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Defect Profile Simulation of Oxygen Implantation into Si and GaAs

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Abstract : This study concerns the ion implantation of oxygen in two semiconductors Si and GaAs realized by a simulation using the SRIM tool. The goal of this study is to compare the effect of implantation energy on the distribution of implant ions in the two targets and to examine the different processes resulting from the interaction between the ions of oxygen and the target atoms (Si, GaAs). SRIM simulation results indicate that the implanted ions have a profile as a function of Gaussian-type; oxygen produced more vacancies and implanted deeper in Si compared to GaAs. Also, most of the energy loss is due to ionization and phonon production, where vacancy production amounts to few percent of the total energy.

Keywords : defect profile, GaAs, ion implantation, SRIM, phonon production, vacancies
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