

HIGH STRENGTH ALUMINIUM ALLOYS PROCESSED BY SPRAY/CODEPOSITION

JULIO ALBERTO JUAREZ-ISLAS

**LAB. DE CUERNAVACA, INSTITUTO DE FISICA-UNAM, APDO. POSTAL 139-B,
C.P. 62191, CUERNAVACA, MORELOS, MEXICO**

ABSTRACT

During the past five years a very successful effort has been made to improve existing and develop new aluminium alloys. The progress achieved has been possible because of the development of new production methods, such as powder metallurgy and spray/deposition. These methods make use of rapid solidification process which alloys compositions other than those achieved by conventional ingot metallurgy. The ingot metallurgy of the 2000 and 7000 series used thus far, as well as the age hardening Al-Li alloys, show several disadvantages caused by the production process. Such problems are primarily coarse intermetallic constituent phases, coarse grains and macrosegregation, resulting in low fracture toughness. The present contribution reports results of an experimental investigation performed on a modern high strength spray deposited aluminium alloy of the Al-Zn-Mg-Cu (7075 and the modified 7150X) type. Results are given in terms of its microstructural characterization by using X-ray diffractometry and transmission electron microscopic. The mechanical properties of those alloys in the as-extruded and extruded + aged condition were evaluated by using microhardness Vickers, tensile test and fracture toughness measurements.