



8. Strain distribution in severe plastic deformation of using Equal channel angular pressing at 90° and 120° channel angles

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Abstract

Severe plastic deformation is capable of producing metals with ultra fine grained microstructure, and is the focus of this study. Equal channel angular pressing (ECAP) was used to perform severe plastic deformation on a Zn alloy. The process was simulated using finite element analysis for different channel angles of 90° and 120°. The input for material properties, loads, velocities, boundary conditions, and contacts were extracted from experiment and was assigned to the finite element models. The strain distribution values were obtained from the finite element analysis to determine how much effect the channel angle affects the Zn alloy sample.

Keywords: Finite element, Bio materials, Severe plastic deformation, ECAP, Magnesium Alloys