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List of abbreviations and symbols

Abbreviations/ symbols	Full form
AD	Anaerobic digestion
ADF	Acid detergent fiber
ANOVA	Analysis of variance
ASTM	American Society for Testing and Materials
AC	Ash content
BBD	Box-Behnken design
BET	Brunauer–Emmett–Teller
CCD	Central composite design
CrI	Crystallinity index (%)
CHNS	Carbon Hydrogen Nitrogen Sulphur
CV	Co-efficient of variation
DDW	Double distilled water
DTG	Differential thermogravimetric
EY	Energy yield (%)
EDS	Energy dispersive spectrum
FC	Fixed carbon
FTIR	Fourier Transform Infrared Spectroscopy
FWO	Flynn-Wall-Ozawa
GC	Gas chromatography
GC-MS	Gas chromatography-mass spectrometry
HHV	Higher heating value (MJ/kg)
I_{002}	Crystalline intensity of diffraction plane (002)
I_{am}	Amorphous intensity of diffraction plane (002)
KAS	Kissinger-Akahira-Sunose
MAI	Mean annual volume increment
MC	Moisture content
Mtoe	Million Tonnes of Oil Equivalent
NDF	Neutral detergent fiber
RSM	Response surface methodology
SD	Standard deviation
SEM	Scanning electron microscope

SS	Sagwan sawdust
TCD	Thermal conductivity detector
TGA	Thermogravimetric analysis
TS	Total solid
VM	Volatile matter
Wt . %	Weight percentage
XRD	X-Ray diffraction
XPS	X-ray photoelectron spectra
λ	X-ray wavelength (0.15406 nm)
k	Rate constant
α	Fractional conversion
E	Activation energy (kJ/mol)
A	Pre-exponential factor (s^{-1})
R	Universal gas constant
β	Heating rate ($^{\circ}C/min$)
T	Temperature (K)
C_0	Initial Cr(VI) concentration (mg/L)
C_t	Cr(VI) concentration at time t (mg/L)
C_e	Cr(VI) concentration at equilibrium (mg/L)
q_e	Equilibrium adsorption capacity (mg/g)
q_t	Adsorption capacity at time t (mg/g)
W_o	Initial mass of the sample
W_i	Mass of the sample at time t
W_f	Final mass of the sample
T_{α}	Temperature at different conversion (K)
T_m	DTG Peak temperature (K)
ΔH	Change in enthalpy (kJ/mol)
ΔG	Change in Gibbs free energy (kJ/mol)
ΔS	Change in entropy (J/mol.K)
K_B	Boltzmann constant ($1.381 \cdot 10^{-23}$ J/K)
h	Plank constant ($6.626 \cdot 10^{-23}$ J.s),
