Electronic Supplementary Material (ESI) for Environmental Science: Water Research & Technology.

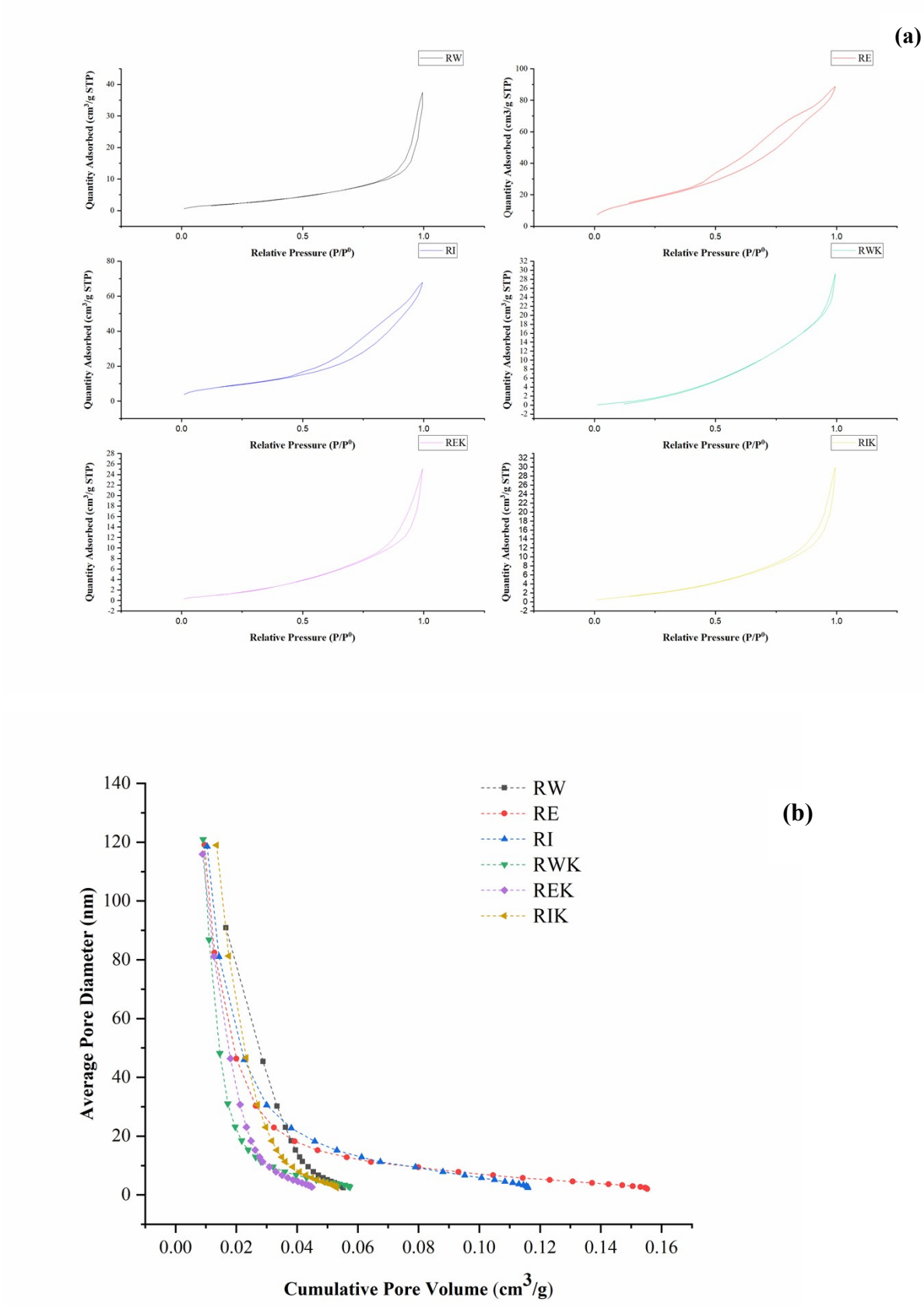

Fig. S1.: N_2 adsorption-desorption isotherms (a), pore distribution (b) of solvochars/catalytic solvochars

