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Nitrogen-vacancy in diamond for Solid-state quantum computing

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<p>Ever since the inception of the quantum computing idea, many technologies for its realization have been tried. The fundamental intention is to implement and manipulate a two-dimensional quantum mechanical unit of information that is termed a quantum bit (qubit). In this context during the past decade, solid-state fluorescing defects have drawn huge interest. The promising candidates for solid-state qubits are nitrogen-vacancy (NV) centers in diamonds due to their individual addressability, optical spin polarization and spin coherence time of milliseconds at room-temperature.

Here, an on-going study on enhancing NV centres creation and NV electronic spin coherence times is reported. The vacancies in diamond crystal samples are created using Van der Graaf accelerator and then the samples are annealed at elevated temperatures to form NV centres. Sample measurements in terms of detecting the defects and their concentrations and electron spin coherence times are performed using techniques such as Raman spectroscopy, absorption spectrum, photoluminescence and confocal microscopy equipped with Electronic spin resonance (ESR).

Level (Hons, MSc,
   PhD, other)?

PhD

Consider for a student
   award (Yes / No)?

Yes

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

Yes

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