

# Carbon Fibers Coated with Ternary Ni-Co-Se Alloy Particles as Low-cost Counter Electrode for Flexible Dye Sensitized Solar Cell

## Supporting Information

Brishty Deb Choudhury<sup>1</sup>, Chen Lin<sup>¥</sup>, Sk Md Ali Zaker Shawon<sup>1¥</sup>, Javier Soliz-Martinez<sup>1</sup>, Jose Gutierrez<sup>1</sup>, Muhammad N. Huda<sup>2</sup>, Federico Cesano<sup>3</sup>, Karen Lozano<sup>4</sup>, Jin Zhong Zhang<sup>5</sup>, M. Jasim Uddin<sup>1,\*</sup>

<sup>1</sup>*Department of Chemistry, Photonic and Energy Research Laboratory, The University of Texas Rio Grande Valley, 1201 West University Dr, Edinburg, TX 78539, United States*

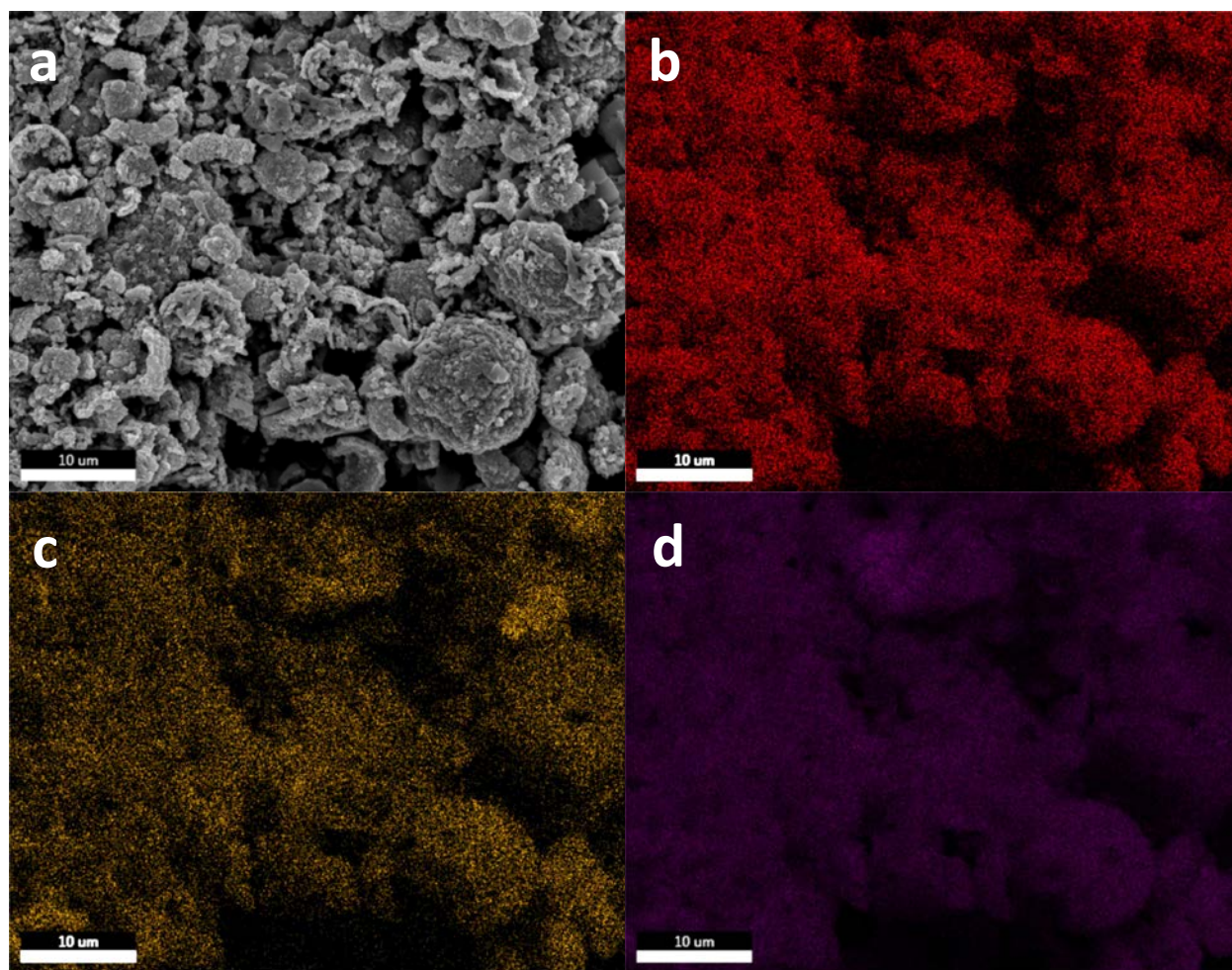
<sup>2</sup>*Department of Physics, The University of Texas at Arlington, Arlington, Texas 76019, USA*

