

POSITRON ANNIHILATION TECHNIQUE IS A POWERFUL NUCLEAR TECHNIQUE IN MATERIAL SCIENCES.

E.A. Badawi

El-Minya University, Egypt

Abstract

Positron Annihilation Doppler Broadening Spectroscopy (PADPS) is a non-destructive technique used in material science. Electrical measurements are one of the oldest techniques used also in material science. This paper aimed to discuss the availability of using both PADPS and electrical measurements as diagnostic techniques to detect the defects in a set of plastically deformed 5454 wrought aluminum alloy. The results of the positron annihilation measurements and the electrical measurements were analyzed in terms of the two-state trapping model. This model can be used to investigate both defect and dislocation densities of the samples under investigation. Results obtained by both nuclear and electrical techniques have been reported.

Key words:

Positron annihilation Doppler broadening spectroscopy; electrical measurements; Al 5454 alloy; defect concentration; dislocation density