

APT CHARACTERIZATION OF SOLUTE SEGREGATION TO INDIVIDUAL DISLOCATIONS

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The solute segregation to individual dislocations may be quantified by atom probe tomography. Dislocations may be observed in the field ion images by a change of the normal concentric atom terraces to spirals. Dislocations are detected in atom maps by enhanced levels of solute along linear features. The magnitude of the solute segregation may be quantified with the use of the maximum segregation envelope method. Examples will be presented of solute segregation to dislocations in nickel aluminides, neutron irradiated pressure vessel steels and a mechanically alloyed, oxide dispersion strengthened (MA/ODS) ferritic alloy.

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