

SUPPLEMENTARY MATERIAL TO
**Effect of pyrolysis temperature and time of Robusta coffee husk on
yield and product characteristics**

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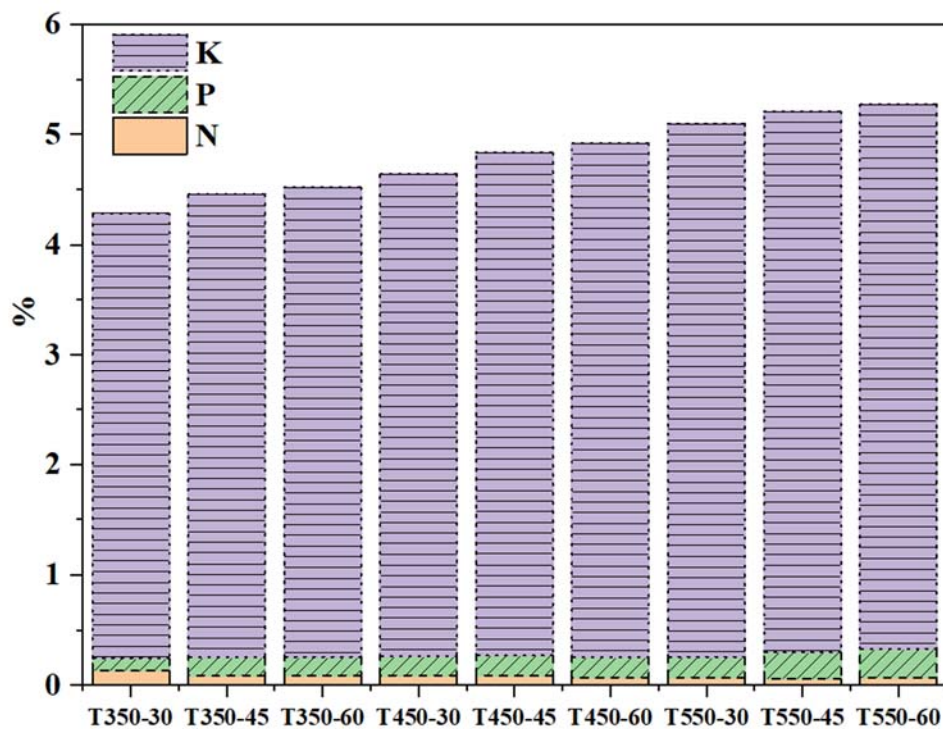


Fig. S-1. Biochar's total nitrogen, phosphorus, and potassium content at different pyrolysis temperatures and times

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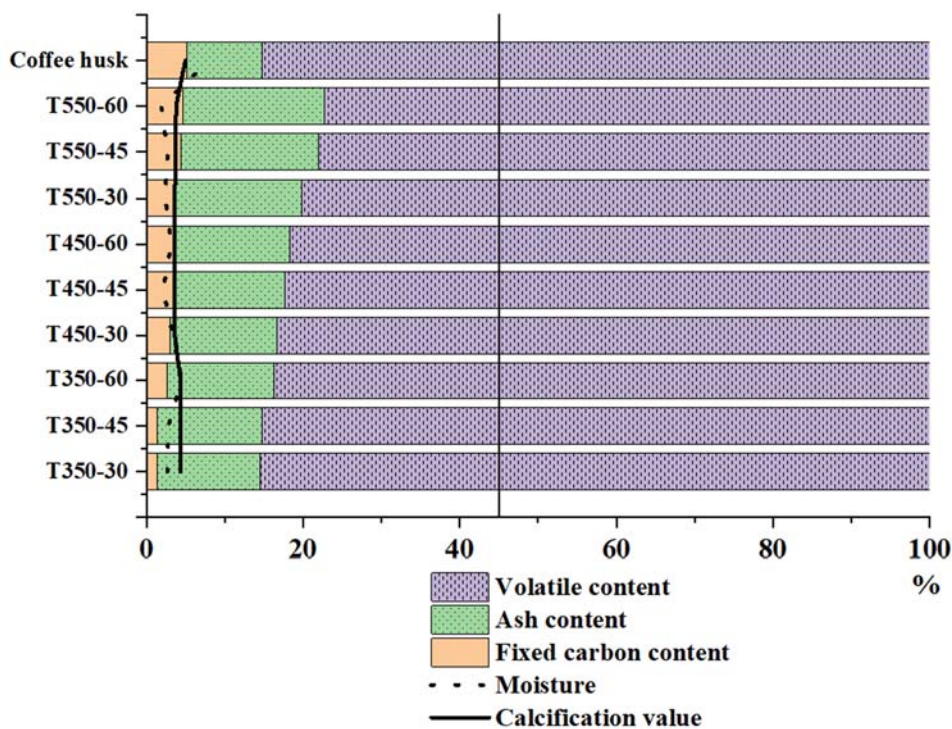


Fig. S-2. The average physicochemical characteristics of coffee husks and biochar from coffee husks at different pyrolysis temperatures and times

Table S-I. Functional groups in the FTIR spectrum

Wavelength, cm^{-1}	Functional groups
3400-3700	Vibrations of -OH bonds from H_2O , phenol, and organic acids. ⁴⁴
2850-2950	Vibrations of the stretched C-H bond of aliphatic CH_x . ^{44,45}
1700-1750	Vibrations of C=C bonds of aromatic and olefinic rings. ^{44,46}
1600-1650	Vibrations of C=C bonds of lignin and hemicellulose. ^{44,45}
	Vibrations of C=O bonds of amide (I), ketones and chinons. ^{44,45}
1500-1590	Oscillation of the asymmetric COO- bond. ⁴⁶
1400-1460	C-H change of CH_3 group. ⁴⁷
1200-1270	Phenolic -OH group. ²⁴
1000-1110	Symmetric elongation of C-O-C in ester groups of cellulose, hemicellulose, and methoxyl groups of lignin. ^{44,45}
460-990	Vibration of Si-O bond. ⁴⁵