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**Porous silicon nitride under shock compression** VLADISLAV YAKUSHEV, ALEXANDER UTKIN, ANDREY ZHUKOV, Institute of problems of chemical physics RAS — The experimental results on shock loading of  $\beta$ -Si<sub>3</sub>N<sub>4</sub> porous samples (15% porosity) up to 55 GPa are presented. VISAR-recorded particle velocity profiles and measured Hugoniot show no peculiarities connected with phase transition from  $\beta$ -phase to high density  $\gamma$ -phase. However, it follows from comparison with Hugoniot for densified samples [1], the phase transition takes place. It begins at lower pressure about 25 GPa, where Hugoniot for porous samples crosses that for densified samples. The uncommon positional relationship of both Hugoniots is supposed to be connected with more powerful heating of porous material under loading which leads to reduction of pressure transition threshold. It was revealed that Lagrangian sound velocity of the samples decreases from 16 to 9 km/s in the 23-41 GPa interval. The decrease of sound velocity can be attributed to the increase in the new high density phase concentration.

[1] H. He, T. Sekine, T. Kobayashi, et al. //Phys. Rev. B., 62, No. 17., 11412 – 11417 (2000).

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