Supplementary Information

Catalyst-Free Lignin Photothermal Valorization via Preferential Aromatic C-H Cleavage

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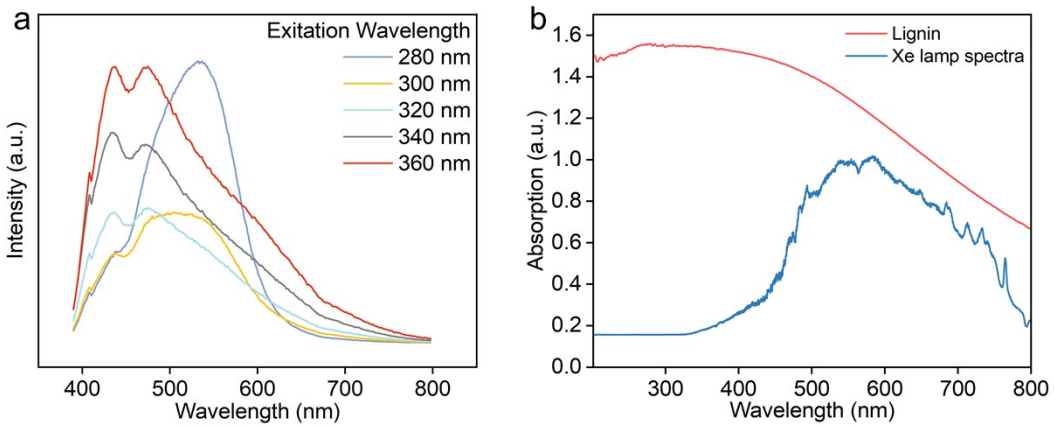

Figure S1. Optical characterization of lignin.

(a) Fluorescence emission spectra of lignin under different excitation wavelengths.

(b) UV–Vis absorption spectrum of lignin and emission spectrum of the Xe lamp.

