

Effective carbon dioxide uptake in tailored covalent organic framework with pore size and active atoms regulation

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Instrumental characterization

The infrared spectra were recorded from 500 to 4000 cm^{-1} on an Avatar FT-IR 360 spectrometer by using KBr pellets. Elemental analyses were measured by an Elementar model vario EL cube analyzer. Field emission scanning electron microscopy was recorded on a SU8020 model HITACHI microscope. Powder X-ray diffraction data were performed on a PANalytical BV Empyrean diffractometer by depositing powder on glass substrate, from $2\theta = 4.0^\circ$ to 35° with 0.02° . Thermogravimetric analysis (TGA) was performed on a TA Q500 thermogravimeter with the heating at a rate of $10^\circ\text{C min}^{-1}$ from room temperature to 800°C under nitrogen. Nitrogen sorption isotherms were measured at 77 K with a JW-BK 132F analyzer.

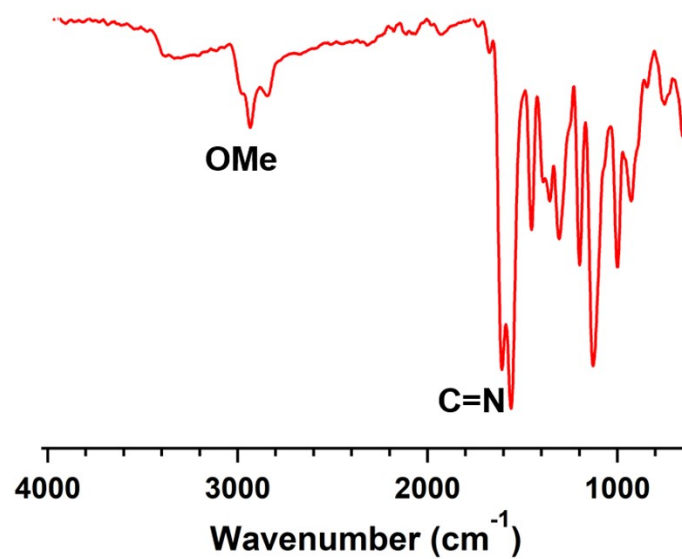


Fig. S1. FT IR spectrum of T-COF.

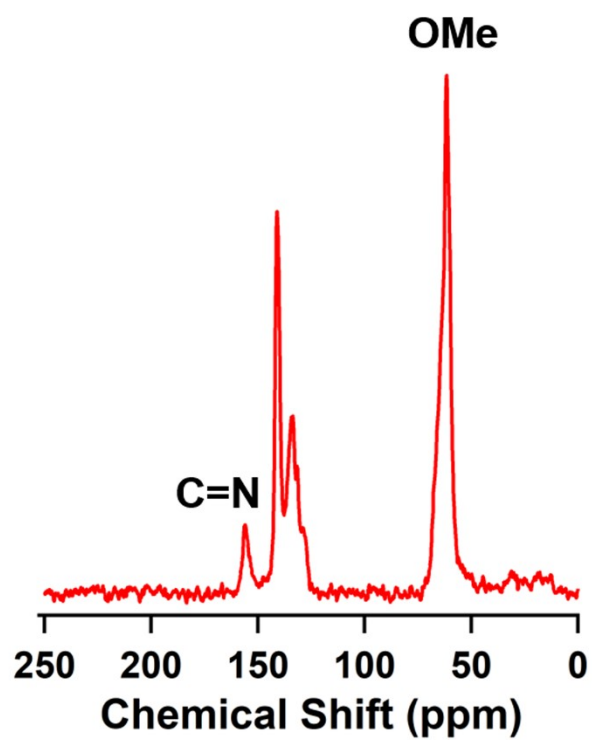


Fig. S2. ^{13}C NMR spectrum of T-COF.

