

High Temperature Volume Combustion Synthesis of Ti₃Al with Low Porosities

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Abstract : Reaction synthesis, or combustion synthesis, is a processing technique in which the thermal activation energy of formation of a compound is sustained by its exothermic heat of reaction. The aim of the present study was to investigate the effect of high initial pressing pressures (420 MPa, 630 MPa, and 850 MPa) on porosity of Ti₃Al which produced by volume combustion synthesis. Microstructure examinations were performed by optical microscope (OM) and scanning electron microscope (SEM). Phase analyses were performed with X-ray diffraction device (XRD). A significant decrease in porosity was obtained due to an increase in the initial pressing pressure.

Keywords : Titanium Aluminide, Volume Combustion Synthesis, Intermetallic, Porosity

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