<sup>3</sup>*Department of Chemistry, University of Turin, Turin, TO, Italy*

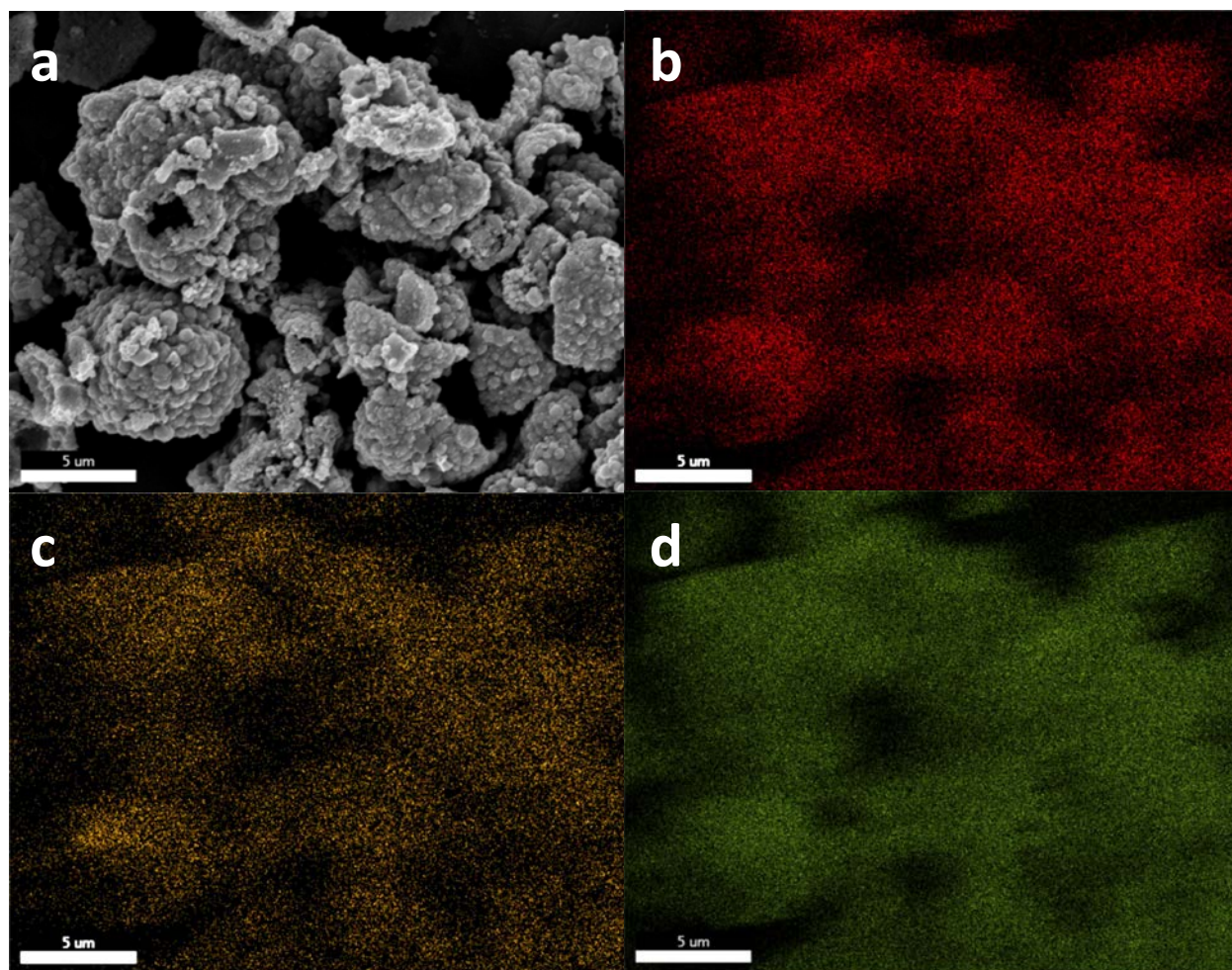
<sup>4</sup>*Center for Nanotechnology, Department of Mechanical Engineering, The University of Texas Rio Grande Valley, 1201 West University Dr, Edinburg, TX 78539, United States*

<sup>5</sup>*Department of Chemistry and Biochemistry, University of California, Santa Cruz, California 95064, United States*

