Supporting Information

Adsorptive desulfurization of dibenzothiophene over lignin-derived biochar by one-step modification of potassium hydrogen phthalate

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Table S1 The pH values of dissolved samples in aqueous solutions

Dissolved samples	pH values of solution [a]
0.5g Lignin	8.8
0.5g KHP	4.3
0.5g Lignin + 0.5g KHP	6.4
0.5g Lignin + 1.0g KHP	5.2
0.5g Lignin + 1.5g KHP	4.9

[a] The measurement tests are carried out at ambient temperature.

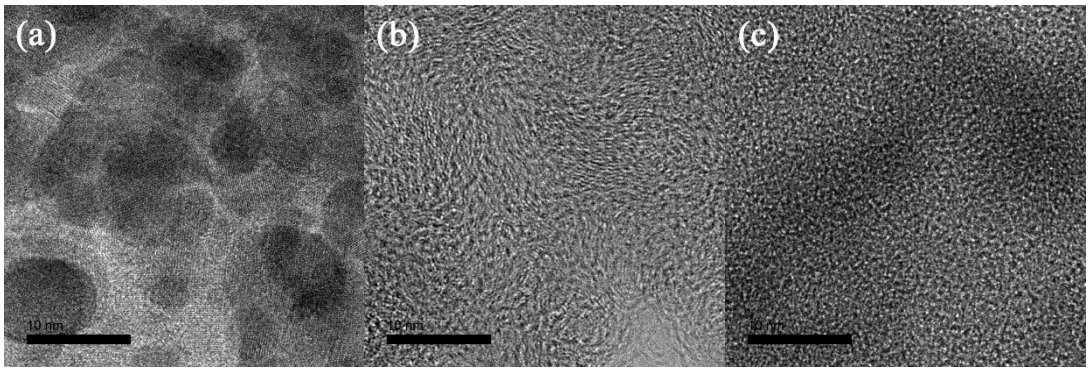

Fig.S1 The TEM images of (a) KHP-char (b) lignin-char (c) KHP-activated char with mass ratio of 1:1

Table S2 The char yield and desulfurization rate of the main component

Char samples	Char yield [a]	ADS samples	Desulfurization rate [b]
15g Lignin	56.8wt%	0.1g pure lignin-char + 10ml DBT	44.7%
15g KHP	11.4wt%	0.1g KHP-char + 10ml DBT	9.2%
15g Lignin + 15g KHP	35.1wt%	0.1g activated lignin-char + 10ml DBT	92.5%

[a] Preparation condition: T=800°C, t=1h.

[b] ADS condition: T=30°C, t=4h.

Table S3 Content of acid functional groups on the surface of regenerated biochar

Reused times	1st biochar	2nd biochar	3rd biochar	4th biochar	5th biochar
Surface acidity ($mmol \cdot g^{-1}$)	1.0667	0.9824	0.9749	0.9702	0.9689