

## **Influence of microstructure on the thermal properties of $\text{Si}_3\text{N}_4/\text{BN}$ fiber monoliths.(LT26)**

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Detailed measurements and studies of thermal conductivity,  $\kappa(T)$ , heat capacity and  $C_p(T)$  of  $\text{Si}_3\text{N}_4$ , BN polycrystalline ceramic samples and  $\text{Si}_3\text{N}_4/\text{BN}$  fiber monoliths (FM) in the directions [0], [90], [0/90] and [0/45] of fibers have been performed between 4 K and 300 K. Sound velocity in the same samples has been also measured in the temperature range 3.5 - 77 K. Our studies indicate that at low temperatures (5-25 K) phonons dominate the scattering and phonons in  $\text{Si}_3\text{N}_4/\text{BN}$  [0], [90], [0/90] and [0/45] fiber monoliths are scattered primarily by dislocations. This effect has not been observed in ceramic  $\text{Si}_3\text{N}_4$  and BN samples. The experimental data have been used for an estimation of the values of the phonon mean free path in polycrystalline  $\text{Si}_3\text{N}_4$  and BN and of an effective one in the  $\text{Si}_3\text{N}_4$  [0] FM .