

Seminar

Sensing magnetic and stress fields with nitrogen-vacancy spins in diamond

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In this talk, I will discuss our current work in the emerging field of nitrogen-vacancy (NV) defect spin centers in diamond lattice. The optically addressable spin of a NV center in diamond has been utilised to detect and measure a number of physical quantities such as magnetic field, electric field, temperature and stress/strain at ambient conditions [1]. This diamond spin quantum sensor when integrated into a scanning probe setup could also serve as a powerful tool for imaging of magnetic phenomena in a number of condensed matter [2], material and biological systems. After introducing the unique optical and spin properties of NV defect centers, I'll present our recent results from my post-doctoral research work on realizing ambient magnetic imaging and force sensing studies [3] with NV centers.

References:

1. "Nitrogen-Vacancy Centers in Diamond: Nanoscale Sensors for Physics and Biology", Annual Reviews in Physical Chemistry 65, 83-105 (2014).
2. Nature Nanotechnology 11, 700–705 (2016); Nature Nanotechnology 11, 677–681 (2016).
3. "Nano mechanical sensing using spins in diamond", Nano Lett., 2017, 17 (3), pp 1496–1503.

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4:00 PM (Tea/Coffee at 3:45 PM)

Seminar Hall, TCIS