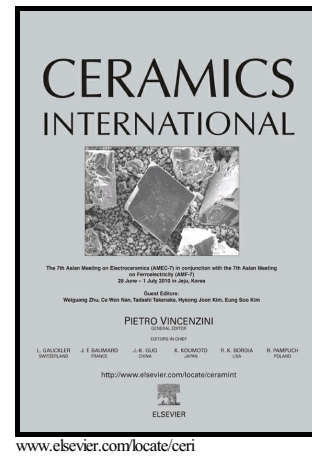


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**Microstructure and mechanical properties of fine-grained boron carbide ceramics fabricated by high-pressure hot pressing combined with high-energy ball milling**

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**Abstract**

Dense and fine-grained boron carbide (B<sub>4</sub>C) ceramics were fabricated via high-pressure hot pressing (100 MPa) using powders, which are prepared by high-energy ball milling. These powders were sintered at a low temperature (1800 °C) without any sintering aid. The dense and fine-grained B<sub>4</sub>C ceramics demonstrate super high hardness, outstanding fracture toughness and modern flexure strength. The milled powders were characterised by disordered crystal structure and ultrafine particle size that ranges from a few nanometres to a few hundred nanometres. The combined contributions of high pressure and the characteristic of the milled powders guaranteed

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