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Towards Probing Living Cell Function with NV Centers in Nanodiamonds ALEXANDER SUSHKOV, IGOR LOVCHINSKY, NICHOLAS CHISHOLM, Harvard University, DAVID HUNGER, Ludwig-Maximilians-Universität, ALEXEY AKIMOV, P.N. Lebedev Physical Institute, PEGGY LO, AMY SUTTON, JACOB ROBINSON, NORMAN YAO, STEVEN BENNETT, HONGKUN PARK, MIKHAIL LUKIN, Harvard University — We report on recent progress in using the nitrogen-vacancy (NV) center in nanodiamonds as a local probe of paramagnetic free radical concentrations in living cells. The ability to monitor the local magnetic environment within the cell provides us a new tool to study organelle function during normal operation or in response to applied stimuli. Our approach involving biologically inert, robust sensor of local magnetic fields with nanoscale resolution opens up a new interface between quantum and biological sciences.

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