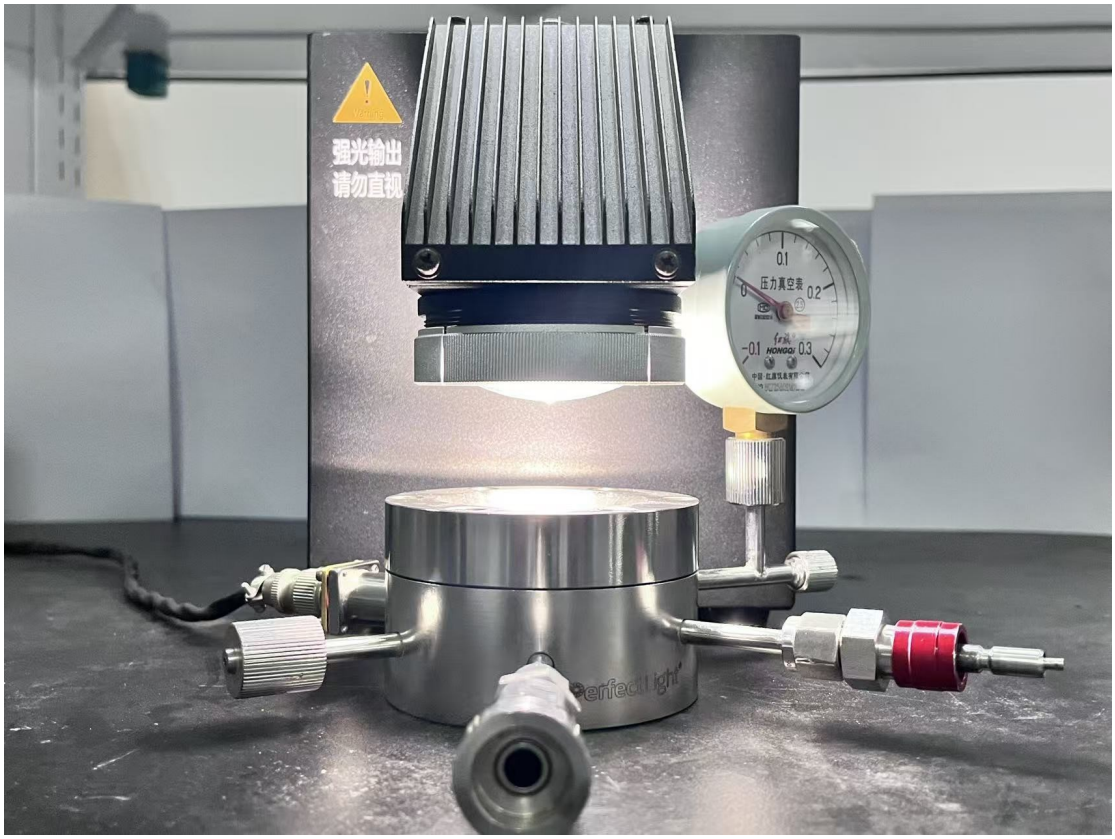

Figure S2. Digital photograph of the lignin photothermal recovery system.

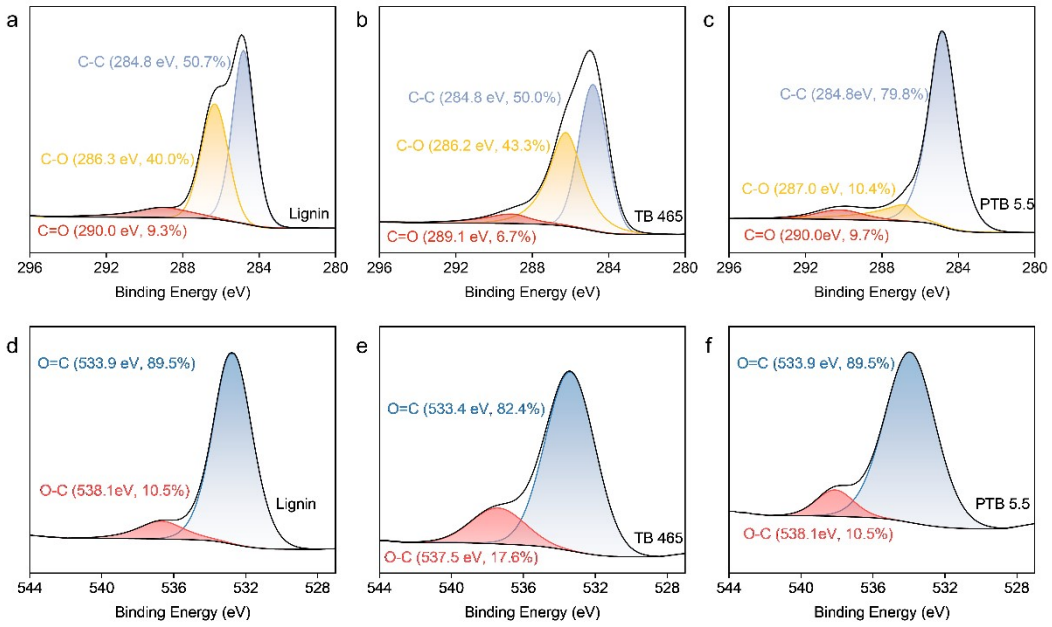

Figure S3. XPS spectra of C1s for (a) lignin, (b) TB 465, and (c) PTB 5.5; XPS spectra of O1s for (d) lignin, (e) TB 465, and (f) PTB 5.5.

