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Electroluminescent Schottky Diodes Fabricated Using Plasma Ion Implantation[1] SARAH PURDY, University of Saskatchewan, MARCEL RISCH, Massachusetts Institute of Technology, PHILLIP DESAUTELS, SED Systems, MICHAEL BRADLEY, University of Saskatchewan — Carbon-implanted silicon light-emitting Schottky diodes were produced by Plasma Ion Implantation (PII) in an RF ICP plasma chamber using methane feedstock gas. The electroluminescence spectrum of the devices was fitted with a set of Gaussian peaks corresponding to known emission centers including disordered silicon (broad white background), buried porous silicon and hydrogenated carbon-rich silicon. Some of the emission peaks exhibit a peak intensity at a drive current density of several A/cm^2, followed by a drop in emission intensity at higher drive current densities. In this presentation we discuss a possible model for this observed drop in electroluminescent intensity.

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