

Abstract Submitted
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Ion Energy Distribution Measured in Pulsed Boron Trifluoride Glow Discharge LUDOVIC GODET, SVETLANA RADOVANOV, JAY SCHEUER, Varian Semiconductor Equipment Associates, CHRISTOPHE CARDINAUD, GILLES CARTRY, University of Nantes, France, VSEA TEAM — Pulsed plasma doping has emerged as an efficient technology for low energy implantation. The cathode sheath in the pulsed glow discharge plays a key role in defining the ion energy distribution of ions reaching the wafer. Understanding the structure, dynamics and collisional properties of the sheath is critical for successful application of these discharges to low energy plasma implantation. In this study, the ion energy distributions in the cathode sheath of a boron trifluoride discharge are discussed. Measured ion energy distributions are analyzed in the collisionless and collisional sheath regime. Based on the experimental ion energy distributions, the dopant depth profile is calculated. The optimal shallow dopant depth distribution in silicon can therefore be obtained by proper tuning of the plasma parameters.

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