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Synthesis and electrochemical properties of Ru/PC/SiO₂/CNFs composites for anode materials of Li secondary batteries**Chang-Seop Lee¹, Eun-Jeong Hwang¹ and Yura Hyun²**¹Keimyung University, Republic of Korea²International University of Republic of Korea, Republic of Korea

Carbon Nanofibers (CNFs) were grown by chemical vapor deposition method on C-fiber textiles that Ni and Cu catalysts were pre-deposited via electrophoretic deposition. Carbon nanofibers were oxidized by nitric acid to create hydroxyl group and then coated with silica layer via hydrolysis of TEOS (Tetraethyl Orthosilicate). Pyrolytic carbon was coated on the SiO₂/CNFs composite by flowing ethylene gas at 900 °C and then Ru was dip-coated to prepare Ru/PC/SiO₂/CNFs composite. The morphologies, compositions and crystal qualities of CNFs and the various carbon nanofiber composites were characterized by SEM, TEM, EDS, XPS, and Raman spectroscopy. The electrochemical properties and the capacitance of the carbon nanofibers and its composites as anode materials of Li secondary batteries were investigated by galvanostatic charge-discharge and cyclic voltammetry. The galvanostatic charge/discharge results of the CNFs, SiO₂/CNFs, (PC)SiO₂/CNFs and Ru/(PC)SiO₂/CNFs, composites exhibited maximum capacities of 809 mAh/g, 1289 mAh/g, 2469 mAh/g and 2451 mAh/g, respectively.

Biography

Chang-Seop Lee has received his BSc and MSc from Kyungpook National University, Daegu, Republic of Korea. He has received his PhD degree from Oregon State University, USA. He is currently working as a Chemistry Professor and Department Chair in Keimyung University, Republic of Korea. He has published more than 120 research papers, 13 books and enrolled 36 patents in the fields of surface chemistry, electrochemistry, sensors chemistry, rubber chemistry, fiber chemistry and composite materials. He has been a Member of the Editorial Board of several domestic and international journals. He is also the Vice-President of Republic of Korean Federation of Science and Technology Societies (Daegu Regional Federation).

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