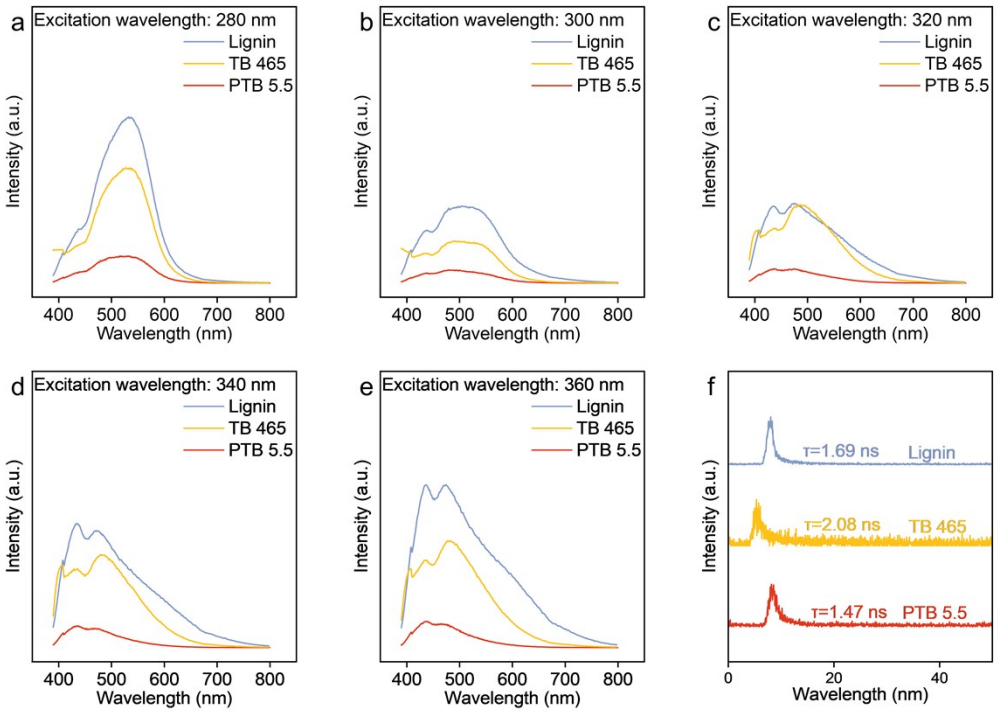

Figure S4. Fluorescence emission spectra and lifetimes of lignin, TB 465, and PTB 5.5. (a–e) Fluorescence emission spectra excited at 280, 300, 320, 340, and 360 nm, respectively; (f) fluorescence lifetime decay curves of the three samples monitored at 430 nm emission.

