

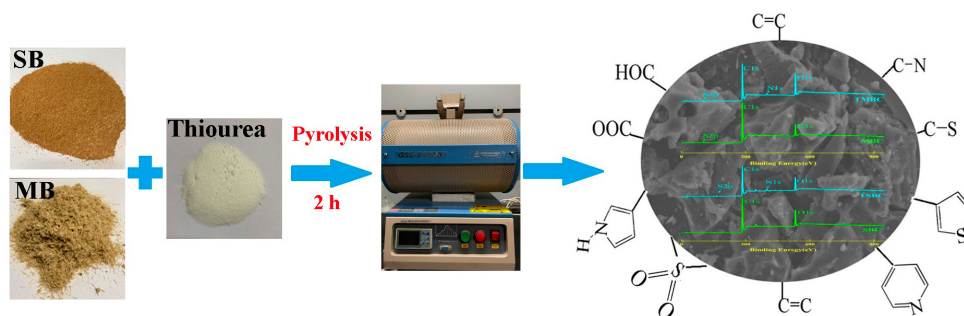


Figure S1. Schematic of the preparation of modified biochar

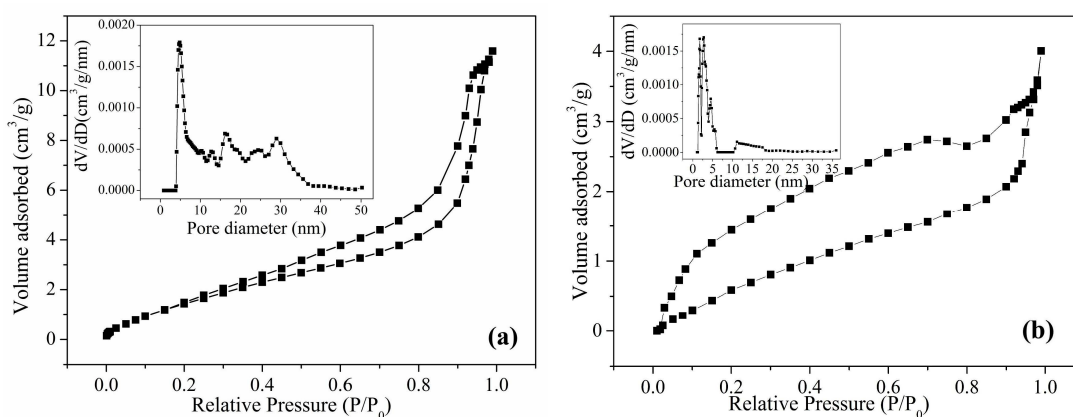
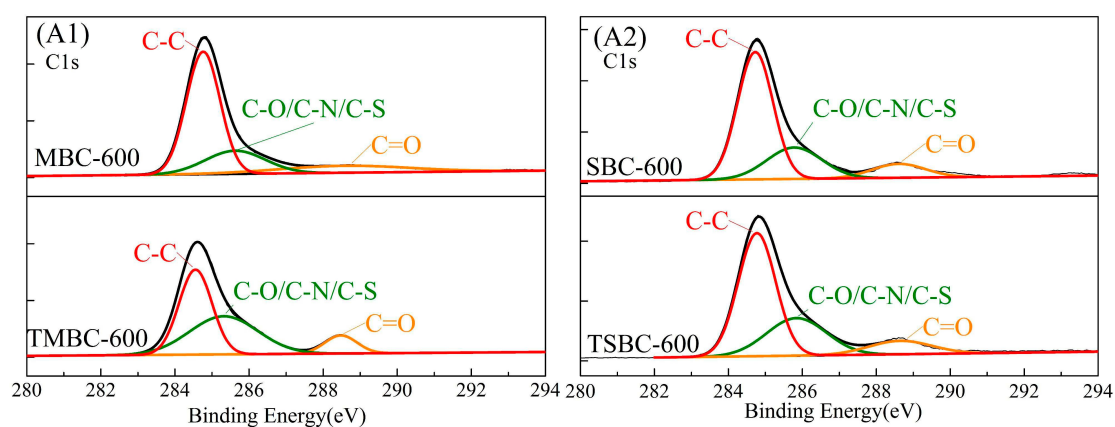


Figure S2. N₂ adsorption/desorption isotherms and pore size distribution of TSBC-600 (a) and TMBC-600 (b)



