Supporting Information

Two in One: Aluminum Porphyrin-Based Porous Organic Polymers Containing Symmetrical Quaternary Phosphonium Salts for Catalytic Conversion of CO_2 into Cyclic Carbonates

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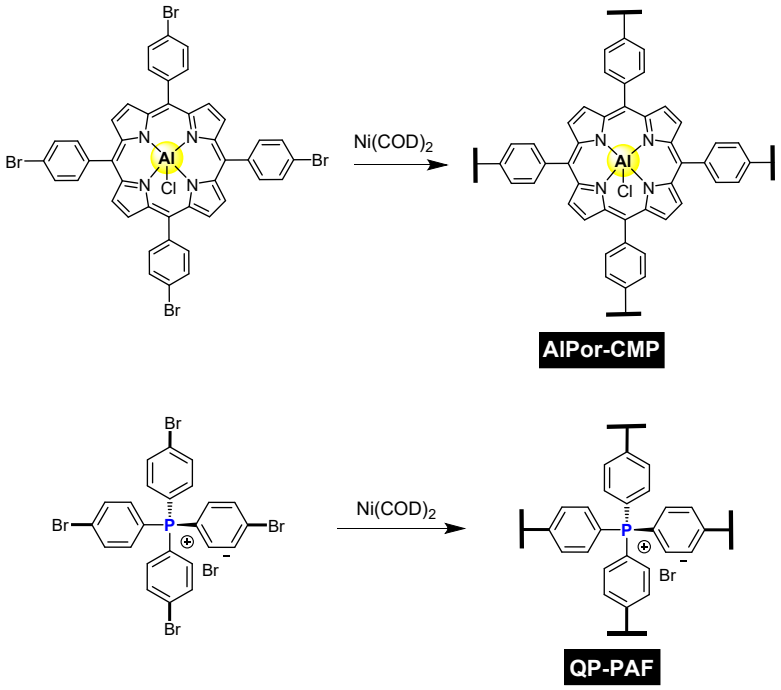
1. Methods

Fourier Transform infrared spectroscopy was carried out by Nicolet 6700 research-based infrared spectrometer with KBr wafers. The nuclear magnetic resonance investigations were collected by a Bruker Avance III 400 spectrometer. Solid-state ^{13}C NMR and ^{31}P NMR spectroscopy were recorded using an Bruker Avance III 600 spectrometer. X-ray photoelectron spectroscopy was conducted on a Thermo Scientific Escalab 250Xi spectrometer. Field emission transmission electron microscopy and element distribution energy spectrum were tested on a Thermo Scientific Talos F200S TEM. Thermogravimetric analysis was performed by STA449F5 thermogravimetric analyzer. The nitrogen adsorption isotherms and CO_2 sorption properties were measured on the Micromeritics ASAP2020 automatic physical adsorption instrument. Metal content was determined by inductively coupled plasma mass spectrometer ICAP RQ (Thermo Fisher) by inductively coupled plasma mass spectrometry. Ion chromatography was used to measure the content of halogen ions by ion chromatograph Thermo Scientific ICS100. The yields and selectivities of the products were measured by a PANNA-A60 gas chromatograph. The chemical structures of the products were determined by ^{1}H NMR and ^{13}C NMR spectra.

2. Synthesis of AlPor-CMP and QP-PAF

AlPor-CMP and **QP-PAF** were synthesized by adopting the same method as described for **AlPor-QP@POP**, in which was prepared by treating AlPor (400 mg, 0.4 mmol) or QP (300 mg, 0.4 mmol) under identical conditions, respectively.



3. Figures

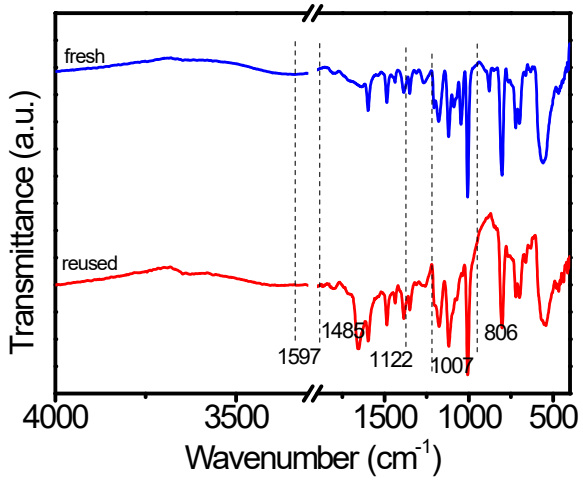


Figure S1. FT-IR spectrum of fresh and reused **AlPor-QP@POP**.

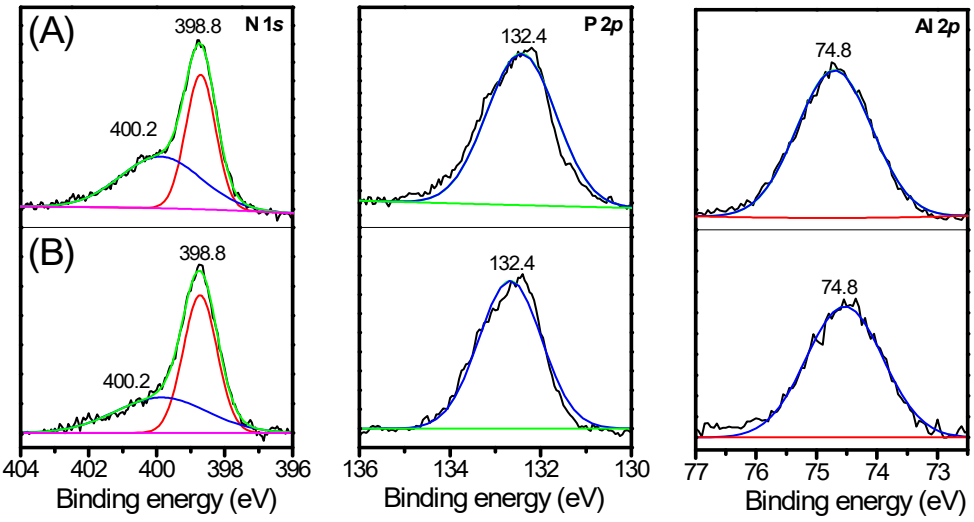


Figure S2. XPS spectra of (A) fresh and (B) reused **AlPor-QP@POP**.

