Superhard Superconductor Composites Obtained by Sintering of Diamond, *c*-BN and C_{60} Powders with Superconductors

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Superhard superconducting samples with a critical temperature of T_C = 10.5 – 12.6 K were obtained by high-pressure / high-temperature sintering of synthetic diamond powders coated with a niobium film and in 50% – 50% composition with superhard C_{60} fullerene. Superhard superconductors with T_C = 9.3 K were obtained when diamond and molybdenum powders were sintered at a pressure of 7.7 GPa and a temperature of 2173 K. Superconducting samples with T_C = 36.1 – 37.5 K have been obtained in the systems diamond-MgB_2 and cubic boron nitride-MgB_2.

Key words: Diamond, MgB_2, C_{60}, Superconductivity, High-pressure / High-temperature