عنوان مقاله:

Effect of Equal Channel Angular Rolling Process on the Fracture Mechanisms of Al-7075 and Al-5052 Alloys

محل انتشار:

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خلاصه مقاله:

Fracture is one of the main criteria in designing industrial structures that its exact comprehension is highly significant in new sciences. This study analyzes the effect of equal channel angular rolling (ECAR) process on fracture mechanics in Al-7075 alloy ECARed through two routes of A and C, and in Al -5052 alloy ECARed through the route of C. The results of analyzing fracture surfaces in samples, using scanning electron microscope (SEM), indicate that fracture has been ductile in samples without application of the process, on which a combination of shear and ductile fracture appeared after application. Moreover, it was observed that ECARed Al -7075 samples in route A have been fractured more in comparison to ECARed samples in route C. In analyzing mechanical properties, yield stress, tensile strength, and Surface hardness increased with increase in the number of passes in each pair of sheet, but elongation decreased.

کلمات کلیدی:

Fracture mechanics, Sever plastic deformation, ECAR process, Route effect