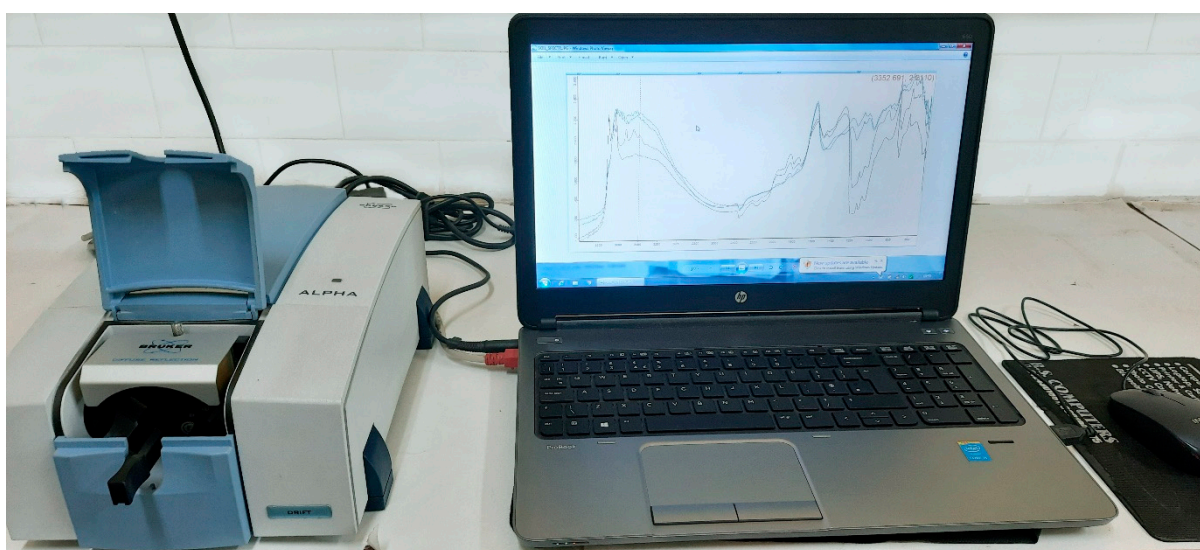


## Supplementary Materials

**Table S1.** The characteristics band assignment of various soil constituents in mid infrared region.

Soil constituents	MIR wave number (cm <sup>-1</sup> )
Water	3278, 1645, 3484
Hydroxyl	3575
Kaolin	3695, 3620, 915
Smectite	3620, 915, 885
Illite	3620
Carbonate	1415
Aromatics	3030
Amine	1610, 3330
Alkyl asymmetric–symmetric doublet	2930, 2850
Carboxylic acids	1725
Amides	1640
Aliphatics	1465
Methyls	1445–1350
Phenolics	1275
Polysaccharides	1170



**Figure S1.** A representative picture of MIR instrument with Drift spectra.