

Nanocomposites and nanomaterials

Physical and mechanical properties of ceramics based on silicon nitride

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Silicon nitride is one of the most promising structural materials for high-temperature applications because of its excellent strength and toughness at elevated temperatures, good thermal shock resistance, low coefficient of thermal expansion, and chemical stability [1–3]. The silicon nitride ceramics with yttrium oxide and aluminum oxide was obtained by spark plasma sintering. The produced material has a high hardness (more than 2000 HV) and high density more than 3.2 g/cm³) close to the theoretical one.

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3. *Sirota V., Krasilnikov V., Lukianova O.*, Fabrication of the ceramics based on silicon nitride by free sintering and cold isostatic pressing // *NANOCON 2013—conference proceedings, 5th international conference.*-2013.-**1**.-P. 248–251.