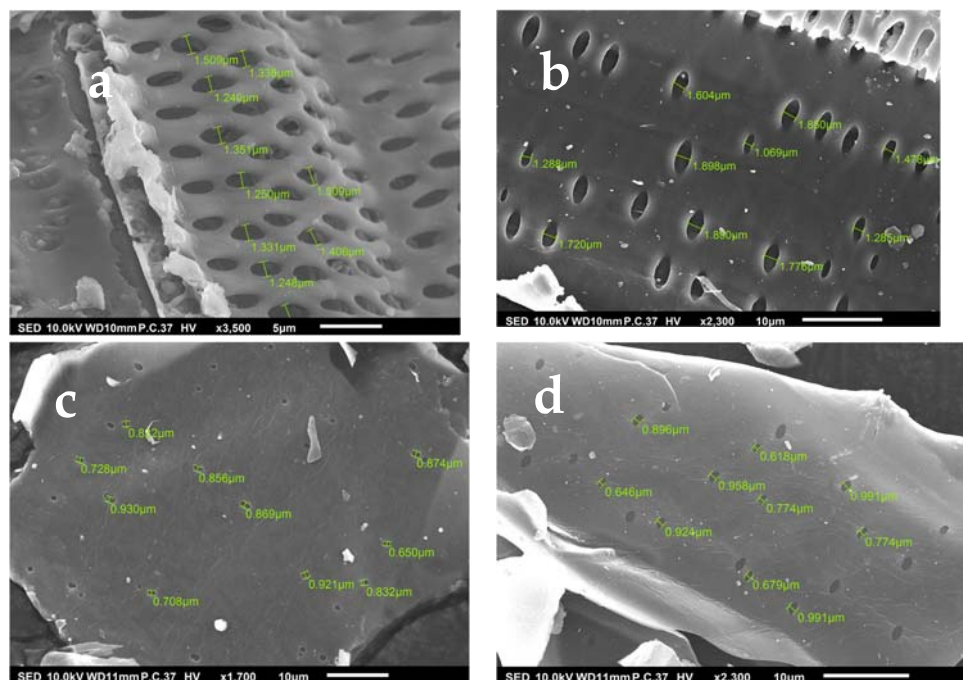


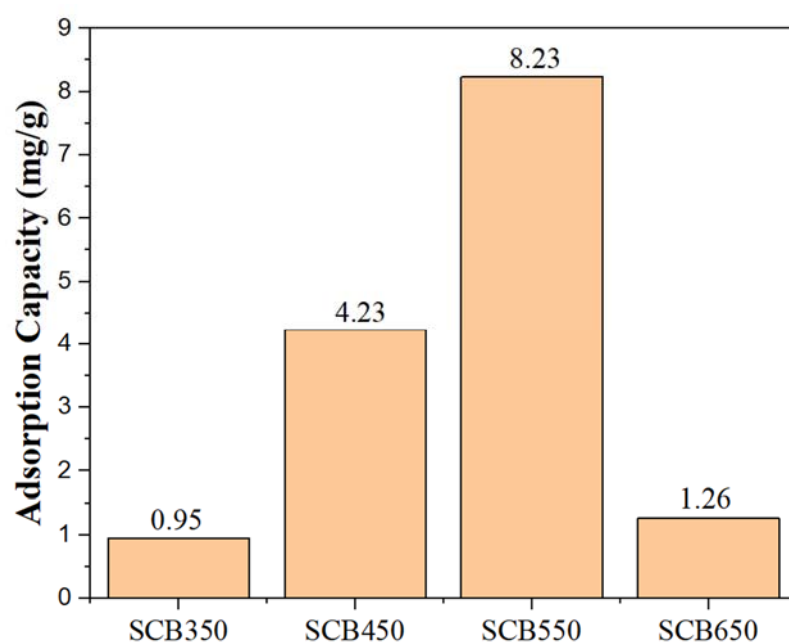
## Supplementary data#

**Table S1.** Specific surface area comparison of previous studies with the results reported in this study.

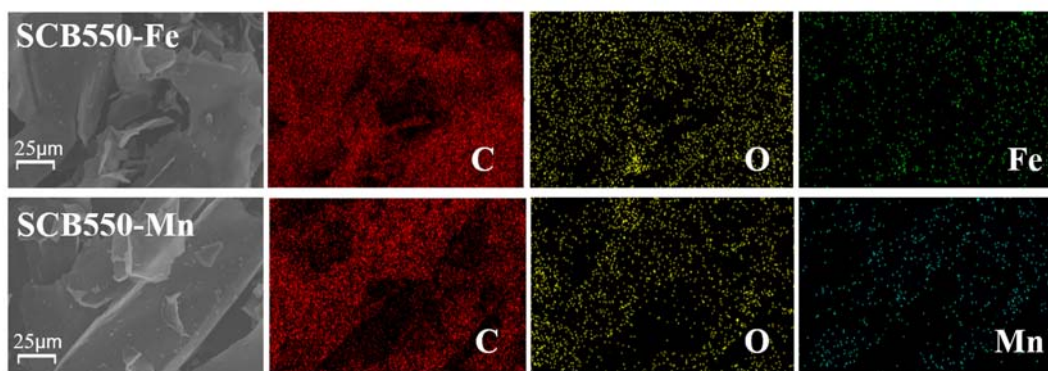
Biochar Name	Pyrolysis Temperature	$S_{BET}$ ( $m^2/g$ )	Reference
