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Experimental Analysis of the Origins of the Anisotropy Behavior in the 2017 AA Aluminum Alloy

Authors : May Abdelghani

Abstract : The present work is devoted to the study of the microstructural anisotropy in mechanical cyclic behavior of the 2017AA aluminum alloy which is widely used in the aerospace industry. The main purpose of the study is to investigate the microstructural origins of this anisotropy already confirmed in our previous work in 2017AA aluminum alloy. To do this, we have used the microstructural analysis resources such as Scanning Electron Microscope (SEM) to see the differences between breaks from different directions of cyclic loading. Another resource of investigation was used in this study is that the EBSD method, which allows us to obtain a mapping of the crystallographic texture of our material. According to the obtained results in the microscopic analysis, we are able to identify the origins of the anisotropic behavior at the macroscopic scale.

Keywords : fatigue damage, cyclic behavior, anisotropy, microstructural analysis
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