<sup>¥</sup>Contributed equally, \*Corresponding Author Email: [mohammed.uddin@utrgv.edu](mailto:mohammed.uddin@utrgv.edu)

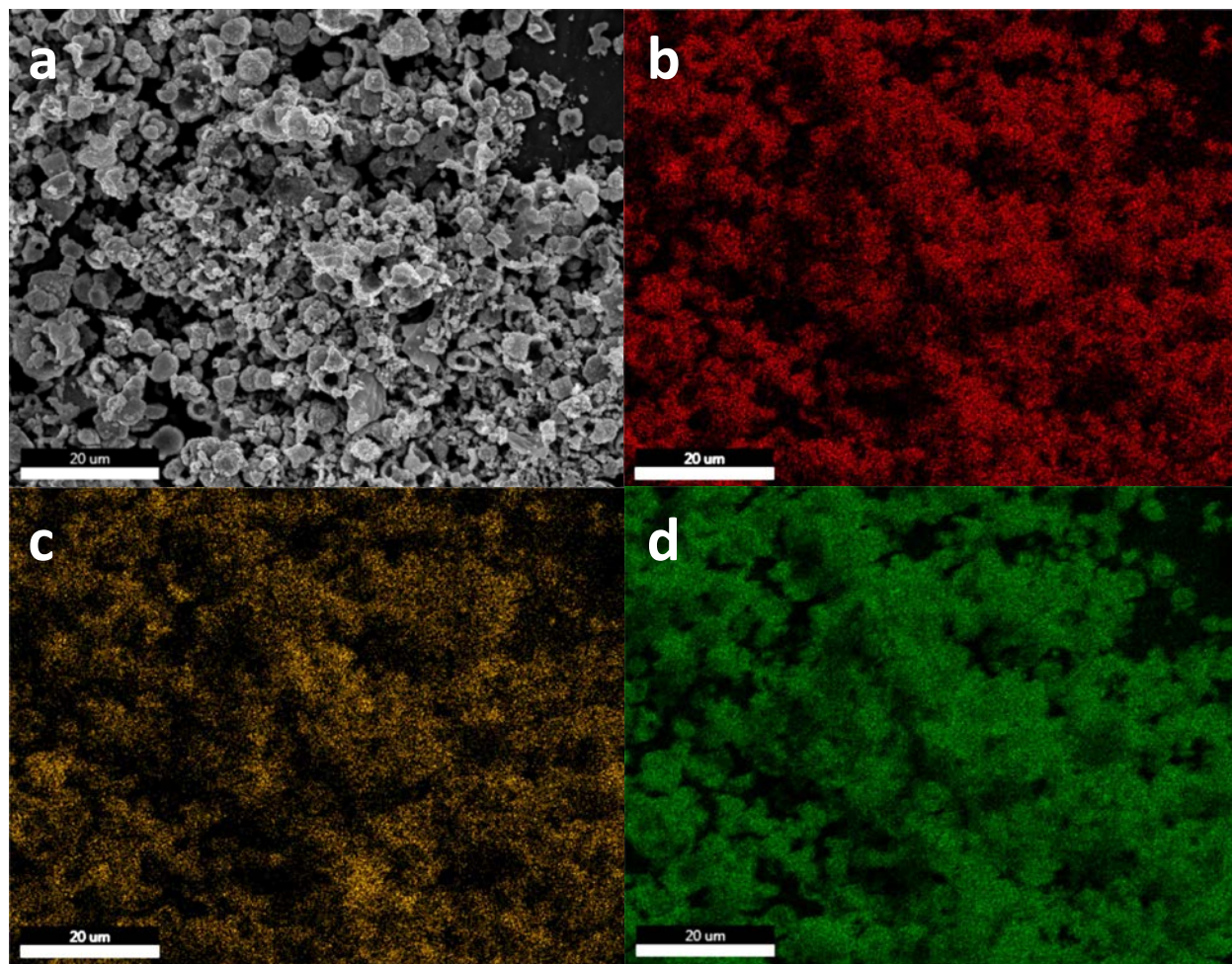


**Figure S1.** SEM image (a) and EDX mapping scanning spectra of (b) Co element, (c) Ni element, (d) Se element of Ni-Co-Se 140 sample.



**Figure S2.** SEM image (a) and EDX mapping scanning spectra of (b) Co element, (c) Ni element, (d) Se element of Ni-Co-Se 180 sample.





**Figure S3.** SEM image (a) and EDX mapping scanning spectra of (b) Co element, (c) Ni element, (d) Se element of Ni-Co-Se 200 sample.