

### Synthesis of Ordered Mesoporous Tungsten Oxide for Lithium Ion Battery Applications

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Great attention has been given to fabricating a number of nanomaterials to achieve high performance lithium ion batteries. Here, we report a synthesis of partially reduced ordered mesoporous tungsten oxide (m-WO<sub>3-x</sub>) and its anode application for lithium ion battery. The material was synthesized through a hard template method (KIT-6 silica template), followed by thermal reduction at H<sub>2</sub>/N<sub>2</sub> atmosphere. As an anode, the m-WO<sub>3-x</sub> electrode exhibited a high initial discharge capacity (748 mAh g<sup>-1</sup> at 0.1 C-rate) and good cyclability. Moreover, m-WO<sub>3-x</sub> electrode exhibited outstanding anode performance when compared with bulk reduced tungsten oxide (b-WO<sub>3-x</sub>) and ordered mesoporous tungsten oxide (m-WO<sub>3</sub>) electrodes. We conclude that the enhanced performance of m-WO<sub>3-x</sub> electrode was probably attributed to ordered mesoporous structure (surface area: 44 m<sup>2</sup> g<sup>-1</sup>, uniform pores: 4 and 20 nm) and improved electric conductivity from the partial reduction of tungsten trioxide.