

عنوان مقاله:

Finite Element Analysis of Combined Processes of Two Severe Plastic Deformation Techniques to improve the homogeneity of the strain distribution

محل انتشار:

دومین کنفرانس بین المللی مکانیک، ساخت، صنایع و مهندسی عمران (سال: 1399)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

In most processes of severe plastic deformation, including in the above processes, the strain distribution is inhomogeneous, which causes mechanical instability in the parts. In the SSE process, the strain rate at the center of the material is higher than the friction surfaces, whereas this strain distribution is reversed in the CEE process. In the research conducted by combining the SSE+CEE processes (first the SSE process and then the CEE process) and vice versa, the strain distribution is significantly homogeneous in the sample and it can be suggested as a way to obtain a homogeneous material with mechanical stability. In this study, DEFORM and ABAQUS finite element software were used to obtain the strain distribution in the consumed material. The results show that the strain distribution homogeneity factor in SSE and CEE process samples was 1.5 and 3.8, respectively, which is 6.5 and 9.8 in CEE+SSE and SSE+CEE process that shows a significant improvement in homogeneity.

کلمات کلیدی:

Severe plastic deformation, Strain distribution, Simple shear extrusion, Cyclic expansion-extrusion

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