Over the past two decades the very high level of sensitivity in Continuous Wave EPR (CW-EPR) has not increased. Recently a new method of acquiring the EPR signal, Rapid Scan EPR (RS-EPR), has been pioneered by the Eaton research lab at the University of Denver. RS-EPR is a revolutionary technique that can improve the signal to noise ratio and significantly decreases the acquisition time (down to milliseconds).

The main difference between CW-EPR and RS-EPR is the size of the modulation amplitude and the sweep rate of the magnetic field. In RS-EPR the modulation amplitude is much larger than the EPR linewidth and the field is swept a million times faster (10 MG/s).

Advantages of Rapid Scan

The short acquisition time in RS EPR allows extensive signal averaging and very high time resolution. Compared to CW-EPR, RS-EPR delivers higher signal to noise in the same total experimental time. With sweep times as low as 10 microseconds, short lived EPR species can be observed and their changes can be followed with unprecedented time resolution.

The main advantage of RS-EPR comes from the later onset of signal saturation, allowing higher microwave powers to be used. This increases the signal amplitude relative to CW-EPR, leading to a much higher signal-to-noise ratio.

Summary

- Impressive Signal-to-Noise gain vs CW-EPR.
- Reaction monitoring with unprecedented time resolution.
- Available as an accessory for EMX and ELEXSYS systems.
- Low temperature compatible (4K -300K).