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Characteristics of sCVD Diamond Sensors

Radiation hard and reproducible diamond sensors are fundamental for the development of beam diagnostics instrumentation for accelerators. The quality control of diamond sensors is vital to determine the sensor' s characteristics for dedicated applications. The optical quality control tells the defect level in the diamond material before metallisation while Transit Current Technique (TCT) is instrumental in understanding the movement of electrons and holes in the diamond sensors and their respective ionisation energies. The IV and It measurements provide the dark current profile of the sensors for DC-based applications. This study presents an overview of characteristics of single-crystal chemical vapour deposition (sCVD) diamond sensors and a selective data analysis of different parameters measured during quality control.

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