

Supplementary information

Temperature Dependences of IR Spectral Bands of Humic Substances from Silicate-Based Soils

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Table S1. Measurement parameters of soil humic substance samples by ICP–AES

Parameters	Values
Conditions	
Power (kW)	1.50
Plasma-forming flow (L min ^{−1})	18.0
Axial flow (L min ^{−1})	1.50
Nebulizer flow (L min ^{−1})	1.00
Replicate time (s)	10
Stabilization time (s)	30
Sample-injection parameters	
Sample time delay (s)	25
Pump rate (rpm)	12
Washing time (s)	10
Number of replicates	4

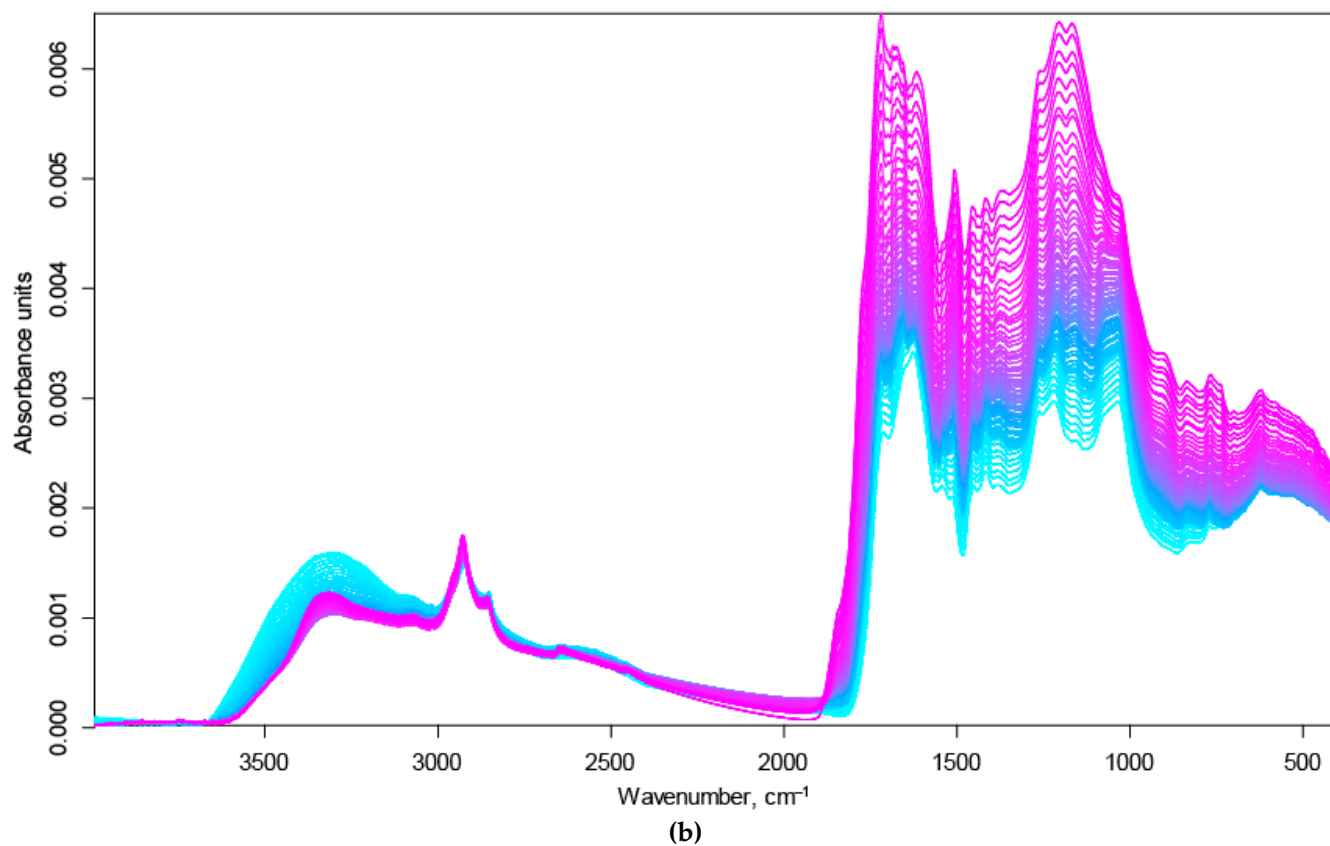
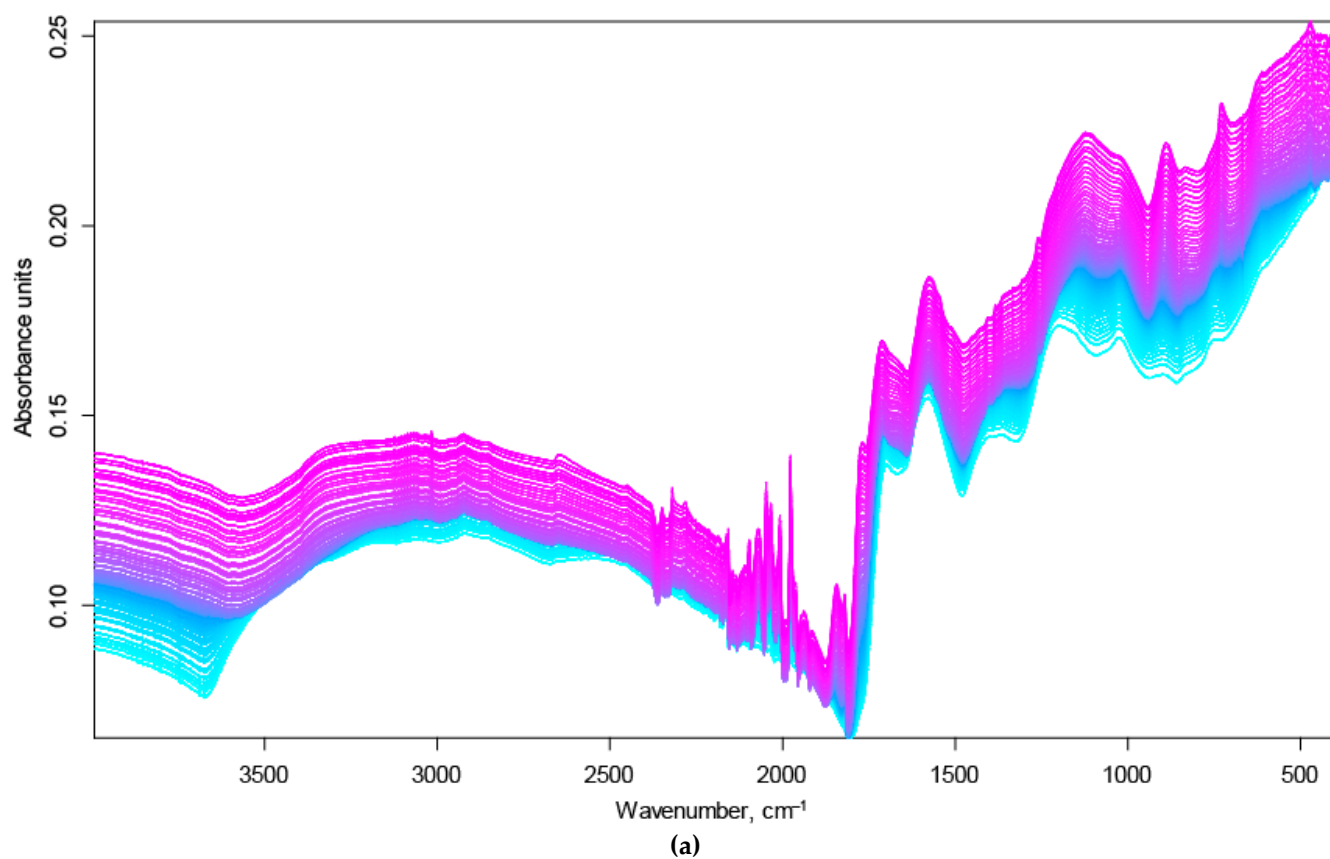


