Editorial

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Editorial Note on a Low-Cost and Scalable Carbon Coated SiO-Based Anode Material for Lithium-Ion Batteries

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Editorial Note

Because of its high theoretical capacity, high operating voltage, and inexpensive cost, silicon monoxide (SiO) is regarded one of the most promising alternative anode materials. SiO's commercial applicability was hampered by its large volume change, weak electrical conductivity, and poor cycle performance. We present an inexpensive and straightforward method for producing carbon-coated SiOC composites with good electrochemical performance on kilogramme scales in this report.

Carbon coating was used to modify industrial grade SiO utilising an inexpensive and environmentally friendly carbon source, polyvinyl pyrrolidone (PVP). The surface of SiO has an amorphous carbon coating layer with a thickness of around 40 nm, according to high-resolution transmission electron microscopy (HRTEM) and Raman spectrum data.`

With a high capacity of 1491 mAh.g1 at 0.1 C rates and extraordinary capacity retention of 67.2 percent after 100 cycles, the synthesised SiOC-650 composite demonstrates excellent electrochemical performance. With a capacity of 1100 mAh.g1 at 0.5 C rates, the material also performs exceptionally well. The carbon coating layer can effectively improve the composite's conductivity and hence improve the cycle stability of the SiO electrode, according to the results of electrochemical impedance spectroscopy (EIS).