Facile and cost-effective synthesis of $CuCo_2O_4$ nanoparticles for Li-ion battery and methanol oxidation application

Diane Clare Tiongco, Harsharaj Sayaji Jadhav[1], 서정길[1,†]
명지대학교; [1]Myongji University
(jgseo@mju.ac.kr†)

Transition metal oxides play a key role in attaining cost-effective energy storage systems by exhibiting outstanding electrochemical activity and stability. In this study, a simple, two-step synthesis of $CuCo_2O_4$ nanoparticles has been developed based on solvothermal process followed by calcination. Furthermore, the synthesized $CuCo_2O_4$ nanoparticles were used as an electrode and electrocatalyst for Li-ion battery and methanol oxidation application, respectively. $CuCo_2O_4$ nanoparticles exhibited superior reversible capacity and high-rate capability for Li-ion battery. In addition, these exhibited 75% retention of catalytic activity after 500 cycles for methanol oxidation. Given that the synthesis of $CuCo_2O_4$ nanoparticles involves a facile and cost-effective technique, the present approach thus opens a new era to novel materials for large-scale processes in different electrochemical applications. This work was supported by the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT and Future Planning (NRF-2016R1C1B2008694).