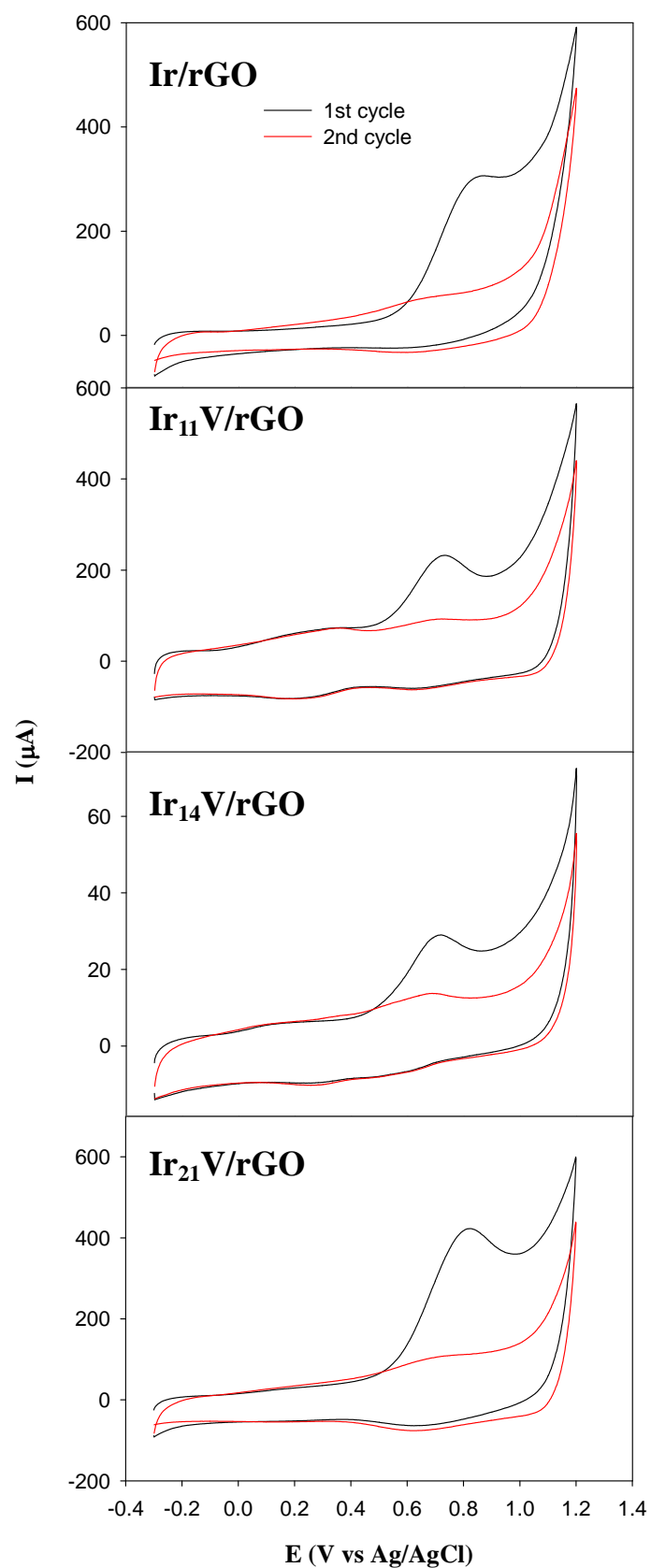


Fig. S4 CO stripping cyclic voltammograms of the as-synthesized Ir/rGO and Ir_xV/rGO in 0.1 M HClO₄ at a potential scan rate of 50 mV/s.

