

ABSTRACT

This work contains: 107 p., 28 fig., 27 tab., 44 ref.

This work presents a review of current theory and practice of MAX-materials receiving, particularly metal-ceramic composite Ti_3SiC_2 . The effect of the synthesis technology on the structure and properties of the material was researched.

The aim is to study the influence of synthesis technology on the structure formation and mechanical properties of composite cermet Ti_3SiC_2 .

Methods:

1. Transmission electron microscopy.
2. X-ray analysis.
3. Determination of micro hardness.
4. Determination of porosity.
5. Determination of compressive strength.

Object is a material, which source components are titanium hydride (II), silicon carbide and carbon powders.

The samples obtained by spark plasma sintering have highest rates of micro hardness and tensile strength.

The samples obtained by spark plasma sintering have the lowest porosity.

KEYWORDS: TITANIUM HYDRIDE, SILICON CARBIDE, CARBON, MAX-PHASES, SHS, SINTERING, ELECTRON BEAM MELTING, SPARK PLASMA SINTERING.