

Oxidation and Thermal Shock Resistances of AlTiN Ceramic Thin Coating Deposited by Magnetron Sputtering (Hipims) on Ti-48Al-2Cr-2Nb Intermetallic Alloy

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The intermetallic alloy Ti-48Al-2Cr-2Nb is used for fabrication of low pressure turbine blades, because it's good mechanical properties, low density and oxidation resistance at high temperature. However, the alloy application is still limited by significant oxidation above 850 °C. A thin AlTiN ceramic coating of about 3 μm, applied by magnetron sputtering, can improve the surface oxidation resistance of this intermetallic alloy. The objective of this work is to investigate the integrity and oxidation resistance of TiAlN coating after thermal cycling under oxidizing atmosphere at temperatures up to 850°C and 950°C. Thermal cycling was performed in a burner rig specifically designed to simulate the operating conditions of turbine engine components.

Biography:

Oxana Ostrovskaya graduated in chemical technology of refractory non-metal and silicate materials at Belgorod Shukhov State Technological University (Russian Federation) in 2003, and she received her M.S. Degree in Materials Science and Technology from Politecnico di Torino (Italy) in 2014. At present, she is a Ph.D student in Materials Science and Technology at "Politecnico di Torino", Italy. Currently, her researches focus on Intermetallic Alloys with or within thin protective coating for aerospace applications. Oxana Ostrovskaya co-authored 3 paper articles.