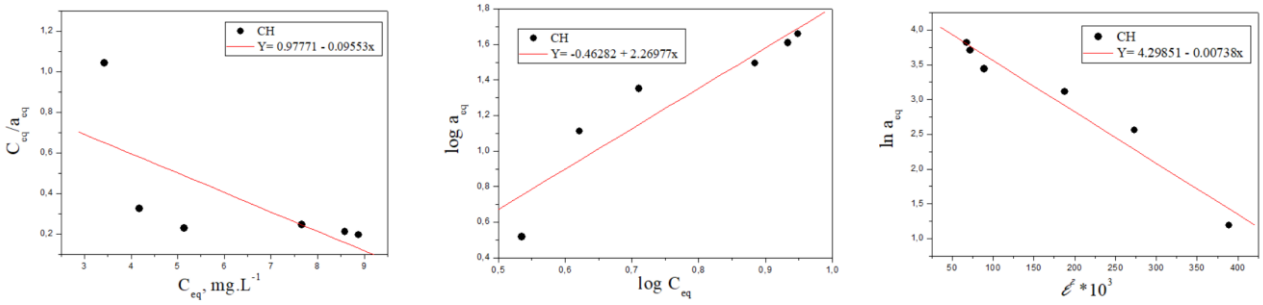
Supplementary material

Application of Bio-Based Activated Carbon from Cocoa Husk Waste for High-Efficiency Adsorption in Water Treatment

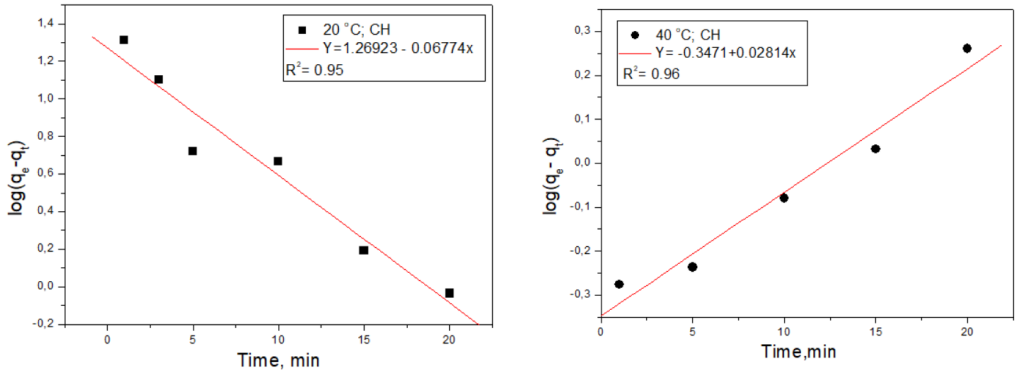
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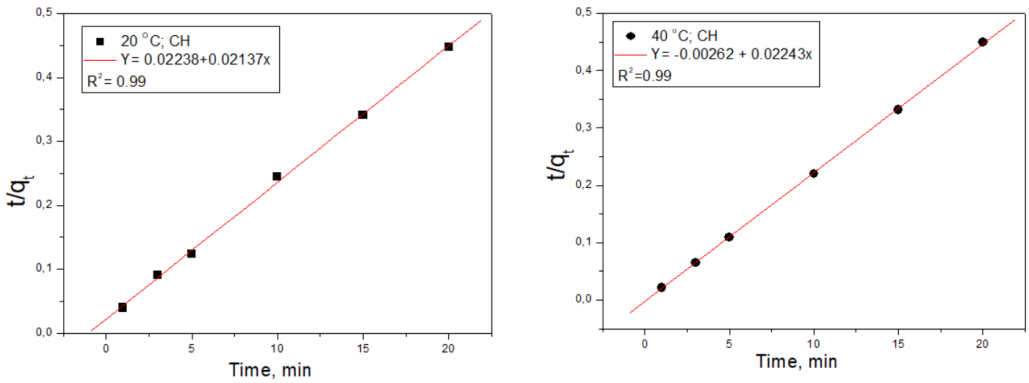


(a) (b) (c)

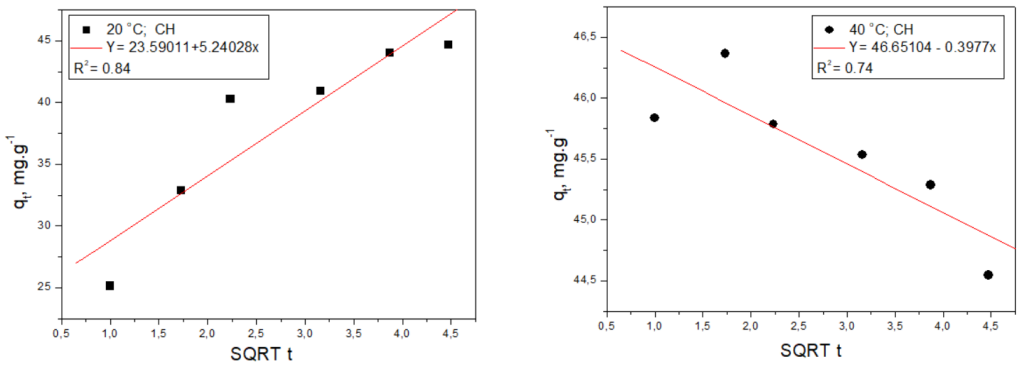
Figure S1. Fitting plots of Langmuir (a), Freundlich (b), and Dubinin–Radushkevich (c) isotherms for dye adsorption onto CH



