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**Electroluminescence of Carbon-Implanted Silicon**[1] MARCEL RISCH, MICHAEL BRADLEY, University of Saskatchewan — Silicon, being the staple semiconductor of integrated circuits and microchips, features an indirect band gap which limits its application in photonic devices. However, there is a large demand for an interface between electric circuits and optical circuits and therefore light-emitting silicon-compatible devices. A possible approach to enhance the room-temperature light properties of silicon is carbon ion implantation. We compute the absolute number of implanted ions using the Lieberman model for the ion current. Subsequently, SRIM calculations yield the concentration distribution, which has great influence on the emission spectrum. We produced Schottky diodes from the processed samples and found the most stable and efficient operation at a current density of about 2.5 A/cm$^2$. The observed electroluminescence, caused by compositional and structural disorder, appears orange-white to the eye. The discussed method has limitations for the quantum efficiency but shows some potential for cost-effective on-chip light emitting diodes (LED).

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