

## **Finite element study of deformation behaviour of Al- 6063 alloy developed by equal channel angular extrusion**

### **ABSTRACT**

The objective of this work is to evaluate the equivalent plastic strain levels induced by equal channel angular extrusion (ECAE) in an annealed Al-6063 alloy after six passes at a temperature of 200°C following route A with a constant ram speed of 30 mm/min through a die angle of 90° between the die channels using the finite element method (FEM). ECAE process is simulated using the DEFORM-3D software through a three-dimensional analysis. Grain refinement is simulated by forcing the element size to zero. It is found that for a very fine mesh the PEEQ converges to 1.046.

**Keyword:** Al-6063; Equal channel angular extrusion (ECAE); Finite element method; Mechanical properties