

# Supporting Information

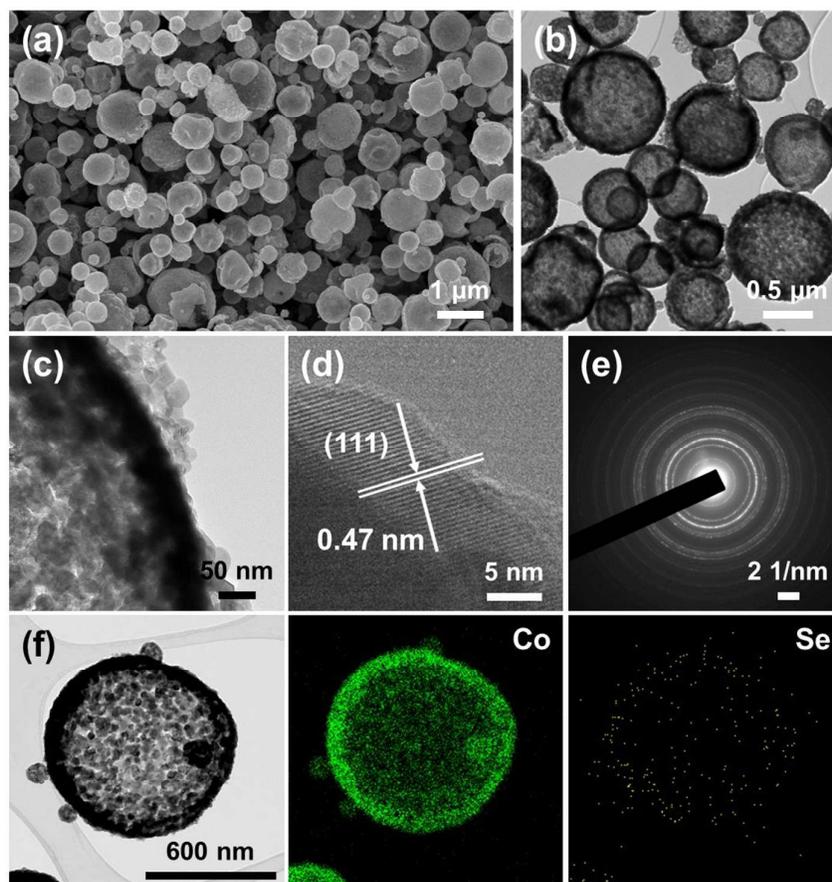
## **Hollow Cobalt Selenide Microspheres: Synthesis and Application as Anode Materials for Na-Ion Batteries**

You Na Ko, Seung Ho Choi, and Yun Chan Kang\*

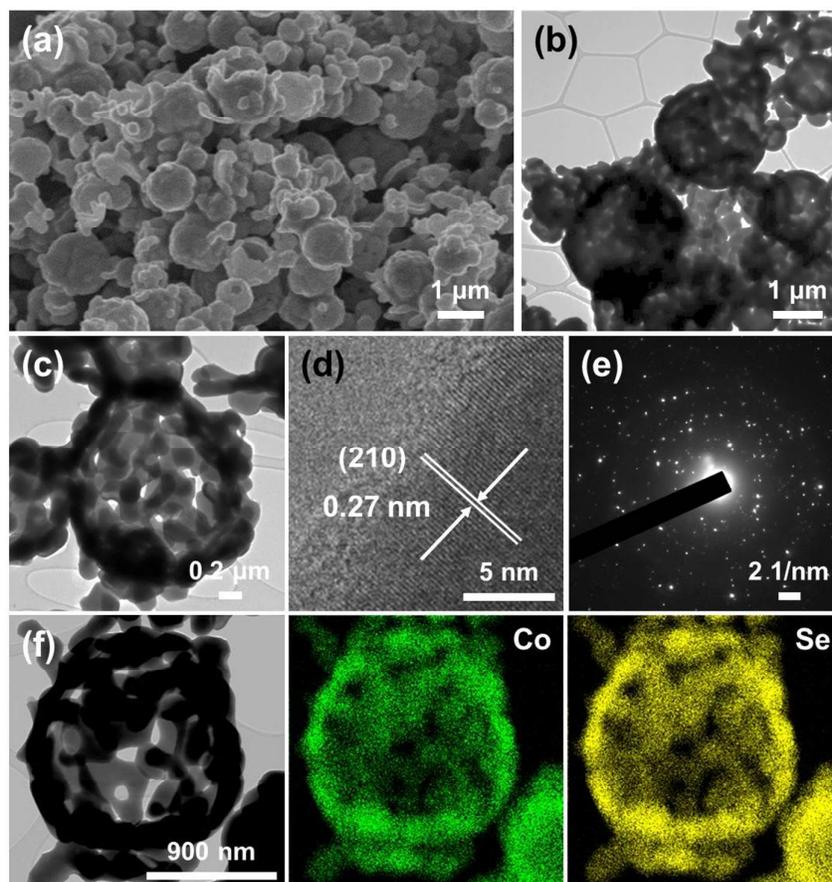
Address: Department of Materials Science and Engineering, Korea University, Anam-Dong,  
Seongbuk-Gu, Seoul 136-713

\*Corresponding author. Fax: (+82) 2-928-3584.

