



# Diamond magnetometry for biomedical applications

Diamond magnetometry allows magnetic resonance measurements in the nanoscale. It makes use of a quantum effect to convert a magnetic resonance signal into an optical signal. Since optical signals are easier to detect this method currently holds the world record in terms of sensitivity. My team utilises this sensitivity in two ways. First, we use the sensitivity to gain spatial resolution. This allows us to obtain an MRI signal from the inside of single cells with nanometer resolution. With this information we observe free radical generation in stressed cells. Thus, we can study for example processes as ageing or cell death. The second way to use the unprecedented sensitivity is to gain time resolution. In this project we aim to perform spectroscopy within microseconds. The aim of the project is to observe chemical reactions while they are happening. This can reveal reaction mechanisms or identify intermediates.

**Dr. Romana Schirhagl**  
**Groningen University, Netherlands**  
room P 603, Mon. 14.01.2019, 13:30