

ESR Results for Charcoal Samples 9 March 2005.

Sample	Gain	Amplitude (mm)
1	1.25×10^2	202
2	3.2×10^3	62
3	3.2×10^4	62
4	80	160
5	80	212
6	80	152
8	4×10^3	103
10	2.5×10^2	200
11	2.5×10^4	96
12a	8×10^4	no detectable signal
12b	8×10^4	no detectable signal

All the signals had $g=2.0036$ that is what you expect from an organic radical containing no heavy elements.

Brian says that the data is only qualitative with care you could make it semi-quantitative (making sure the same amount of sample was used etc). You might wish to pursue this when you return as the instrument is easy to use.

All of the signals are first derivatives that is the line goes up and then straight down below the baseline and then back to the baseline. Usually the right hand side is slightly lower than the left but this was greatly exaggerated in sample 8. Brian was not too sure of the reason for this.

He has recommended the text J.E. Wertz and J.R. Bolton "Electron Spin Resonance: Elementary theory and Practical applications" McGraw Hill (1972).

As shown by Urbanski et al...increase the temp of carbonization = decrease the radicals.