Biochar	600°C	295.0	[56]
MFSCBB-MC	600°C	305.4	[43]
SCB550	550°C	299.6	This Study
SCB550-Fe	550°C	318.4	This Study



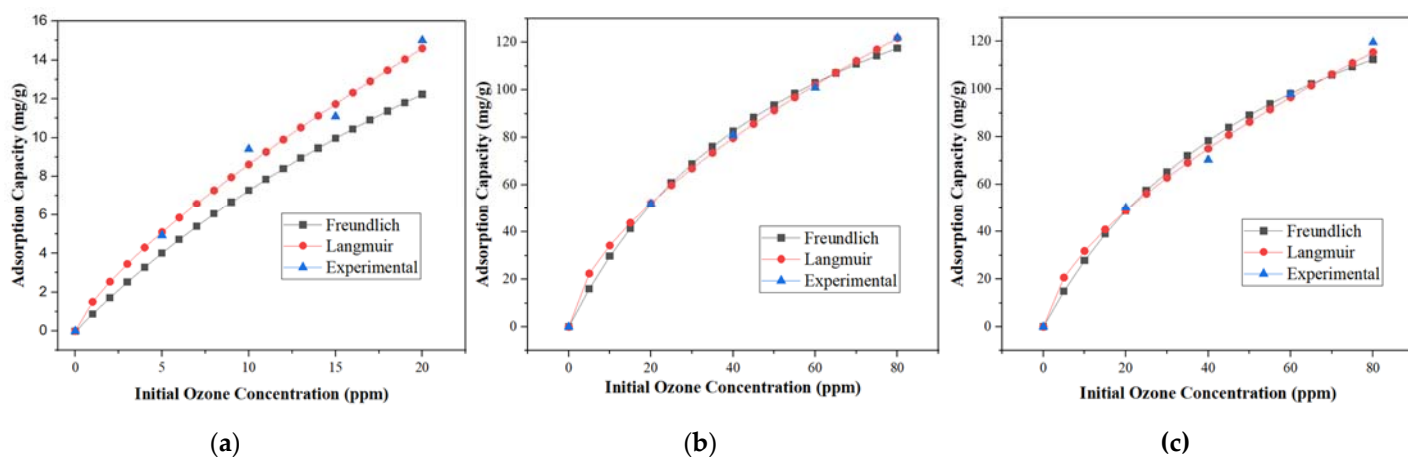
**Figure S1.** Pore sizes of pristine biochars pyrolyzed at 350 (a), 450 (b), 550 (c), and 650° (d).



