

Very low frequency EPR: what we have learned and what we may learn?

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We have explored the information potentially available from very low frequency (several hundred MHz) EPR for over a decade. The motivation for very low frequency is the increased penetration of lossy tissues that obtains at low frequency. The exploration has been directed to aspects of animal tissues that may be relevant to cancer mechanism or cancer treatment. Three specific aspects are noted. Using infusible nitroxide spin probes we have derived tumor oxygen partial pressure measurements with standard deviations of 5 torr. We have used the spectra from these same measurements to measure the micro viscosity in tumors and we have, for the first time measured markers of radiolytic hydroxyl radicals directly in real time in living tissues.