

ABSTRACT

Masters dissertation contains: 109 p., 16 fig., 28 tables, 41 sources.

BORON CARBIDE, ZIRCONIUM DIBORIDE, FIBERS, SPARK PLASMA SINTERING, STRUCTURE, DISPERSE HARDENING, TOUGHNESS, FRACTURE STRENGTH.

Research object: boron carbide reinforced with ZrB_2 fibers, obtained with sparkle-plasma sintering (10, 20 % ZrB_2).

Goal of the research is to investigate the structure and mechanical properties of the composite B_4C-ZrB_2 , that was obtained with sparkle-plasma sintering.

Research methods and equipment: consolidation technique – spark-plasma sintering. Highly informative methods of physical material sciences, (scanning electron microscopy and three point bending technique) were used for sintered samples characterization: the structure and toughness of composite materials.

The influence of parameters of SPS-process on the structure of the composite was investigated. The mechanical properties of the composite were investigated. The influence of disperse hardening with ZrB_2 particles on the toughness of boron carbide ceramic was presented.