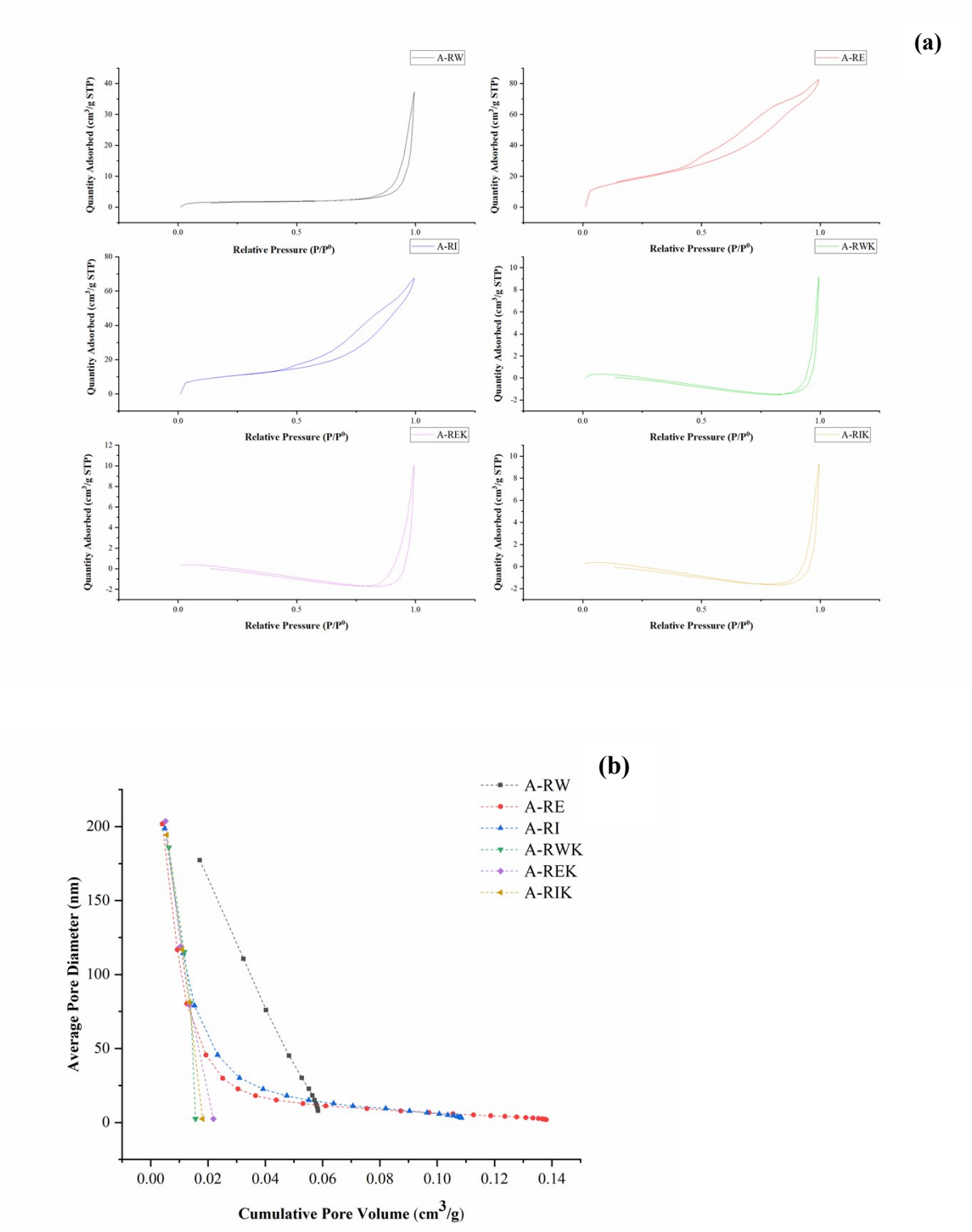

Fig. S2: N_2 adsorption-desorption isotherms (a), pore distribution (b) at post-adsorption (after 1st run) stage

