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SELF-PROPAGATING HIGH TEMPERATURE SYNTHESIS OF COMPOSITION MATERIALS ON THE BASIS OF TiB₂- TiC- MgO

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Boron, borides and related compounds have unique bonding characteristics, structural, peculiarities and superior intrinsic properties. However, strong covalent bonds inherent to the phases of pure diborides of transition metals lead to low plasticity and low strength that considerably limits the field of their application. In this regard, at present great attention is paid to the technology of producing multi-component metals in combination with more plastic materials playing the role of binding. They are, for example, aluminium or magnesium oxides which play the role of a high-temperature binder and filler decreasing the content of expensive diboride, when obtaining composition materials.

In the present study TiB₂, TiC containing composite materials were obtained by SHS from a mixture of TiO₂, B₂O₃ (ore), C (carbonized rice husk - CRH) and Mg. The products were characterized using X-ray diffraction analysis and scanning electron microscopy. The presence of high temperature phases – titanium diboride, titanium carbide, magnesium oxide and their spinels in the SHS products were determined. The possibility of using borate ore of Inder deposit of the Republic of Kazakhstan for production of boron containing composition materials in the system Mg-TiO₂-B₂O₃-C is shown.

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OPTIONAL - Please indicate: max. 5
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Conference panel (Topics)

Carbon Fibers and Composites

Type of Presentation

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