

Electronic Supplementary Information

Spherical Nanoporous LiCoPO_4/C Composites as High Performance Cathode Materials for Rechargeable Lithium-Ion Batteries

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Experimental

X-ray powder diffraction (XRD) patterns were obtained using a Phillips X'Pert X-ray diffractometer equipped with an X'celerator detector, using Cu K α radiation, between $2\theta=15^\circ$ and 75° with a step size of 0.01° . The refinement of the XRD pattern was done using RIQAS (Materials Data, Inc., Livermore, CA). Scanning electron microscopy (SEM) images were obtained using a JSM-7500F instrument (JEOL Ltd) equipped with a Thermo Scientific Inc. energy dispersive X-ray spectroscopy (EDS) detector used for the elemental mapping. High-resolution transmission electron microscopy (HR-TEM) images were collected with a 200 kV COI monochromated F20 UT Tecnai microscope. Thermogravimetric analysis (TGA) was performed using an SDT-Q600 analyzer (TA Instruments Inc.). HydroQuebec Ltd. (Montreal, Canada) supplied the pure (carbon-free) LiCoPO_4 used for TGA calibration. Brunauer-Emmett-Teller (BET) measurements were carried out on a Tristar 3000 surface area & porosity analyzer (Micromeritics Instrument Corp.).

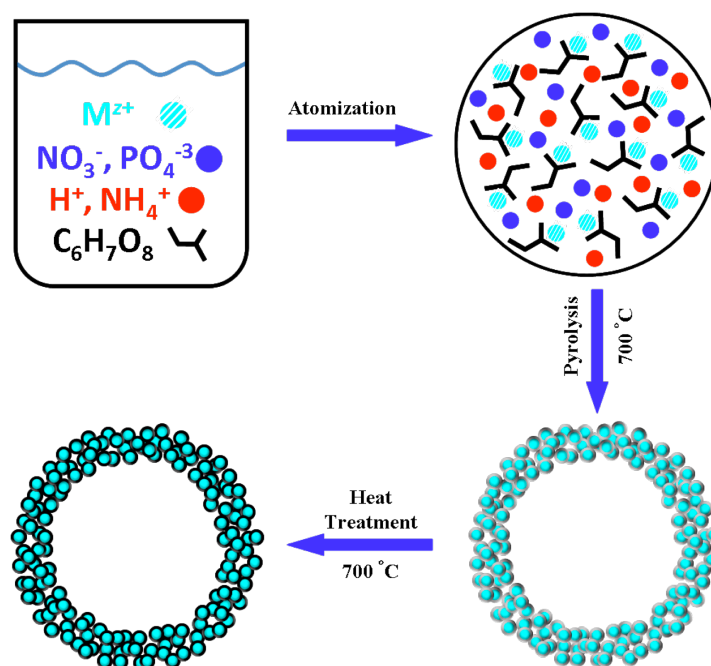


Fig. S1 Scheme showing the spray pyrolysis preparation of LiCoPO_4/C composites. The aqueous precursor solution is sprayed into a hot furnace. The porous spherical particles are then calcined at 700°C .