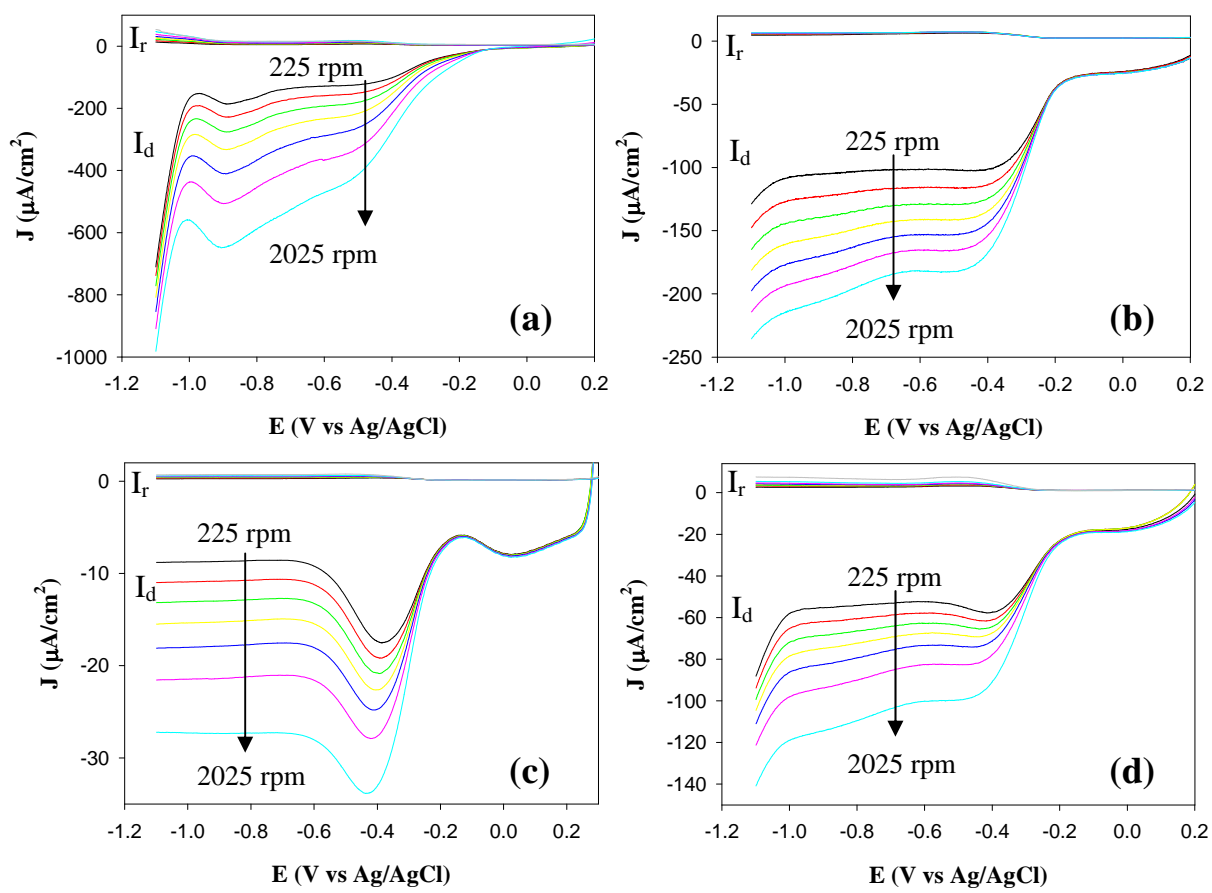


Fig. S5 Steady-state ORR polarization curves of disk (I_d), and ring electrode (I_r) from $\text{Ir}_x\text{V}/\text{rGO}$ in O_2 -saturated 0.1 M KOH at different rotation rates. (a) Ir/rGO ; (b) $\text{Ir}_{11}\text{V}/\text{rGO}$; (c) $\text{Ir}_{14}\text{V}/\text{rGO}$; and (d) $\text{Ir}_{21}\text{V}/\text{rGO}$.

