

Characterization of acceptor removal in silicon pad diodes irradiated by protons and neutrons

Wednesday 6 June 2018 10:20 (20 minutes)

Acceptor removal has been studied on p-type silicon sensors irradiated with protons and neutrons up to $7E15$ n_{eq}/cm^2 . Two sets of diodes were used: thin epitaxial diodes with different resistivities (10, 50, 250 and 1000 Ohm cm) and high resistivity float zone diodes with different thicknesses (100, 150, 200 and 285 um).

CV and IV measurements were performed to extract the effective doping concentration of these devices. TCT collected charge versus voltage was used to evaluate the sensor's bulk space charge.

Defect spectroscopy was conducted using TSC technique in order to study the correlation between the BiOi defect concentration and acceptor removal.

All collected data is used to revise the fitting of the Neff to extract acceptor removal rate parameters, while comparing proton vs neutron irradiation.

Primary authors: DIAS DE ALMEIDA, Pedro (FCT Fundacao para a Ciencia e a Tecnologia (PT)); GURIMSKAYA, Yana (CERN); MATEU, Isidre (CERN); MOLL, Michael (CERN); FERNANDEZ GARCIA, Marcos (Universidad de Cantabria (ES))

Presenter: DIAS DE ALMEIDA, Pedro (FCT Fundacao para a Ciencia e a Tecnologia (PT))

Session Classification: Defect and Material Characterization