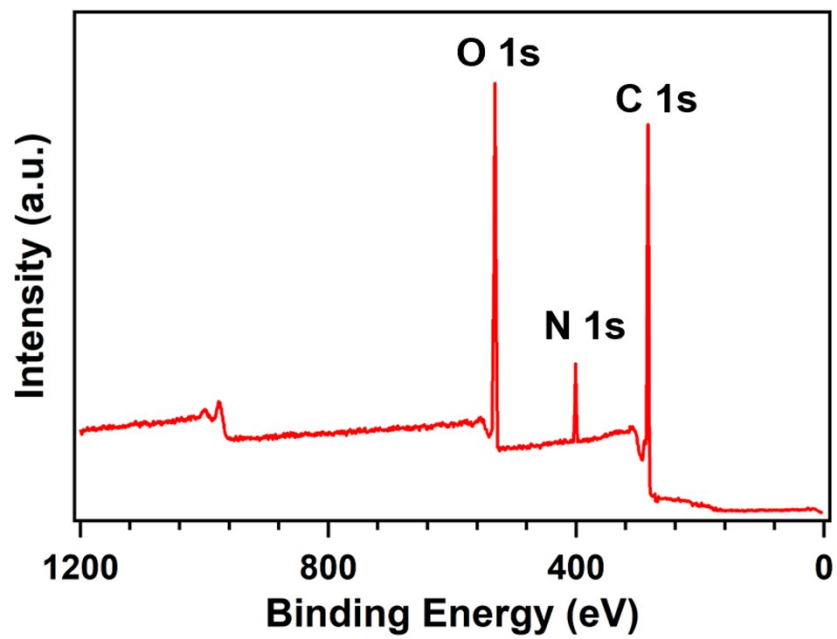


Fig. S3. XPS analysis of T-COF.

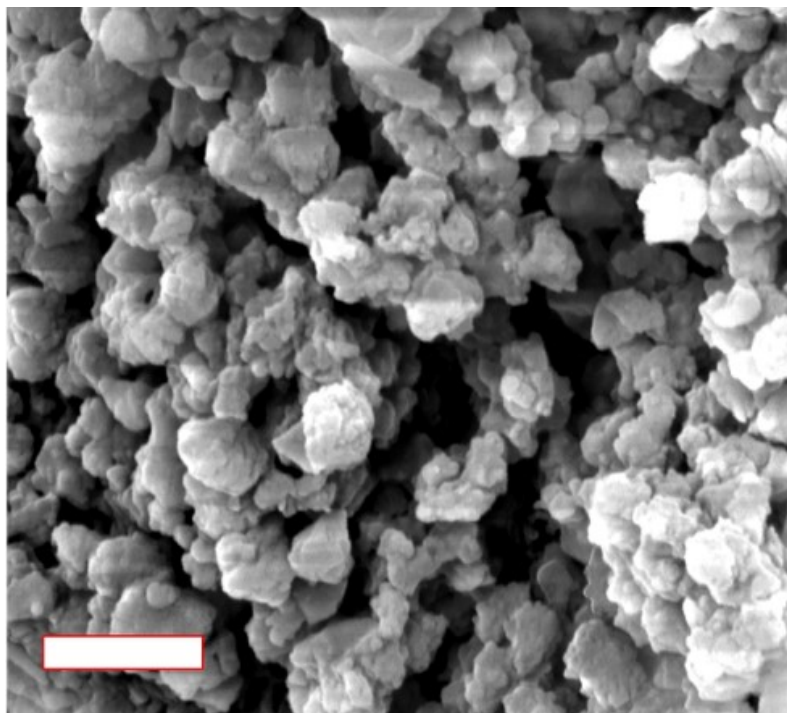


Fig. S4. SEM image of T-COF (scale bar: 5 μ m).

