

CLIENT: UIS
DATE: 25 June 2022
SAMPLES: 1 Sample (44906)
ANALYSIS: Qualitative and quantitative XRD

The material was scanned after addition of 20 % Si for quantitative determination of amorphous content and micronizing in a McCrone micronizing mill. The material was prepared for XRD analysis using a back loading preparation method.

Diffractiongrams were obtained using a Malvern Panalytical Aeris diffractometer with PIXcel detector and fixed slits with Fe filtered Co-K α radiation. The phases were identified using X'Pert Highscore plus software.

The relative phase amounts (weight %) were estimated using the Rietveld method.

Comments:

- In case the results do not correspond to results of other analytical techniques, please let me know for further fine tuning of XRD results.
- Mineral names may not reflect the actual compositions of minerals identified, but rather the mineral group.
- Smectite, lizardite (serpentine), vermiculite, chlorite and kaolinite peaks overlap and further test would be necessary to distinguish. Identification is largely based on peak shapes and positions.
- Due to preferred orientation and crystallite size effects results may not be as accurate as shown in the table.
- Traces of additional phases may be present. Quantities below 0.5 % may be unreliable.
- Determination of amorphous content can carry an error of +- 15 weight per cent.

If you have any further queries, kindly contact me.



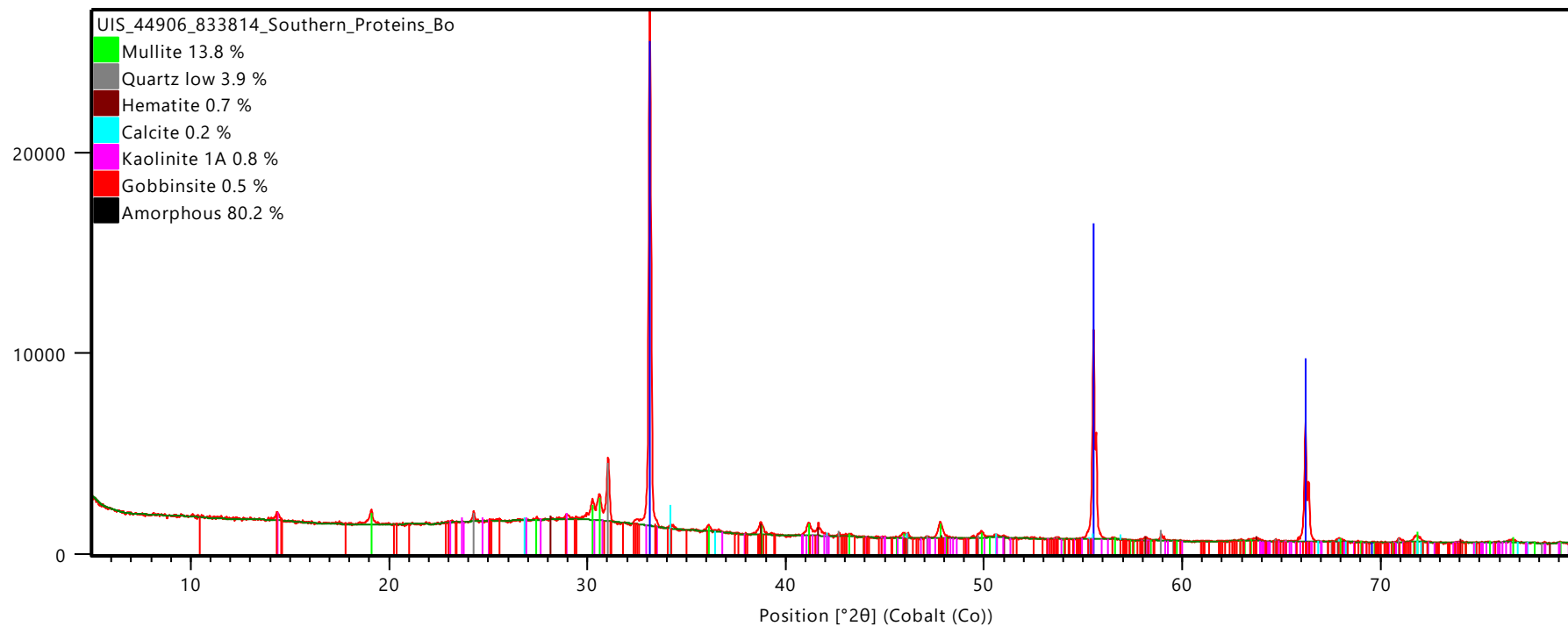
Dr. Sabine Verryn (Pr.Sci.Nat)

Samples will be stored for 3 months after which they will be discarded.

	Mullite	Quartz	Hematite	Calcite	Kaolinite	Gobbsite	Amorphous
UIS_44906_833814_Southern_Proteins_Boiler Ash	13.8	3.9	0.7	0.2	0.8	0.5	80.2

0 = n.d. – not detected above the detection limit of 0.5-3 weight per cent

Counts



Phase	Chemical Formula
Silicon	Si1
Mullite	Al4.56 O9.72 Si1.44
Quartz low	O2 Si1
Hematite	Fe2 O3
Calcite	C1 Ca1 O3
Kaolinite 1A	H4 Al2 D9 Si2
Gobbinsite	H24 Al5.5 Ca0.94 Na4 O44 Si10.4