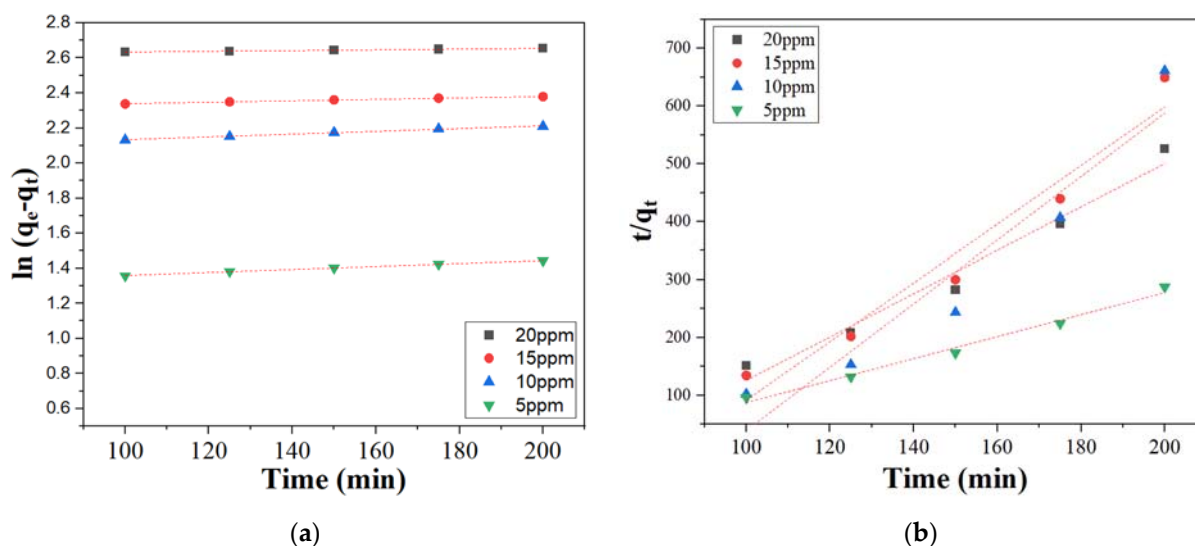
**Figure S2.** Adsorption capacities of biochar prepared at different pyrolysis temperature.



**Figure S3.** EDS images of catalytic biochar SCB550-Fe and SCB550-Mn.



**Figure S4.** Langmuir and Freundlich model fitting of pristine biochar SCB550 (a), and catalytic biochar SCB550-Fe (b) and SCB550-Mn (c) isothermal data.



