Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.


# Supporting Information

# Electrophoretically Deposited $Ni(OH)_2$ Decorated Stainless Steel Nanoparticles for High Performance Oxygen Evolution Reaction Catalysis

By *Anirudh Balram, Hanfei Zhang, and Sunand Santhanagopalan**

Multi-Scale Energy Systems (MuSES) Laboratory
Mechanical & Aerospace Engineering Department,
The University of Texas at Arlington
500 W. First Street, Arlington, TX 76019
*E-mail: ssanthan@uta.edu

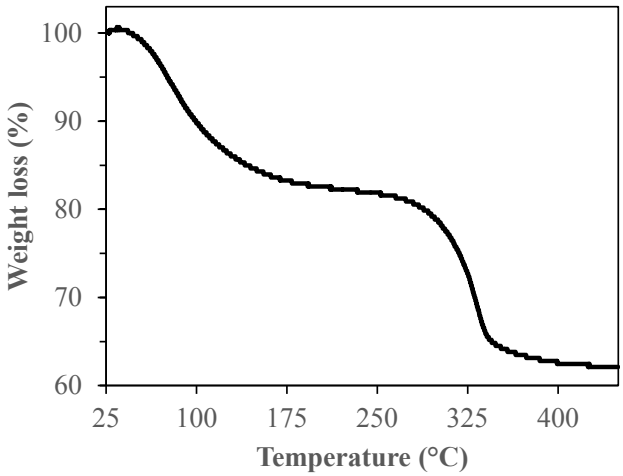


**Figure S1.** Representative TGA curve of electrodeposited α-$Ni(OH)_2$

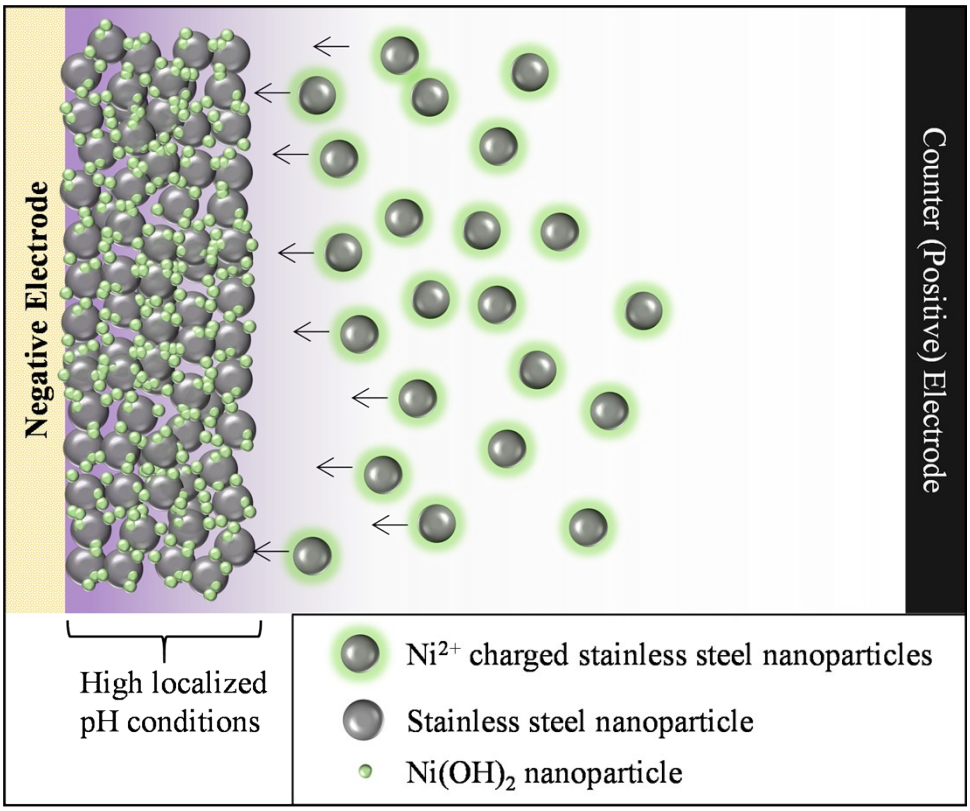


**Figure S2.** Schematic sketch of electrophoretic co-deposition of $Ni(OH)_2$ nanoparticle decorated stainless steel nanoparticles.

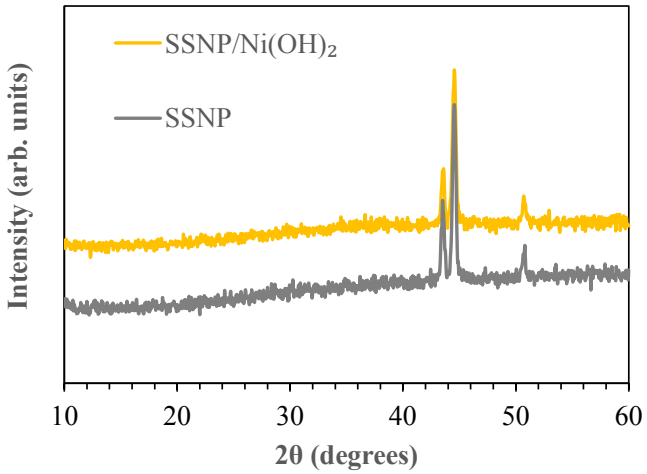


**Figure S3.** Representative X-ray diffraction (XRD) data of as-purchased stainless steel nanoparticles (SSNP) and electrophoretically deposited SSNP/$Ni(OH)_2$ nanocomposite. No α-$Ni(OH)_2$ peaks are apparent owing to disordered structure or small particle size.

