

Modification to an Auger Electron Spectroscopy system for measuring segregation in a bi-crystal

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Abstract

It is reported that different crystal surface orientations yield different segregation fluxes. Although there were a few attempts to confirm these predictions experimentally, it is very difficult to compare data without making a few assumptions. Parameters like temperature measurement, crystal history and spectrometer variables are all adding to the complexity of directly comparing the segregation behaviour from one crystal to another. This investigation makes use of a Cu bi-crystal, modifications to the scanning control unit of the AES electron beam to eliminate the difference in experimental parameters and specialized written software to automate the data acquisition process. This makes direct comparison of segregation parameters on two different orientations possible. The paper describes the electron beam modifications, experimental setup and procedures, as well as the software developed to control the electron beam and automate data acquisition.