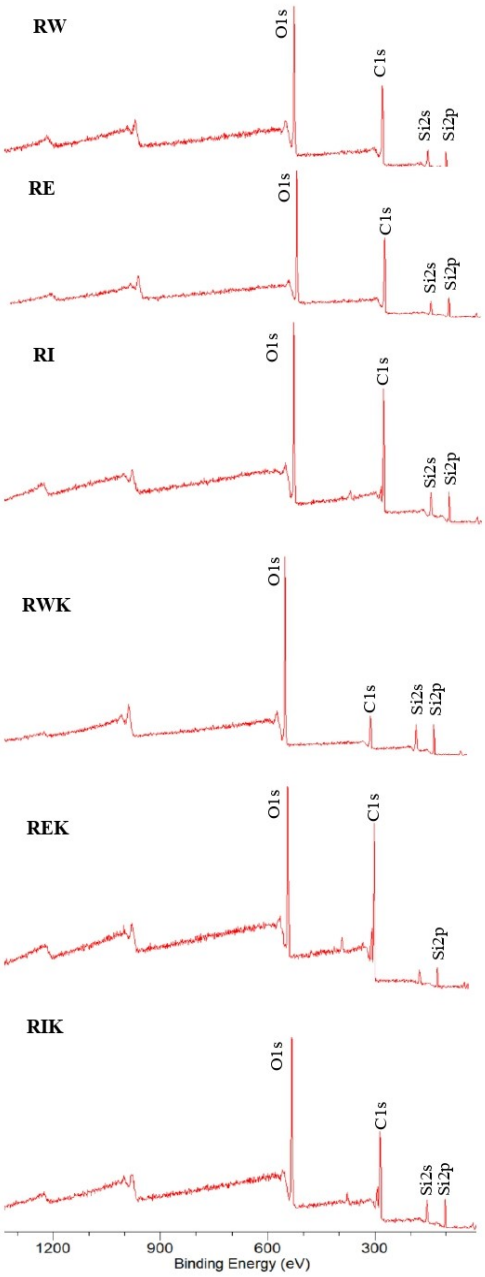

Fig. S3: XPS spectra of solvochars/catalytic solvochars

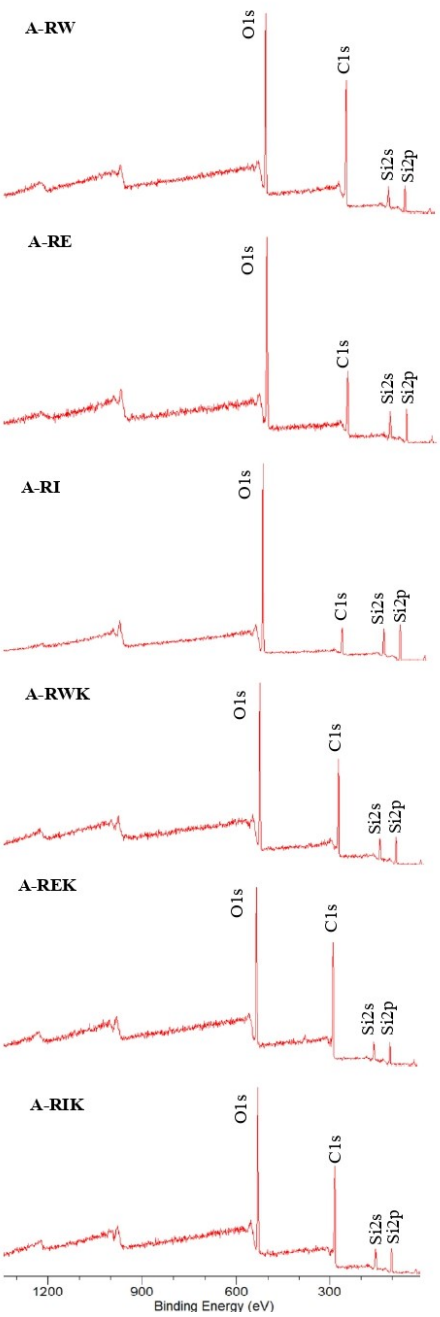

Fig. S4: XPS spectra of solvochars/catalytic solvochars at post-adsorption stage (after 1st run)

Table S1: FTIR analysis of the solvochars/catalytic solvochars

Wavenumber range (cm^{-1})		Bond type	Functional groups	Remarks
λ_{exp}	λ_{th}			
794-840	740-840	C-C	Aromatic mono-substituted	Presence of aromatic C and lignin content
1070-1179	1050-1080	C-O	Primary alcohol	-Presence of organic compounds, oxygen-containing groups enhance heavy metal ion adsorption - Presence of organic compound suitable for soil remediations -Presence of inorganic compounds such as silica and others
	1085-1185	C-O	Secondary alcohol	
	1000-1300	C-O-C, C-OH, S=O, P=O, C-F	Ethers, alcohols, sugars, sulfur, phosphorus, and fluorine compounds	
	1080-1100	Si-O-Si	Silica compounds	
1415	1400-1450	C=O	Carbonyl groups	-Dehydration of cellulose and
1545-1645	1545-1650	N-H	Amine primary	Nitrogen fixation for wastewater treatment and soil remediation
1704	1630-1725	$-NH_2$ C=O	Amide and Aromatic ketones	Presence of carbonyl groups
2934-2937	2840-3000	C-H	Alkanes	Presence of aromatic carbon

Table S2: Average of relative concentrations and standard deviation of the mean for each of the three chemical states and binding energy by XPS analysis

Chemical state	Binding energy C1s (eV)	Functional groups	Remarks
C-C	~284.8	Aliphatic and aromatic carbon bonding	Adventitious carbon, lignin and extractives
C-O-C	~286	Carbon atom from ketone group	Cellulose and hemicellulose
O-C=O	~288.5	Carbon atom from a carboxylic group	High content of aliphatic carbon with carboxylic acids as functional group