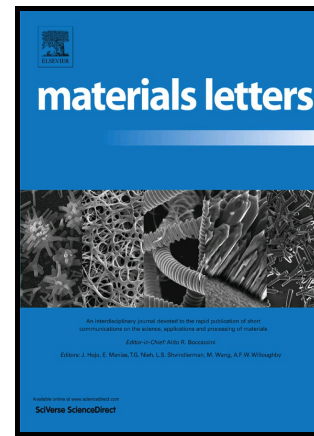


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Effect of strain path on severely deformed aluminium

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Abstract

The twist channel angular pressing (TCAP) technology was recently developed in accordance to the contemporary trend of increasing the efficiency of severe plastic deformation technologies. This study was aimed to analyse structural changes, particularly grain sizes and orientations and textures, in commercial purity aluminium after a single pass TCAP and to put the structure in connection with the strain path. For comparison, another sample processed by two passes equal channel angular pressing (ECAP), Bc route, was analysed. Three independent shear planes affecting the material during a single pass TCAP caused the grains to refine down to the average size of 5.8 μm . The sample after a TCAP pass also exhibited highly developed subgrains. The textures of the samples exhibited differences in preferential orientations and their intensities.

Keywords: twist channel angular pressing; aluminium; texture; microstructure; electron microscopy; metal forming and shaping

1. Introduction

The methods of severe plastic deformation (SPD) are gaining an increasing interest primarily due to their ability to effectively refine grains within materials. Although

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