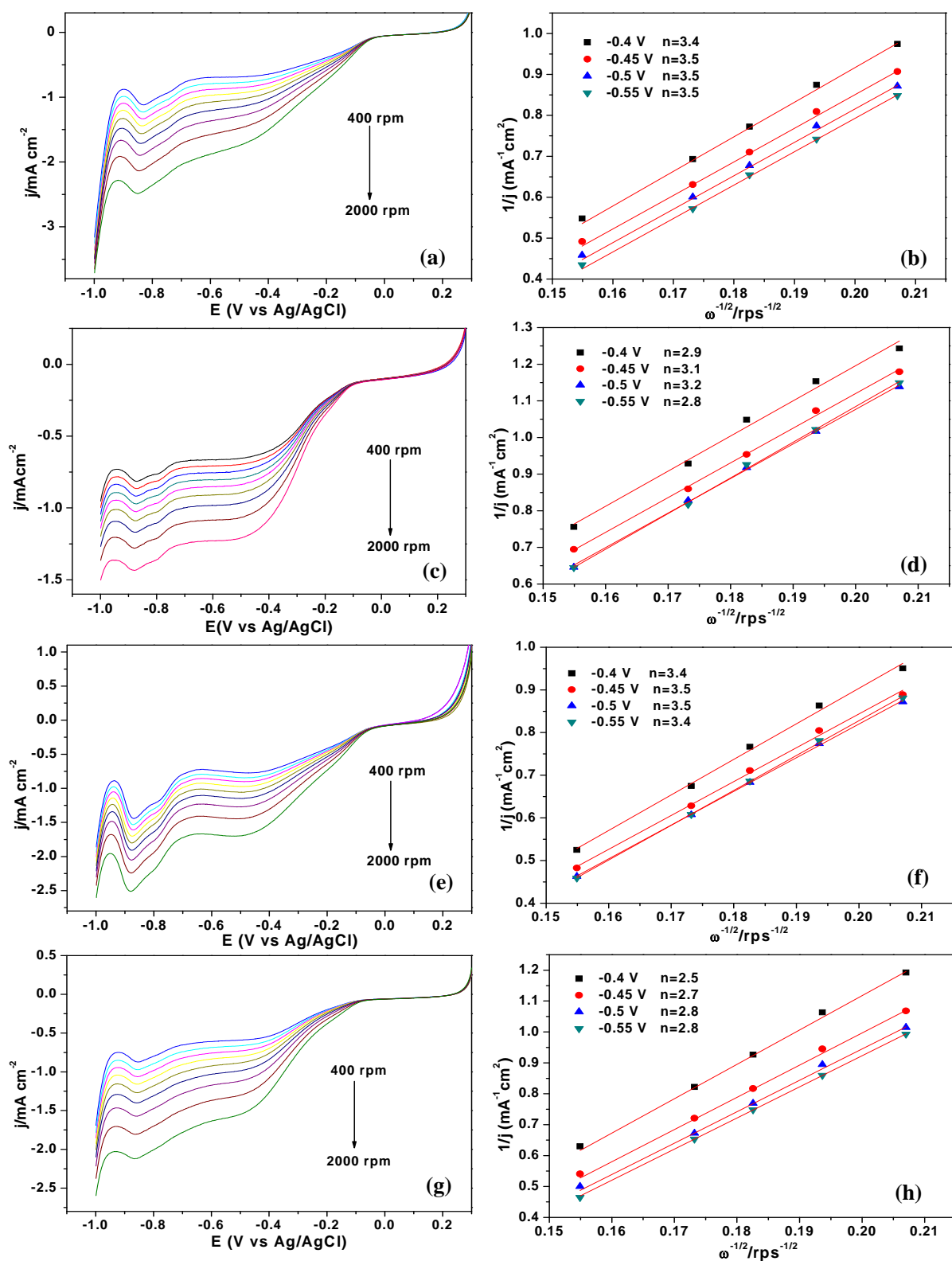


Fig. S6 Rotating disk electrode linear sweep voltammograms at various rotation rates and the Koutecky-Levich plots obtained on $\text{Ir}_x\text{V-rGO}$. (a, b) Ir/rGO ; (c, d) $\text{Ir}_{11}\text{V/rGO}$; (e, f) $\text{Ir}_{14}\text{V/rGO}$; (g, h) $\text{Ir}_{21}\text{V/rGO}$.