

Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Observation of stress effect on iron diffusion in Si by Mössbauer spectroscopy¹ KUNIFUMI SUZUKI, Tokyo Institute of Technology, TOMOHIRO KAMIMURA, MASAHIRO ICHINO, YUTAKA YOSHIDA, Shizuoka Institute of Science and Technology, KOICHIRO ASAHI, Tokyo Institute of Technology — A silicon wafer may contain metallic impurities and crystal defects such as vacancies and dislocations. Such a defect must cause stress fields, which are considered to affect the atomic diffusion and segregation properties. Although such the stress-induced diffusion must play an important role in the metallic impurities diffusion as well, the diffusion of metallic impurities in Si has never been studied under external stress until now. In the present study, in order to investigate the influence of a stress on the iron diffusion in Si matrix, Mössbauer spectra for ⁵⁷Fe doped Si sample were measured at room temperature as a function of the external stress up to 44 MPa using an Instron-type tensile testing machine. The Mössbauer spectra were analyzed in terms of two Lorentzian components each corresponding to substitutional and interstitial Fe. The interstitial line gets broader when the external stress is applied presumably due to a high Fe jump rate of about 10^6 s^{-1} . More details of the experiments will be presented.

¹This work was supported by the Global Center of Excellence Program by MEXT, Japan through the “Nanoscience and Quantum Physics” Project of the Tokyo Institute of Technology.

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Date submitted: 30 Jun 2009

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