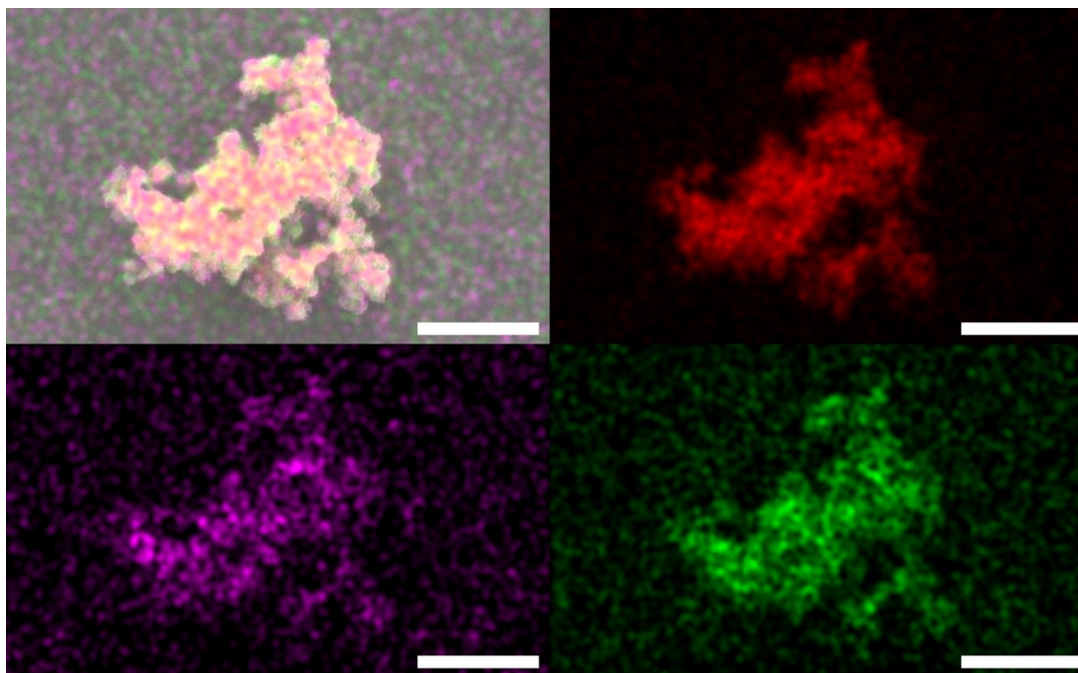


Fig. S5. EDS mapping of T-COF (scale bar: 3 μm).

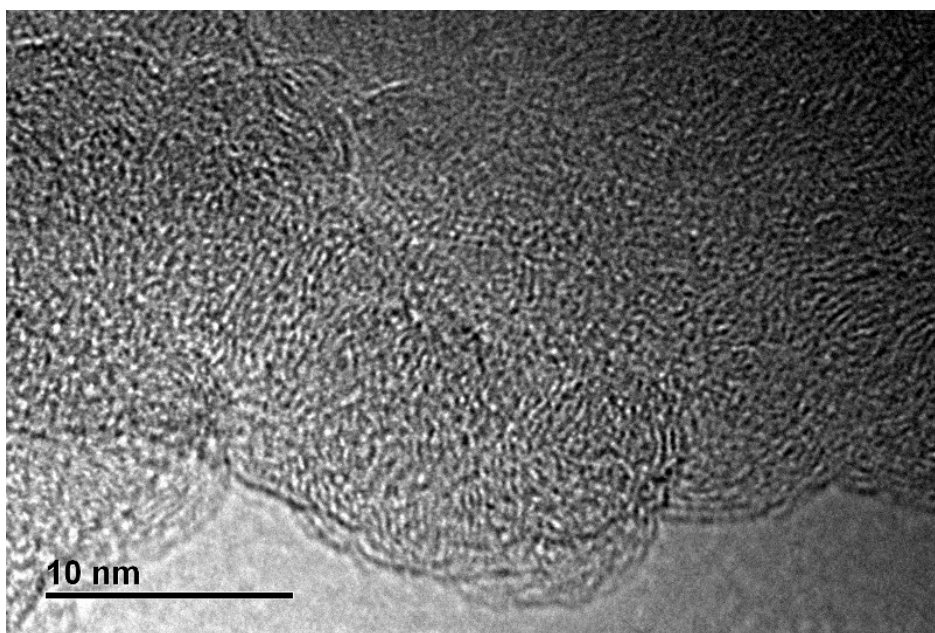


Fig. S6. TEM image of T-COF (scale bar: 10 nm).