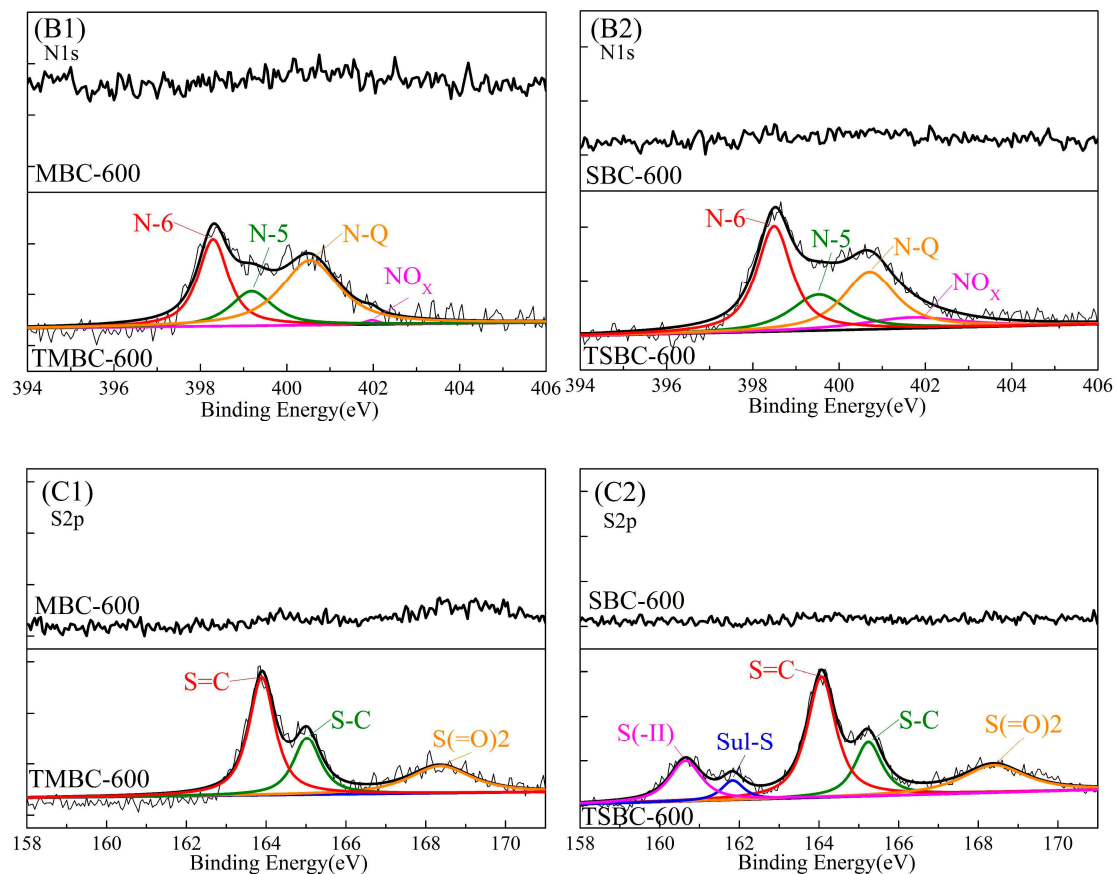


Figure S3. High-resolution spectrum of C 1s (A1,A2), N 1s (B1,B2), S 2p (C1,C2) for MBC-600, SBC-600, TMBC-600 and TSBC-600

Table S1. Comparison of metal ion sorption capacity (mg/g) of different adsorbents

Feedstock	Modifier	Metal ion	Q_{max}	Reference
Watermelon rinds	—	Tl(I)	1123.0	[8]
Vinegar-residue	—	Cd(II)	2.9	[11]
Buffal weed	—	Cd(II)	11.6	[12]
Wheat straw	—	Cd(II)	5.0	[13]
Pulverized corn stalk	HNO ₃	Cd(II)	19.0	[14]
Carrot pulp	thiourea	Cd(II)	4.1	[15]
Phoenix tree leaves	Fe ₃ O ₄ @SiO ₂ -NH ₂	Cr(VI)	27.2	[20]
Rice-husk	polyethylenimine	Cr(VI)	435.7	[23]
Wood chip	element S	Hg(II)	107.5	[24]
Wheat straw	nanoscale iron sulfide	Cr(VI)	130.5	[37]
Bamboo	Hexadecyltrimethylammonium bromide	Cd(II)	12.56	[57]
Poplar bark	thiourea	Cd(II)	20.0	Present study