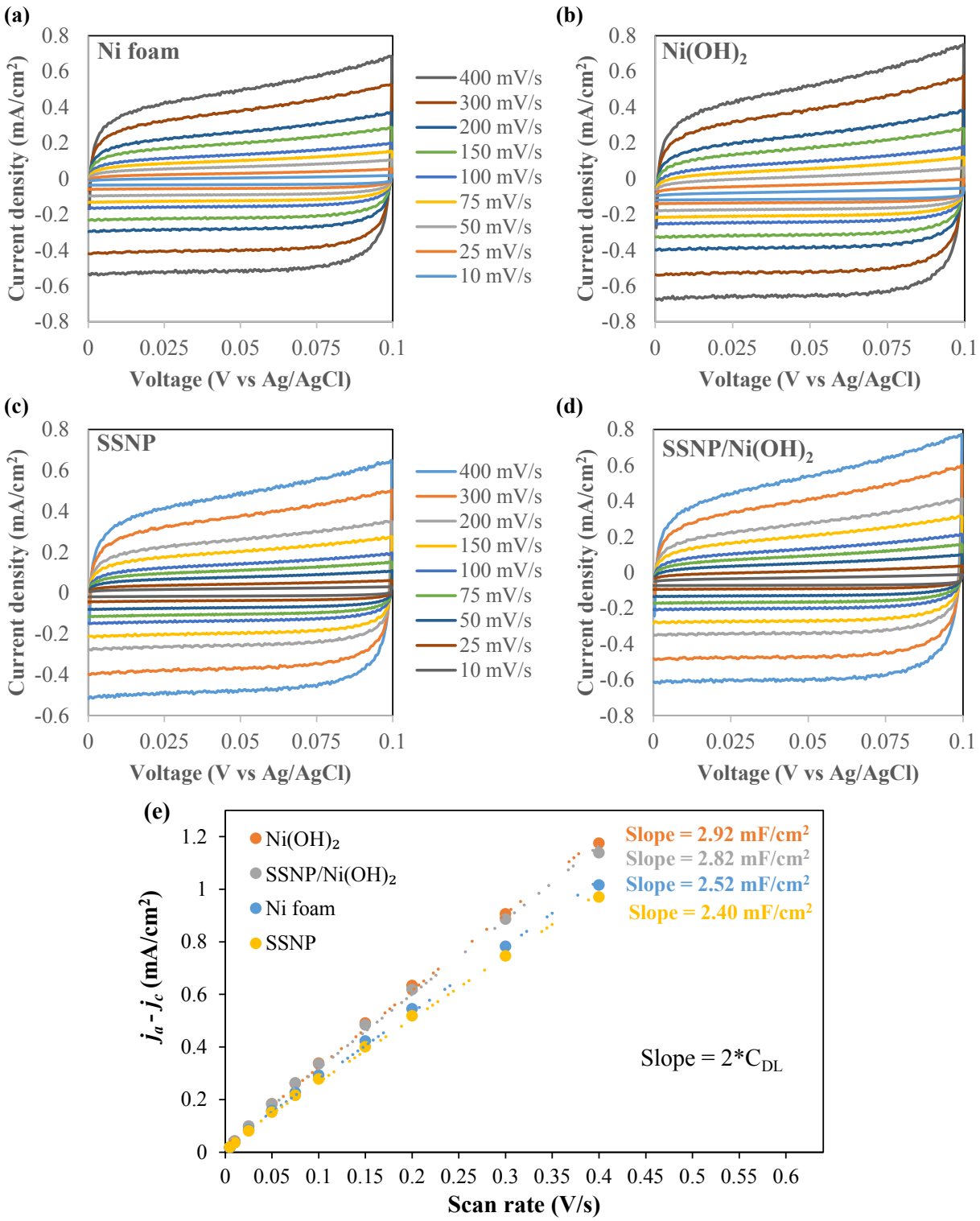


**Figure S4.** Cyclic voltammograms (CV) of samples carried out in non-faradaic potential window: **(a)** Ni foam; **(b)** $Ni(OH)_2$; **(c)** SSNP; **(d)** SSNP/$Ni(OH)_2$; **(e)** Difference between anodic and cathodic currents, $j_a$ and $j_c$ respectively at 0.05 V plotted versus scan rate. Double-layer capacitance of the electrode can be calculated as half of the slope.