

Nanocomposites and nanomaterials

Investigation of the structure and strength properties of ceramics based on silicon nitride obtained by cold isostatic pressing and sintering

O.A. Lukianova¹

¹Belgorod National Research University, 85 Pobedy str., Belgorod - 308015, Russia. E-mail: sokos100@mail.ru

Ceramics based on silicon nitride are most commonly used in many fields of technology and industry applications primarily due to its unique combination of properties [1]. In particular it should be noted that silicon nitride based ceramics have high strength characteristics, hardness, thermostability, thermal conductivity and low linear thermal expansion coefficient [2].

Silicon nitride based ceramic obtained by cold isostatic pressing and sintering was investigated in this paper [3]. The average size of the structural components varies in the range 100–800 nm. Bending strength of the investigated ceramic is 280 MPa.

1. *K. Berroth*, Silicon nitride ceramics for product and process innovations // Advanced Sciences and Technologies.-2005.-**65**,.-P. 70-77.
2. *A.K. Mukhopadhyay, S.K. Datta, D. Chakraborty*, On the microhardness of silicon nitride and sialon ceramics // Journal of the European Ceramic Society.-1990.-**6**, N 5.-P. 303-311.
3. *V.V. Krasil'nikov, V.V. Sirota, A.S. Ivanov, L.N. Kozlova, O.A. Luk'yanova, V.V. Ivanisenko*, Investigation of the structure of Si₃N₄-based ceramic with Al₂O₃ and Y₂O₃ additives // Glass and Ceramics.-2014.-**1**,.-P. 17 – 19.