Figure S1. Normalized ATR IR absorption spectra of humic substances from (a) chernozem, before the application of ATR correction and (b) soddy podzolic soil, after the application of ATR correction; in the region 4000–4000 cm⁻¹. Temperature increases from 25 to 215 °C from blue to magenta lines.

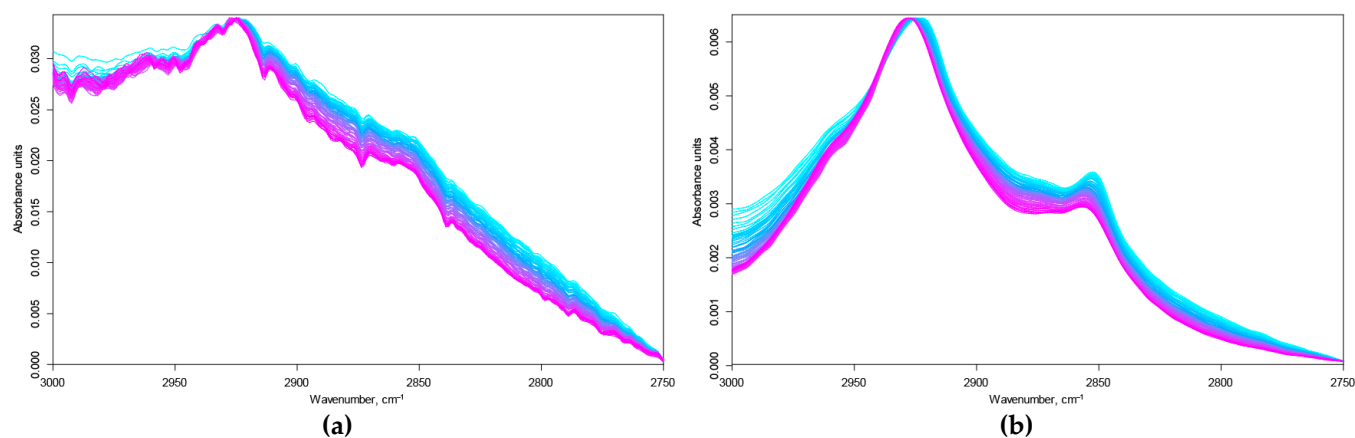


Figure S2. Normalized ATR IR absorption spectra of humic substances from (a) chernozem and (b) soddy podzolic soil in the region 3000–2750 cm^{-1} after ATR correction. Temperature increases from 25 to 215 $^{\circ}\text{C}$ from blue to magenta lines.

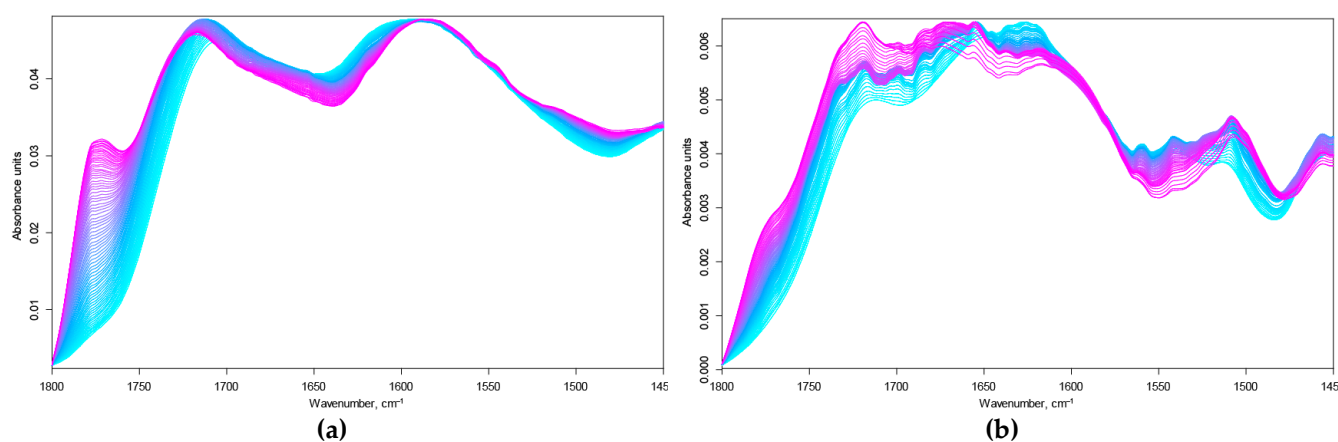


Figure S3. Normalized ATR IR absorption spectra of humic substances from (a) chernozem and (b) soddy podzolic soil in the region 1800–1450 cm^{-1} after ATR correction. Temperature increases from 25 to 215 $^{\circ}\text{C}$ from blue to magenta lines.

