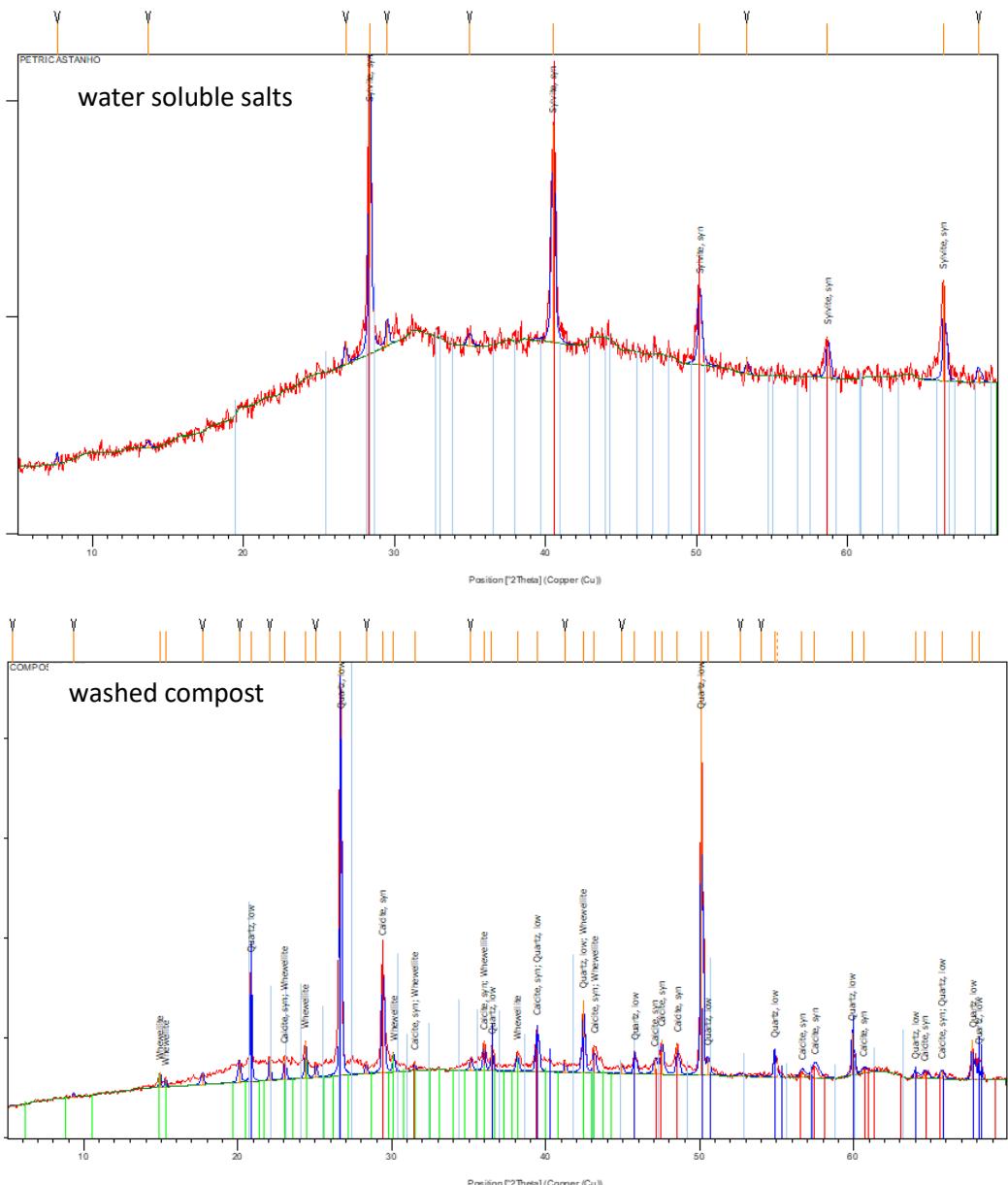
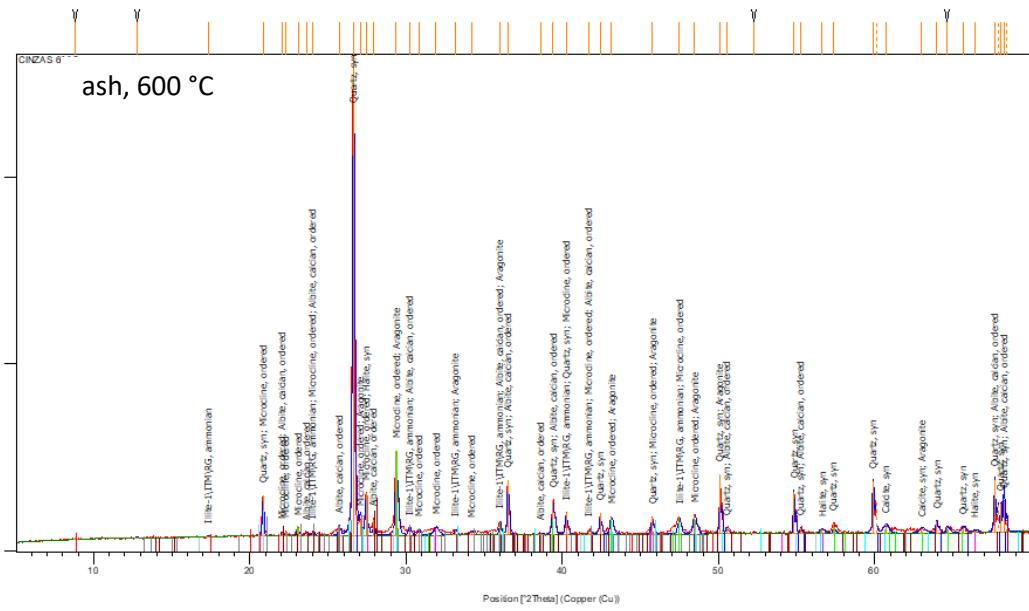


