

ABSTRACT

METASTABLE ALUMINIUM-TITANIUM MATERIALS

This invention relates to the synthesis of a new generation of metastable aluminum-titanium (Al-Ti) alloys and the process of making them. The preparation method used is a combination process incorporating the advantages of conventional casting and spray techniques. The process is a low cost process. The aluminum-titanium materials made in this invention contain titanium in both the reacted and unreacted form. The results were confirmed using microstructural and x-ray diffraction studies. The presence of phases clearly indicate the metastable nature of these materials in accordance with the equilibrium phase diagram established for Al-Ti system. The Al-Ti materials can be made in the dimensions suitable for structural applications at ambient and elevated temperatures and as control materials for synthesis of more dilute equilibrium Al-Ti materials using conventional techniques such as casting.

(Figure 1 and Figure 2 are to be published.)