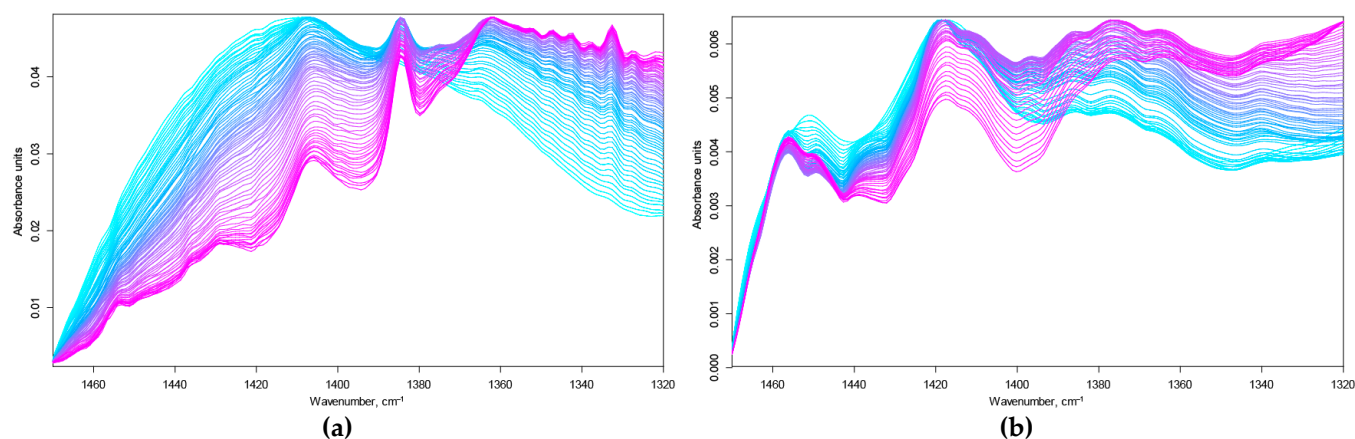


Figure S4. Normalized ATR IR absorption spectra of humic substances from (a) chernozem and (b) soddy podzolic soil in the region 1470–1320 cm^{-1} after ATR correction. Temperature increases from 25 to 215 $^{\circ}\text{C}$ from blue to magenta lines.

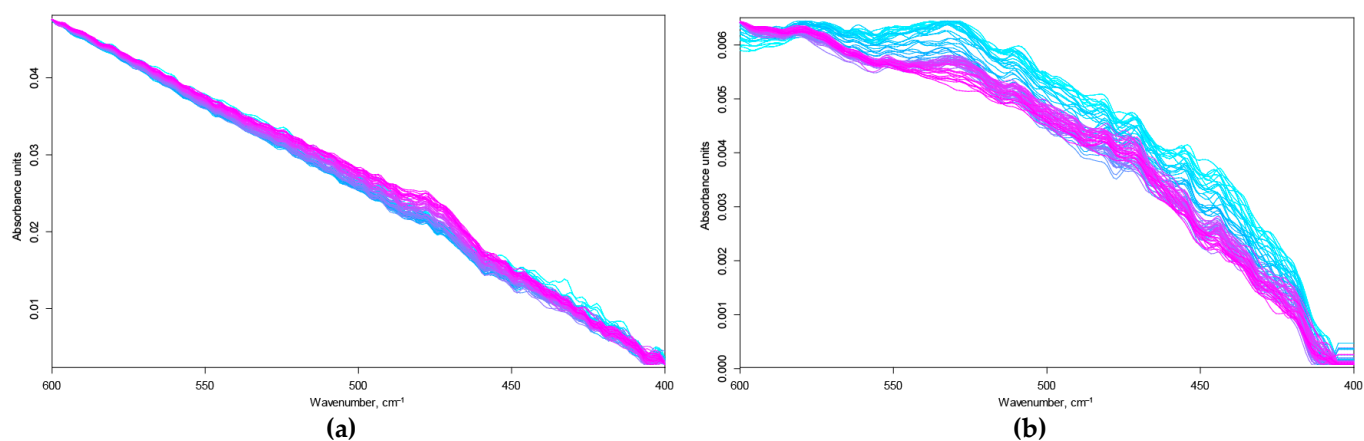


Figure S5. Normalized ATR IR absorption spectra of humic substances from (a) chernozem and (b) soddy podzolic soil in the region 600–400 cm^{-1} after ATR correction. Temperature increases from 25 to 215 $^{\circ}\text{C}$ from blue to magenta lines.

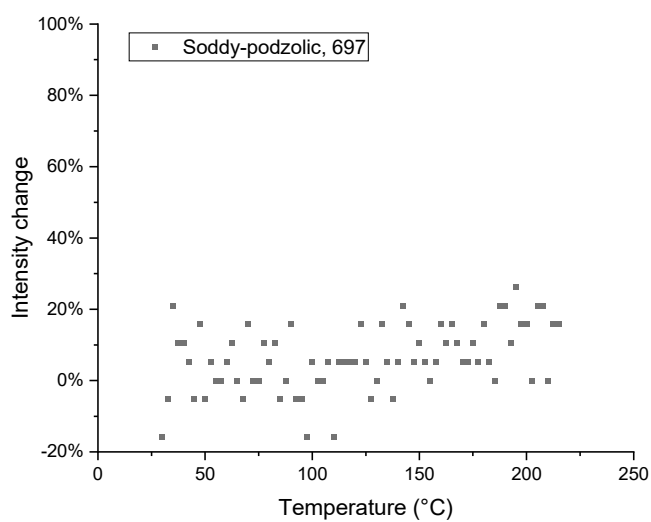


Figure S6. Thermal behavior of the integrated intensity of band of 697 cm^{-1} for HS from soddy podzolic soil.