

# Nano Tungsten Boride as Anode Material for Lithium Ion Battery Prepared via High Energy Milling Method

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Transition metal borides materials tungsten boride (WB<sub>2</sub>, WB<sub>4</sub>) with good electrical conductivity, mechanical strength and chemical inertness are desirable to act as potential attractive candidates anode material for Li-ion battery (LIB).<sup>[1]</sup> Nanostructure electrodes can improved lithium ion reaction properties such as the lithium ion insertion/desertion reaction, cyclability and high rate performance<sup>[2]</sup>. Nano-metal boride can be synthesized by various methods, such as ball milling, arc melting, high-temperature solid-phase, vacuum freeze-drying, and so on<sup>[3-6]</sup>.

In the present study, nanoscaled tungsten boride (WB<sub>2</sub>, WB<sub>4</sub>) powders were fabricated via high energy milling method. The process and mechanism were investigated and as-prepared powders were characterized by SEM and XRD. The electrochemical activities of tungsten boride were examined by cyclic voltammetry (CV) and charge–discharge test. The results show that tungsten boride powders with small size, uniform particle size distribution, high specific surface are metallic with excellent electronic conductivity, which are highly desirable for applications in Li-ion batteries (LIB). WB<sub>2</sub>,WB<sub>4</sub> are confirmed to have an omnidirectional small diffusion energy barrier and high storage capacity for Li atoms.

## References:

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