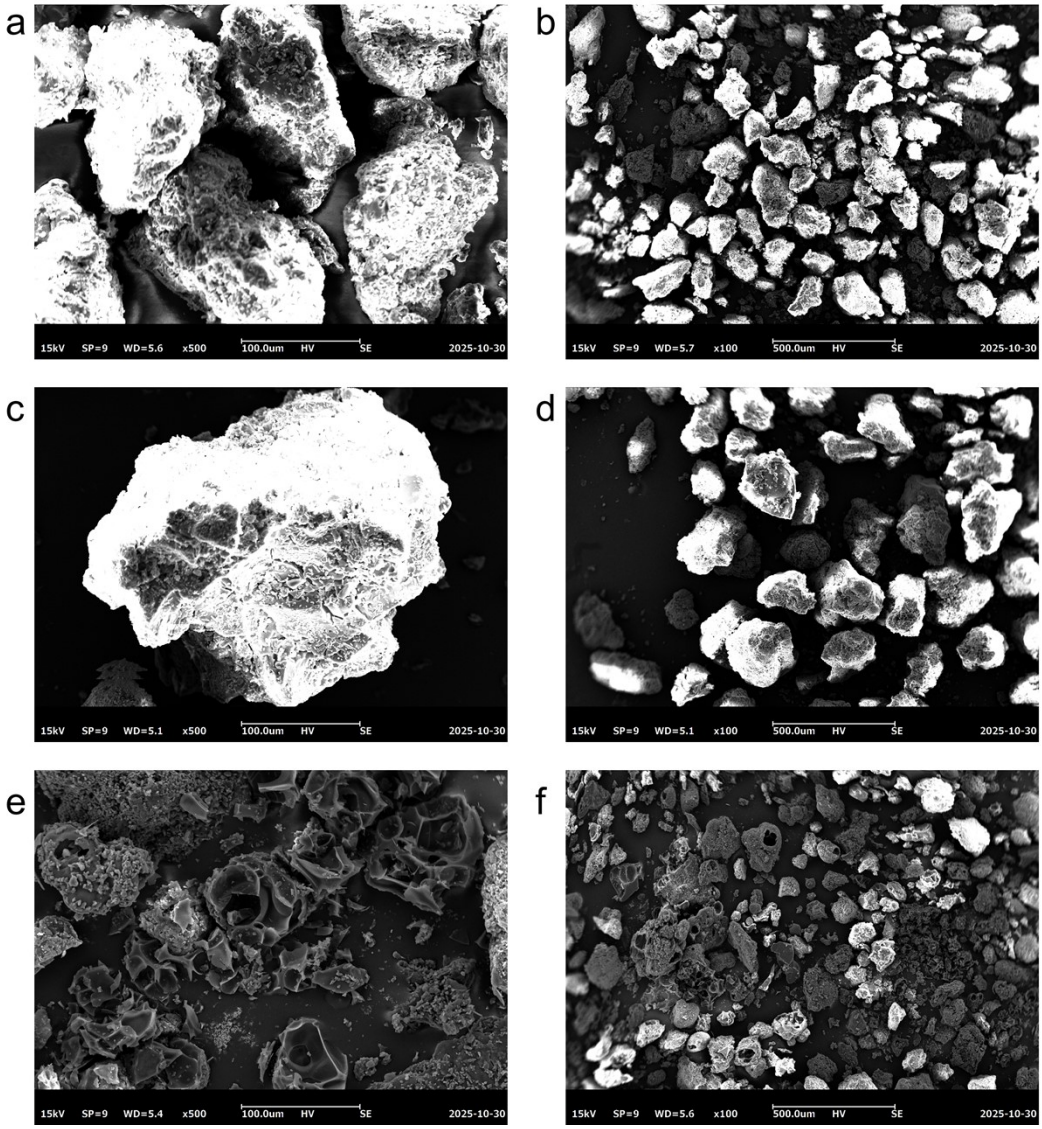

Figure S5. Scanning electron microscopy images of (a, b) lignin, (c, d) TB 465, and (e, f) PTB 5.5.

