

SHS-PROCESS IN THE MIXTURE OF TI, AL, C POWDERS INITIATED BY PULSED ELECTRON BEAM

NIKOLAY KOVAL¹, ANTON TERESOV¹, ALEXANDR LIGACHEV², GELIY POTEKIN³,
OLGA LEPAKOVA⁴, NIKOLA GOLOBOKOV⁴ AND YURIY MAKSIMOV⁴

¹*Institute of High Current Electronics SB RAS, Russia*

²*Institute of general physics by A.N. Prokhorov RAS, Russia*

³*National Research Tomsk Polytechnic University*

⁴*Department of Structural Macrokinetics of Tomsk Scientific Center of SB RAS, Russia*
koval@hcei.tsc.ru

Using a pulsed electron beam (with an energy of 15 keV, a pulse duration of 200 μ s, energy density of ~ 40 j/cm²) SHS-process of synthesis of nanolaminates (initial porosity of 40 %) in the powder mixture of 3Ti-Al, 1.1–1.8 C composition was initiated.

The phase composition and microstructure of the synthesis products was investigated using diffractometer DRON-UM1 (Ka), optical (AXIOVERT 200M, Carl Zeiss) and scanning electron (SEM 515, Philips) microscopes.

The synthesized phases: Ti₃AlC₂ and TiC. Long elongated plate – Ti₃AlC₂-phase, rounded particles – TiC-phase.

Keywords: *Pulsed electron beam, Shs-process, Structure, Mixture of powders.*