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## Study of electrochemical performance: Olivine-monoclinic complexes of cathode material for Li-ion batteries

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Olivine LiMPO4 (M=Fe, Mn, Co, Ni, etc.) structured cathode materials for lithium ion battery enabling use in individual IT device, electric vehicles, and high energy storage systems have been investigated due to low cost and structural stability. However, olivine materials have lower electronic conductivity and discharge capacity compared to other structure of cathode materials. Herein, we present the preparation and characterization of olivine-monoclinic structured material without using external carbon source to improve specific discharge capacity with wide operating voltage range (1.0 - 4.5 V) having high electronic conductivity as a cathode material. X-ray diffraction powder pattern of pristine shows complex of olivine, monoclinic, and vonsenite structures. The disordered vonsenite structure can be changed to active ordered monoclinic structure after the first cycle. Cycle voltammetry analysis confirms the activation of both the olivine and the monoclinic after the first cycle.

### Biography

Youngil Lee has completed his Ph.D. at the age of 27 years from Louisiana State University and is currently professor of department of chemistry at University of Ulsan from 2005. He has been studied characterization and synthesis of cathode materials for lithium ion battery and published more than 90 papers in reputed journals. Especially, he is interesting to study of solid-state NMR spectroscopy on the relationship between the microstructure and electrochemical properties for energy materials.

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