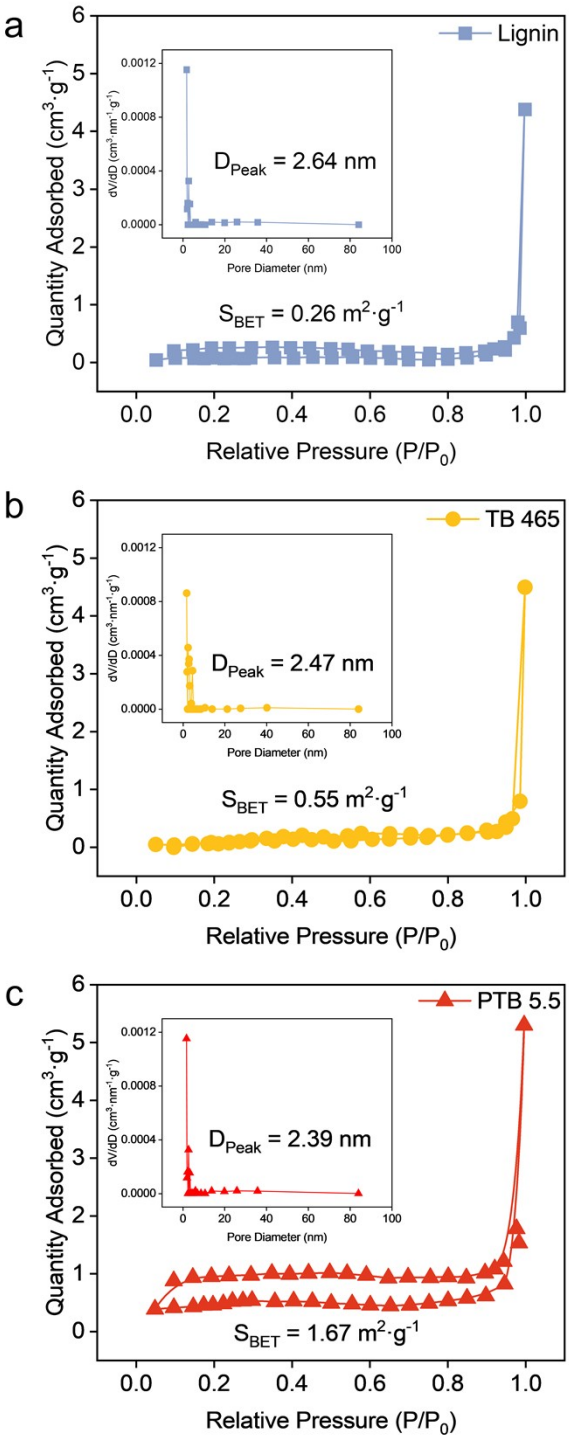

Figure S6. BET spectra of lignin, TB 465, and PTB 5.5 for specific surface area.

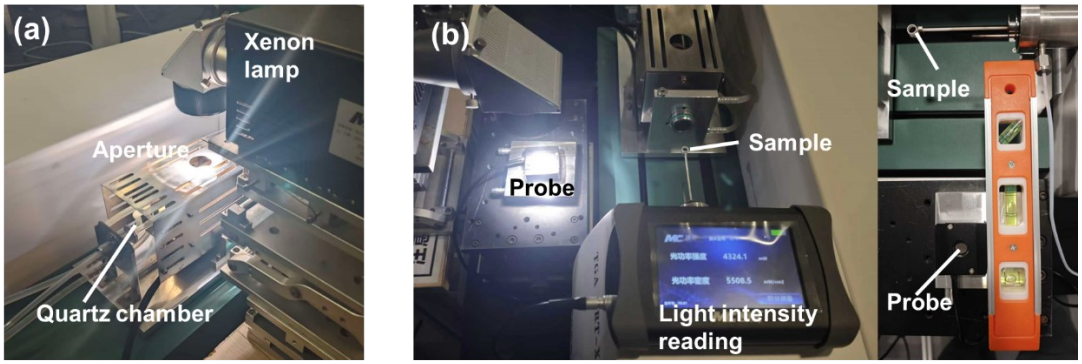

Figure S7. Digital photograph of the photo-TGA experiments.

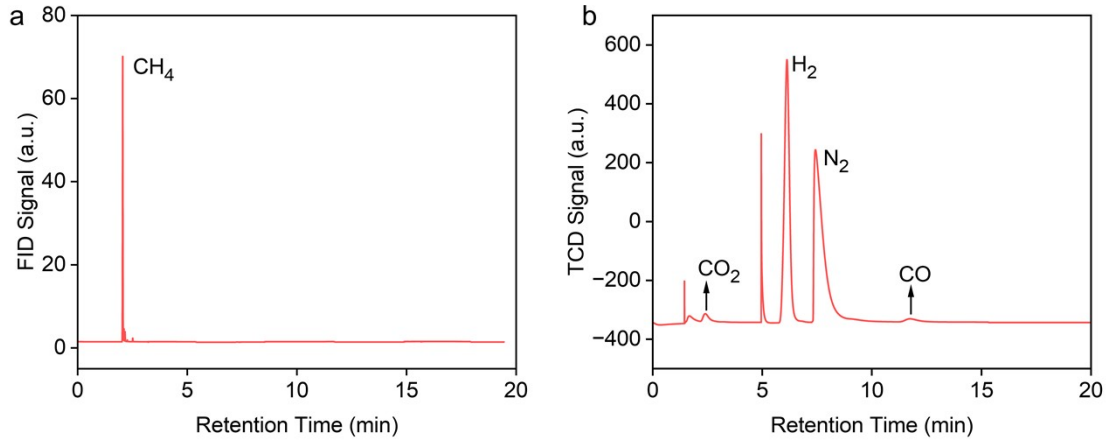

Figure S8. Gas chromatograms of gaseous products from lignin after 1 h irradiation at 5.5 W·cm^{-2}, recorded using flame ionization detector (FID) (a) and thermal conductivity detector (TCD) (b). The injector temperature was set to 220 °C. The temperatures of the FID and TCD were 200 °C and 70 °C, respectively. The oven temperature was maintained at 70 °C, and the TCD current was 70 mA.