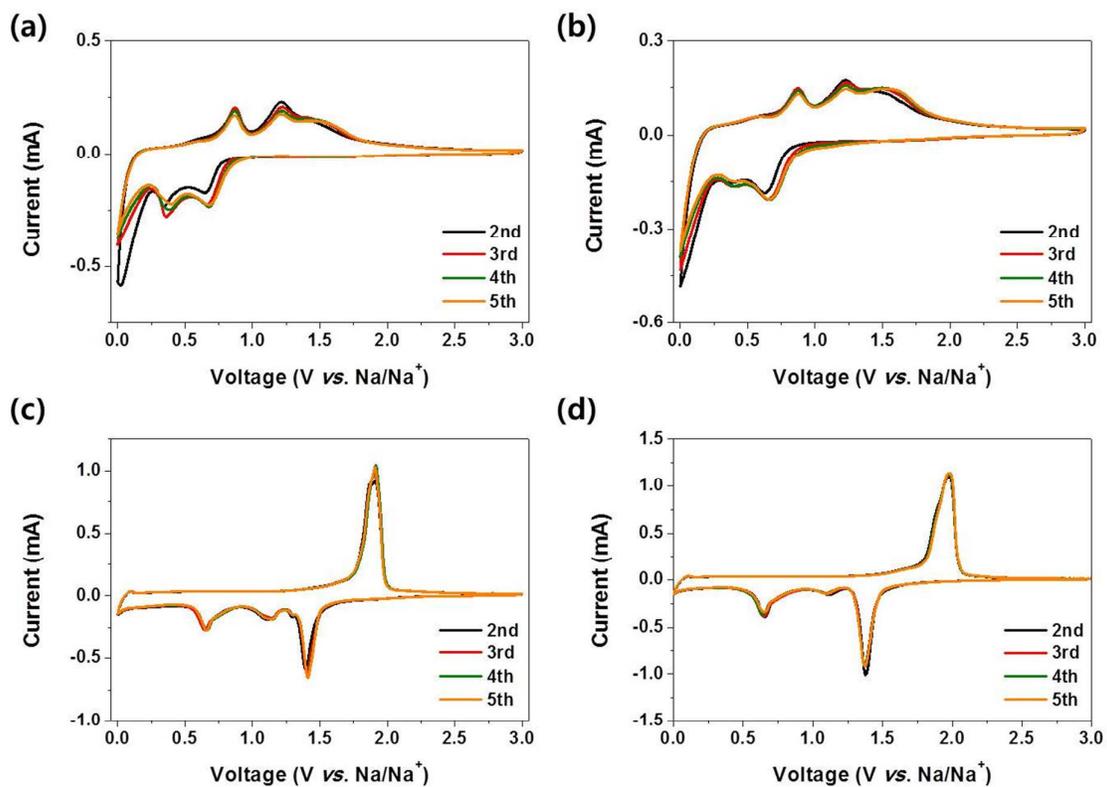
E-mail address: [yckang@korea.ac.kr](mailto:yckang@korea.ac.kr)



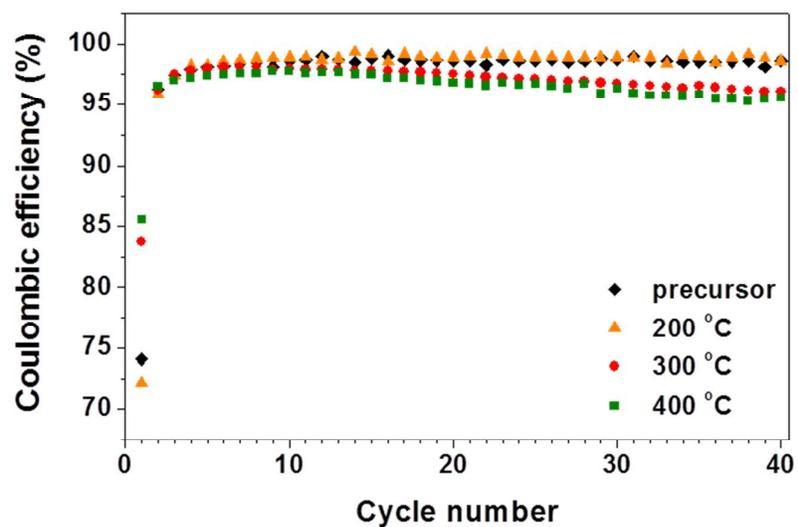
**Figure S1.** Morphologies of the nanostructured  $\text{CoO}_x$  microspheres selenized at  $200\text{ }^\circ\text{C}$ : (a) SEM image, (b)-(d) TEM image, (e) SAED pattern, and (f) elemental mapping images.



