

Polyvinylpyrrolidone-assisted Solvothermal Synthesis of Porous LaCoO₃ Nanospheres as Supercapacitor Electrode

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A polyvinylpyrrolidone (1-ethenylpyrrolidin-2-one or PVP)-assisted solvothermal method has been developed to synthesize porous LaCoO₃ nanospheres. Appropriate PVP addition may effectively prohibit the growth of nanospheres and plays an important role in reducing the size of LaCoO₃. The porous morphology of LaCoO₃ nanospheres can be obtained by an annealing process to achieve a specific capacitance of 203 F g⁻¹ at a current density of 1 A g⁻¹ with good cyclic stability for LaCoO₃ which has been prepared with 0.5 g PVP. This attributes to the synergistic effect of both size reduction and porous morphology.

Keywords: perovskite; porous; LaCoO₃ nanospheres; supercapacitor; polyvinylpyrrolidone

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