

Abstract Submitted
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Optically detected magnetic resonance of silicon vacancies in SiC

KYLE MILLER, Brigham Young University — Defects occur in a silicon carbide lattice structure where a silicon atom is missing. Spin lifetimes of electrons located at these defects can be studied through optically detected magnetic resonance (ODMR). We have employed traditional ODMR to measure the T_2^* spin lifetime, and pulsed ODMR/spin echoes to measure the T_2 spin lifetime. We found T_2^* to be about 140 ns at low temperature (6 K), and T_2 ranges between 5 and 17 μ s as temperature is decreased from 160 K to 6 K. These lifetimes were determined at resonance with a magnetic field of about 372 mT and microwave frequency equal to 10.4744 GHz. Characterization of these lifetimes provides valuable information for use of SiC in quantum computing.

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