Green Synthesis of Polypyrrole coated Manganese(II) Vanadate Nanoflower Composite as Cathode Materials

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Flower-like $\text{Mn}(\text{VO}_3)_2$ precursors were synthesized by a hydrothermal method. Then they were wrapped by Polypyrrole (PPy) to obtain uniform $\text{Mn}(\text{VO}_3)_2$ @PPy nanoflower composites, which were consist of nanosheets with a length of 150-300 nm and covered with a layer of PPy. The $\text{Mn}(\text{VO}_3)_2$ @PPy nanoflower composites had a discharge capacity of 102.6 mAh g⁻¹ range of 1.5-4.5 V at a current density of 0.1 A g⁻¹ and a specific discharge capacity of 75.3 mAh g⁻¹ range of 1.5-4.5 V when the current density was 1 A g⁻¹. After 500 cycles, their coulomb efficiency was close to 100%, exhibiting good cycle performance. These results indicated that the $\text{Mn}(\text{VO}_3)_2$ @PPy nanoflower composites are promising as a lithium ion cathode material with good recycling performance.

Keywords: $\text{Mn}(\text{VO}_3)_2$ @PPy; nanoflower; Cathode material

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