**Figure S5.** Pseudo-first (a) and pseudo-second (b) order kinetic modelling of SCB550.

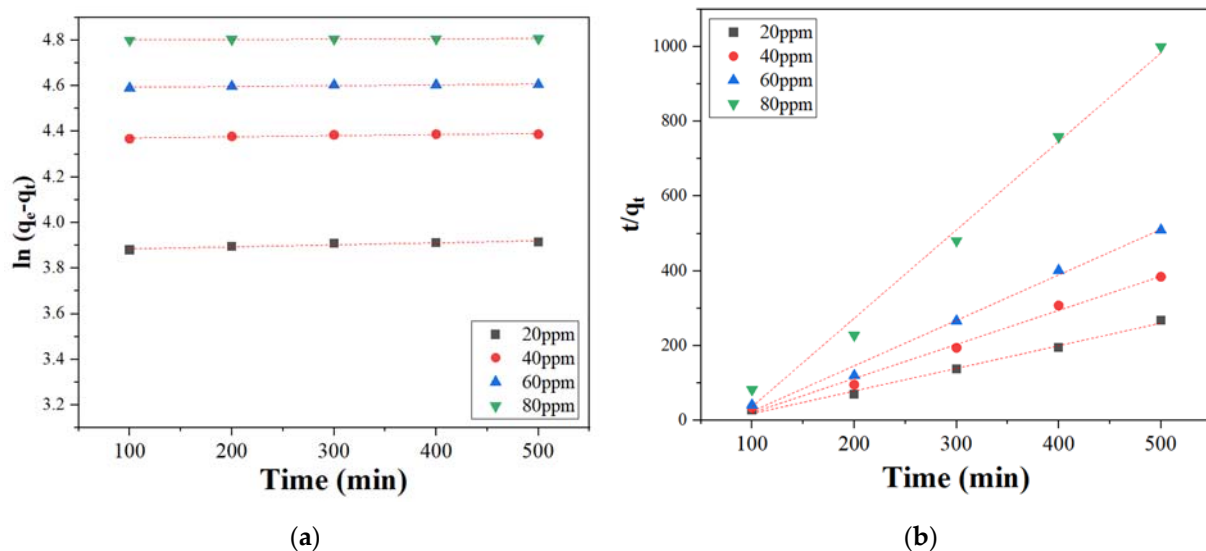


Figure S6: Pseudo-first (a) and pseudo-second (b) order kinetic modelling of SCB550-Fe