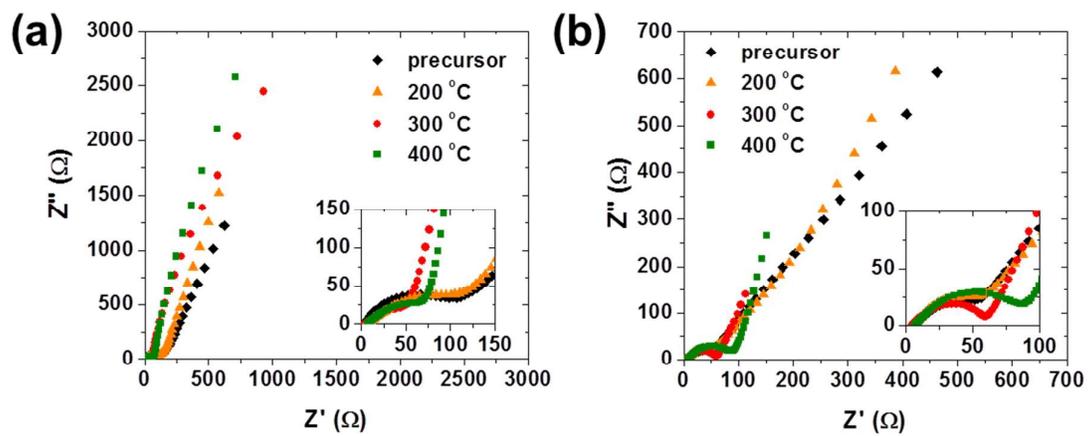
**Figure S2.** Morphologies of the nanostructured cobalt selenide microspheres selenized at 400 °C: (a) SEM image, (b)-(d) TEM image, (e) SAED pattern, and (f) elemental mapping images.



**Figure S3.** Subsequent cyclic voltammograms of the cobalt compounds selenized at different temperatures: (a) precursor, (b) 200 °C, (c) 300 °C, and (d) 400 °C.

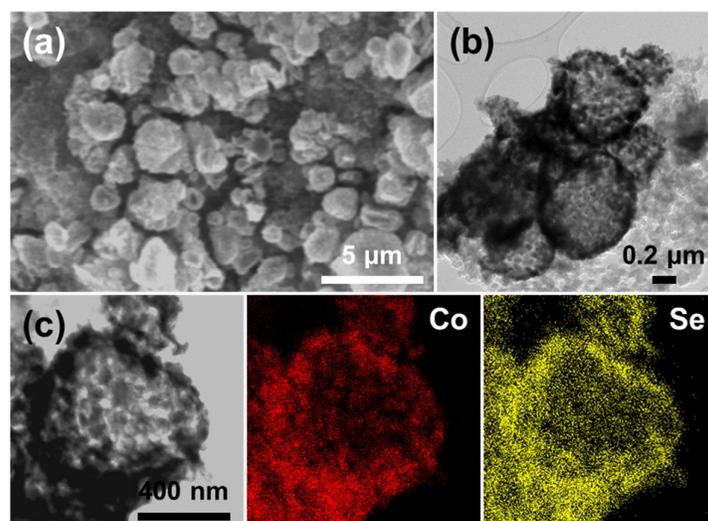


**Figure S4.** Coulombic efficiencies versus cycle number for cobalt compounds microspheres materials at a current density of  $500 \text{ mA g}^{-1}$ .

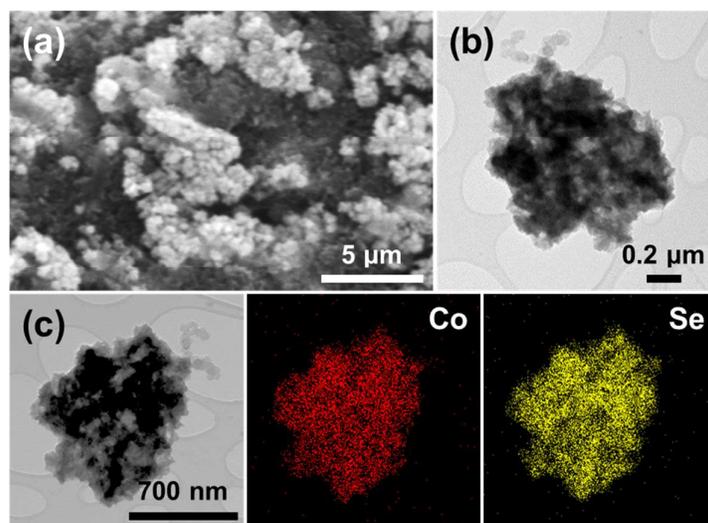


**Figure S5.** Nyquist plots of the electrochemical impedance spectra of the cobalt compounds:

(a) before and (b) after 40 cycles.



**Figure S6.** Morphologies and elemental mapping images of the cobalt selenide microspheres selenized at 300 °C obtained after 40 cycles: (a) SEM image, (b) TEM images, and (c) elemental mapping images.



**Figure S7.** Morphologies and elemental mapping images of the cobalt selenide microspheres selenized at 400 °C obtained after 40 cycles: (a) SEM image, (b) TEM images, and (c) elemental mapping images.