(a)



(b)



(c)

Figure S2. Fitting plots of pseudo-first-order (a), pseudo-second-order (b), and Weber–Morris (c) kinetic models for dye adsorption onto CH

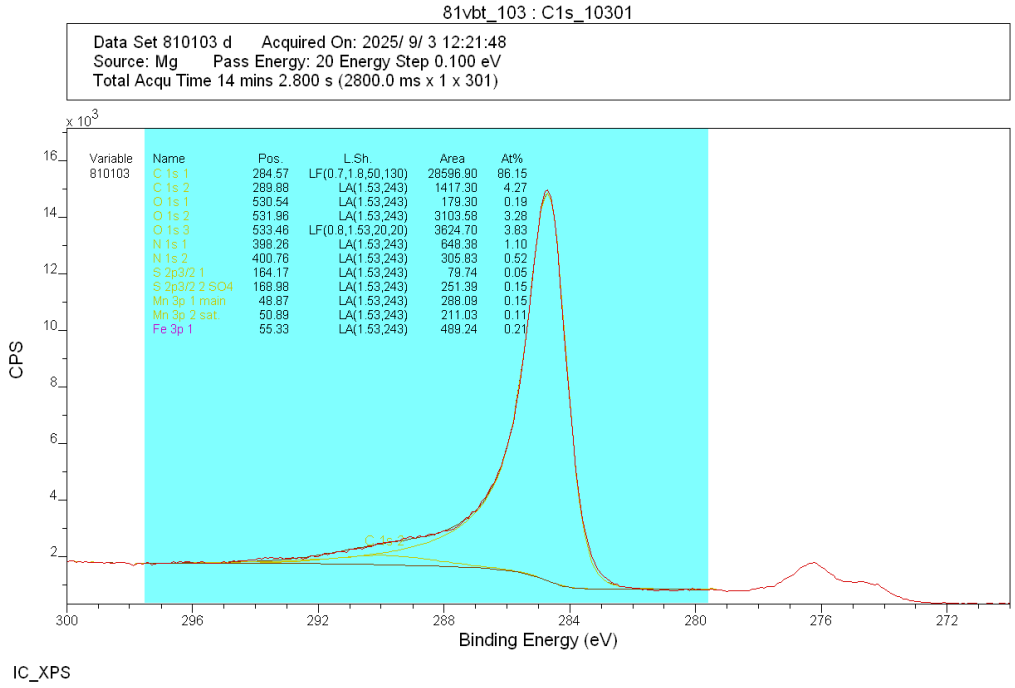


Figure S3. X-ray photoelectron spectroscopy (XPS) of the C1s binding energy (284.57 and 289.88 eV) of cocoa husk–derived activated carbon

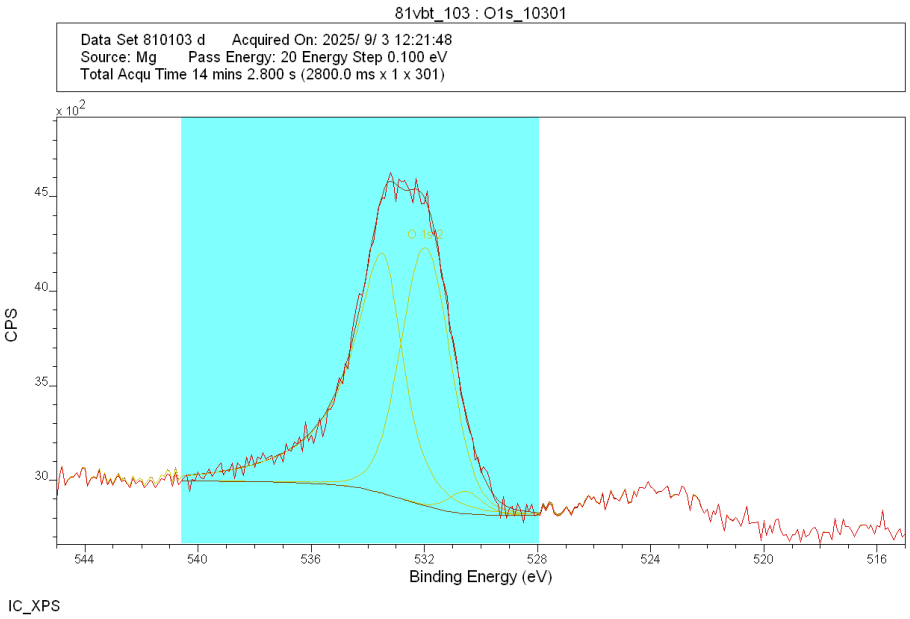


Figure S4. X-ray photoelectron spectroscopy (XPS) of the O1s binding energy (530.54; 531.96 and 533.46 eV) of cocoa husk–derived activated carbon