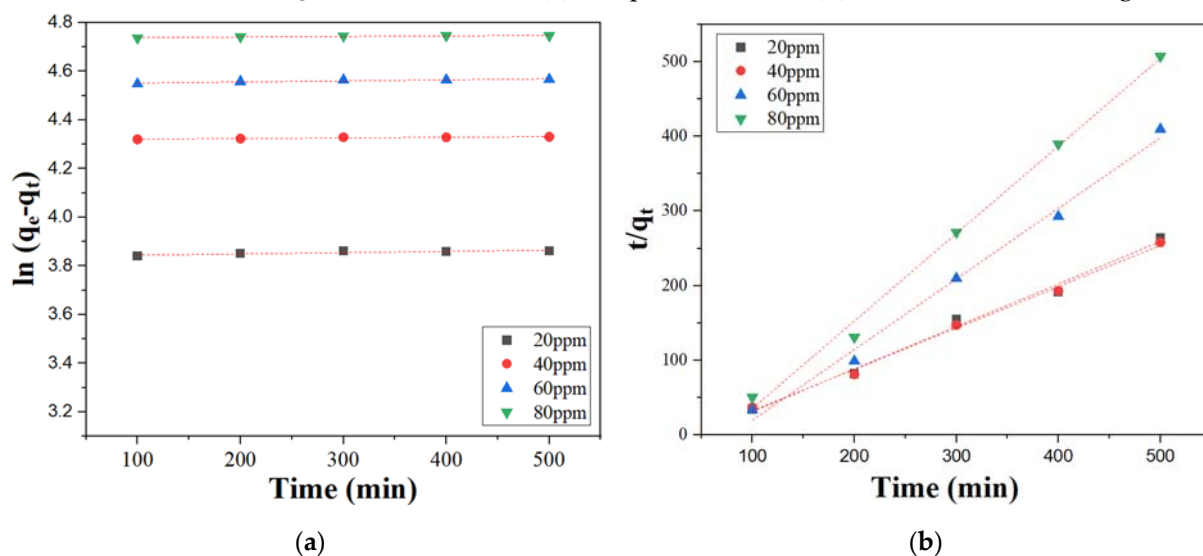
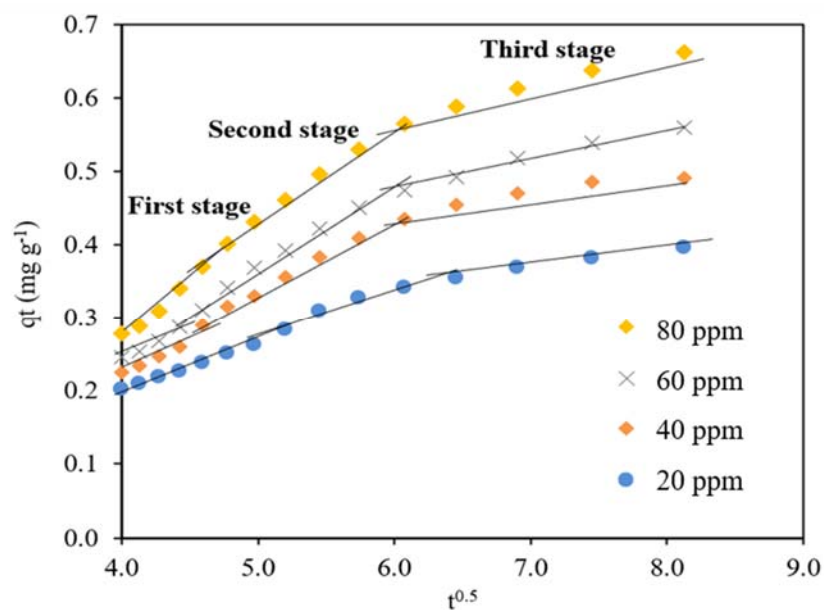
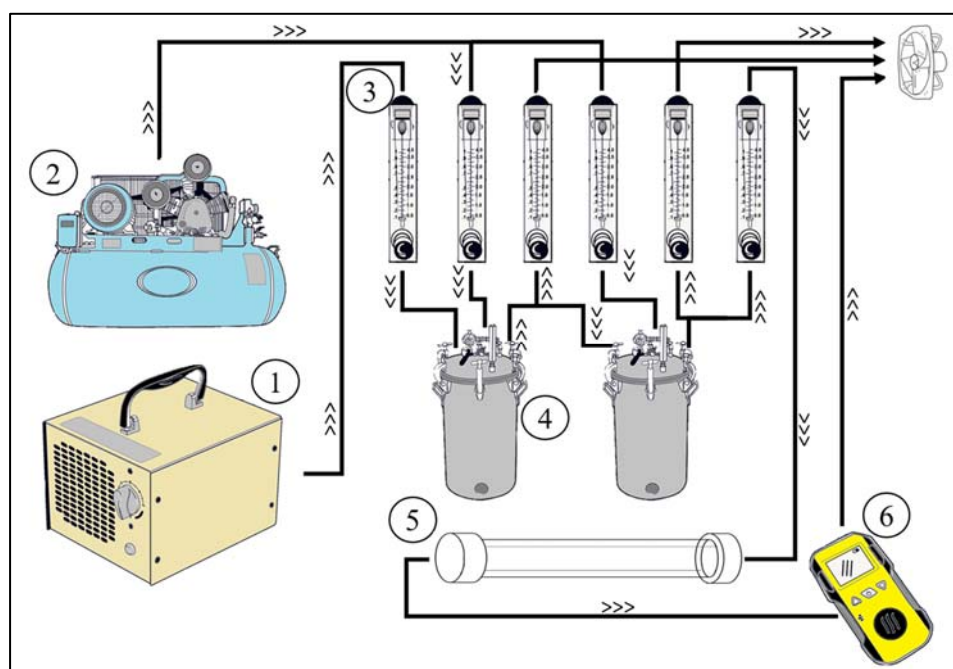


Figure S7: Pseudo-first (a) and pseudo-second (b) order kinetic modelling of SCB550-Mn.



**Figure S8.** Intraparticle diffusion modelling of SCB550-Fe.



**Figure S9.** Schematic diagram of ozone adsorption set-up utilizing an ozone generator (1), air compressor (2), flowmeters (3), isothermal pressure tanks (4), quartz tube reactor (5), and ozone detector (6).