## Supplementary data section





**Figure S1** – X-ray diffractograms with crystalline phases identification.

**Table S1** – FTIR bands of lignocellulosic (adapted from [40]).

Lignocellulosic	Absorption band (cm <sup>-1</sup> )	Attribution
Hemicellulose	1737	C=O stretching
	1056	C-O stretch
	1235	C-O stretch
	1375	C-H deformation
Lignin	1636	C=O stretching
	1516	Phenyl ring stretching
	1218	C-O of guaiacyl ring
	1268	C-O of guaiacyl ring
	1315	C-O of syringyl ring
	1329	Guaiacyl and syringyl condensed
	1502-1600	Aromatic skeletal vibration
Cellulose	1235	C-O stretch
	1158	C-O-C stretching
	900-901	Amorphous cellulose
	1033	C-O stretching at C <sub>6</sub>
	1061	C-C stretching
	1114	C-O stretching at C <sub>3</sub>
	1098	Crystalline cellulose
	1056	C-O stretch

	1375	C-H deformation
	1428	CH <sub>2</sub> scissoring

**Table S2 – FTIR bands attribution for humic and fulvic substances in soils (adapted from [25]).**

Wavenumber (cm <sup>-1</sup> )	Attribution
3700-3620	Free OH stretch
3400-3200	OH stretch; intra and inter molecular N-H; amine NH and phenol OH
1660-1630	Amide C=O stretch; quinone C=O/or C=O to H in paired ketones; C=C aromatic
1600-1580	C=C aromatic group stretching
1430	Stretching of methyl and methylene C-H bonds
1400-1380	Aliphatic C-H stretch
<1000	C-O stretches; aromatic C-H corresponding to polysaccharides and carbohydrates

## References

- [25] Machado W, Franchini JC, de Fátima Guimarães M, Filho JT. Spectroscopic characterization of humic and fulvic acids in soil aggregates, Brazil. *Helijon* 2020;6:e04078. <https://doi.org/10.1016/J.HELION.2020.E04078>.
- [40] Kurian JK, Gariepy Y, Orsat V, Raghavan GSV. Microwave-assisted lime treatment and recovery of lignin from hydrothermally treated sweet sorghum bagasse. *Biofuels* 2015;6:341–55. <https://doi.org/10.1080/17597269.2015.1110775>.