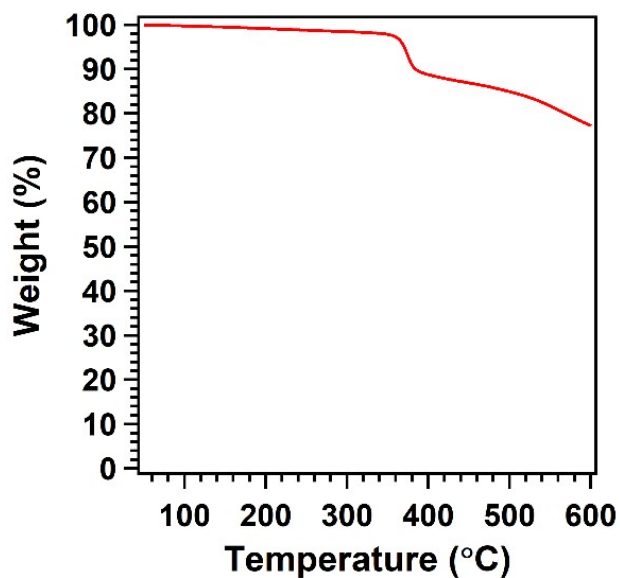


Fig. S7. TGA curve of T-COF.

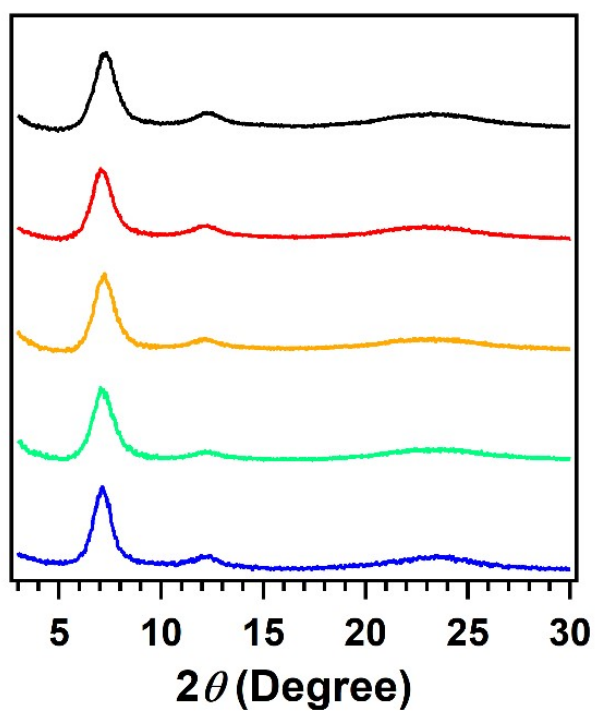


Fig. S8. PXRD patterns of T-COF. (As-synthesized: black; DMF: red; water: yellow; 1 M HCl: green; 1 M NaOH: blue).

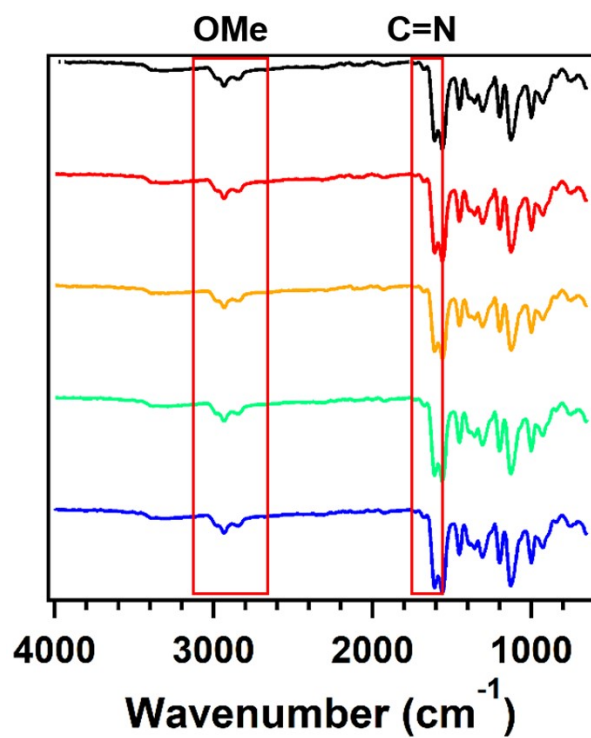


Fig. S9. FT-IR spectra of T-COF. (As-synthesized: black; DMF: red; water: yellow; 1 M HCl: green; 1 M NaOH: blue).