

ABSTRACT

Research work contains: 74 pages, 17 drawings, 13 tab., 39 sources of literature.

Purpose: This paper presents an overview of the current state of theory and technology of composite systems ZrO_2-NbB_2 .

Research methods: the study of patterns of structure of alloys of ZrO_2-NbB_2 and charting fusibility, research microstructure, hardness and phase composition.

The Object of research: the influence in the percentage of niobium diboride on the structure and properties of the system ZrO_2-NbB_2 .

Scientific novelty: microhardness found for each alloy under study. Determined average of HV Med., GPa 10 % NbB_2 – 6,6 GPa, 20 % NbB_2 – 7,4 GPa, 30 % NbB_2 – 8,6 GPa, 40 % NbB_2 – 11,5 GPa, 50 % NbB_2 dark phase – 12 GPa, light phase – 17.7 GPa, 70 % NbB_2 – 20 GPa and 90 % NbB_2 – 32 GPa.

It was built fusibility diagram of system ZrO_2-NbB_2 . The diagram is eutectic character coordinates eutectic point ~ 40 % NbB_2 ; $T_p \approx 2050$ ° C. The microstructure of eutectic alloy has a lamellar structure. Microhardness eutectic alloy is 11.5 GPa.

The method of X-ray analysis, it was found that in the hypereutectic alloys of this system consists of two phases – ZrO_2 , and NbB_2 .

Keywords: ZIRCONIUM DIOXIDE, NIOBIUM DIBORIDE, MICROHARDNESS, FUSIBILITY DIAGRAM, CERAMICS, X-RAY ANALYSIS.