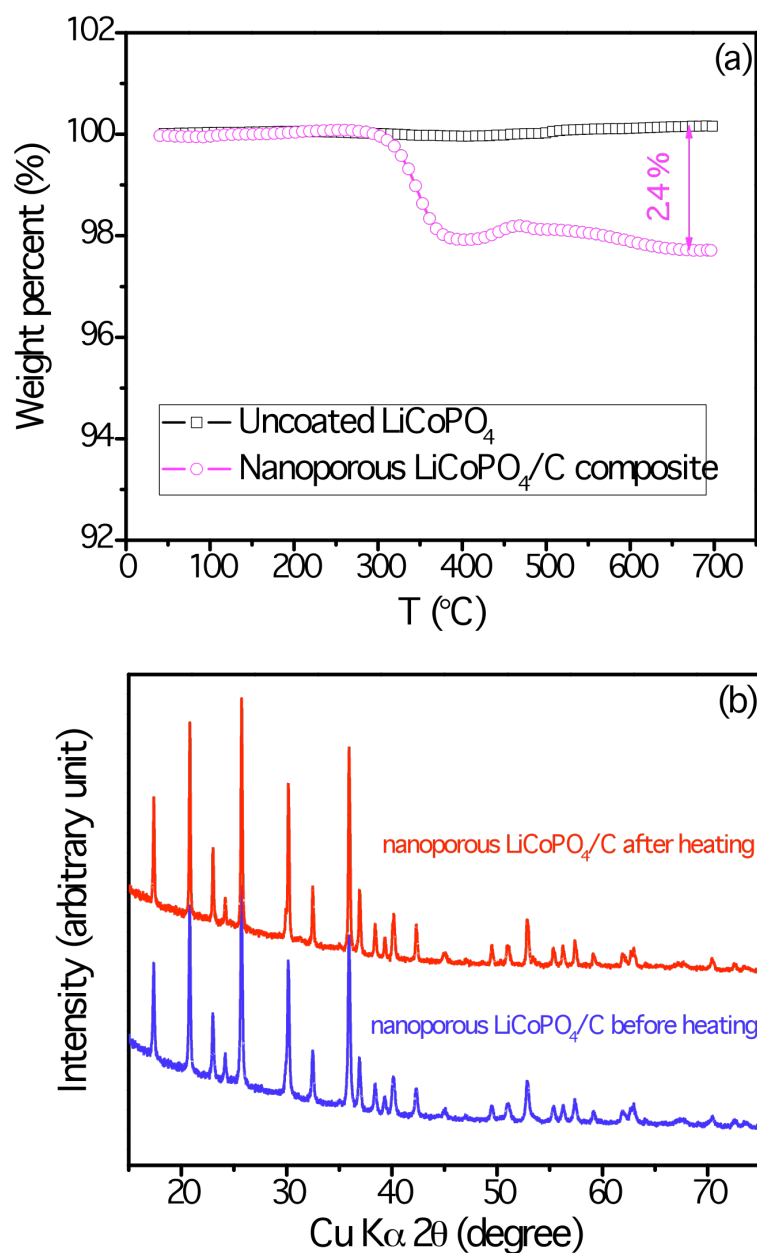


Fig. S2 (a) TGA curves for the nanoporous LiCoPO₄/C composite material and uncoated LiCoPO₄ heated in air; (b) XRD patterns of the material before and after heating.

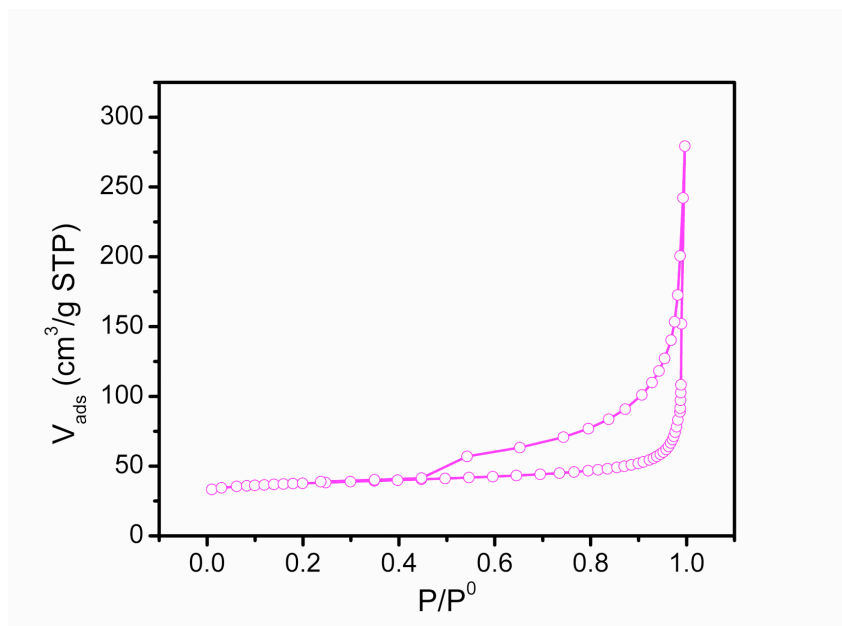


Fig. S3 Nitrogen adsorption/desorption isotherms for the nanoporous LiCoPO₄/C composite material.

Notes

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