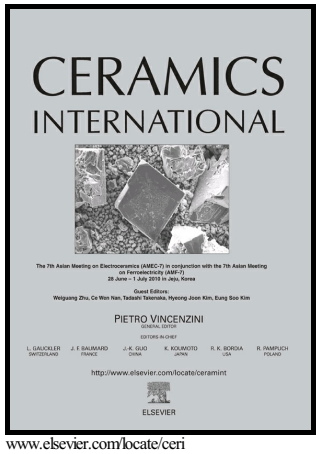

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Abstract

Dense and fine-grained boron carbide (B_4C) 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_4C 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