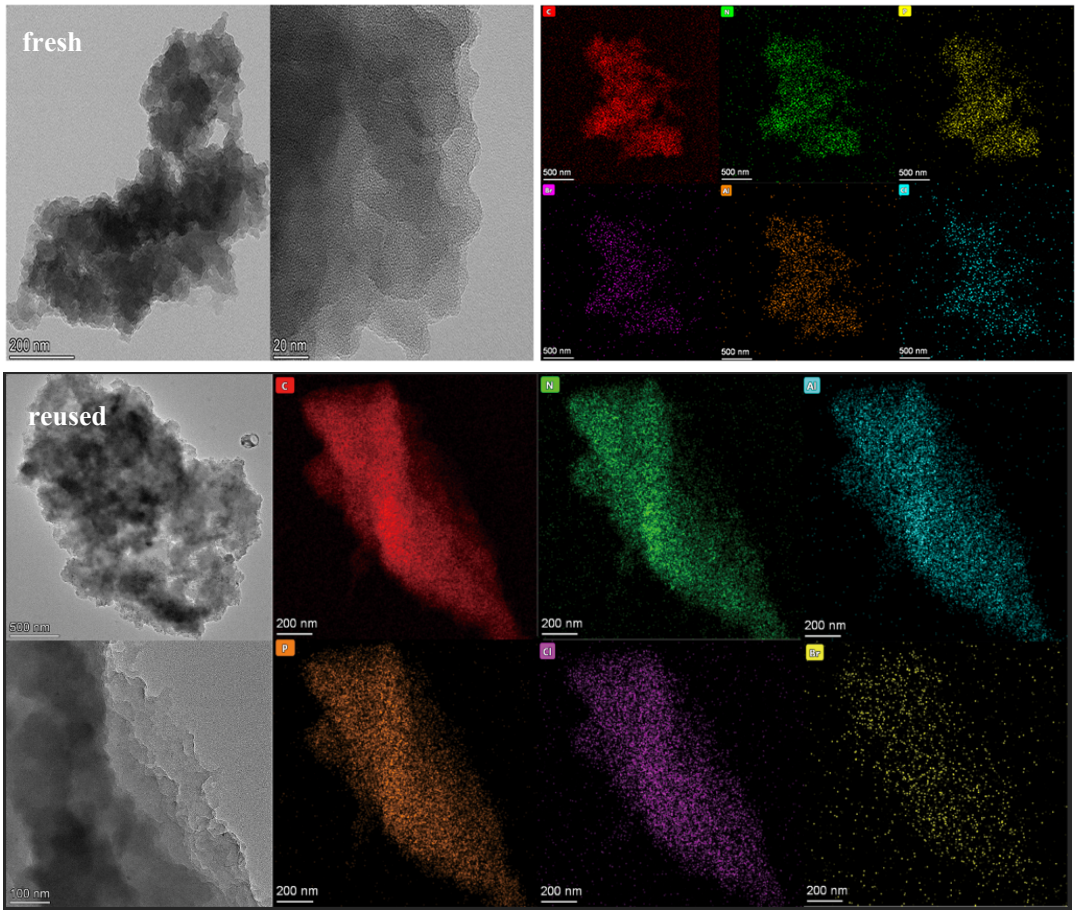


Figure S3. TEM and elemental mapping images of **AlPor-QP@POP**.

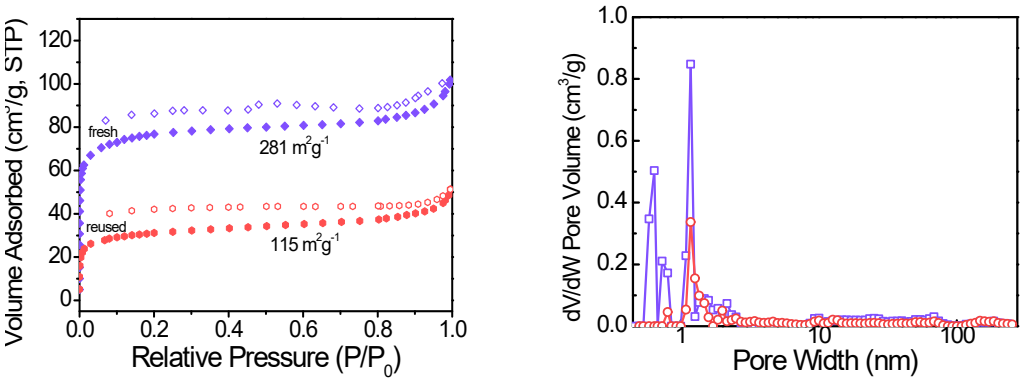


Figure S4. N_2 adsorption-desorption isotherms and pore size distributions of **AlPor-QP@POP**

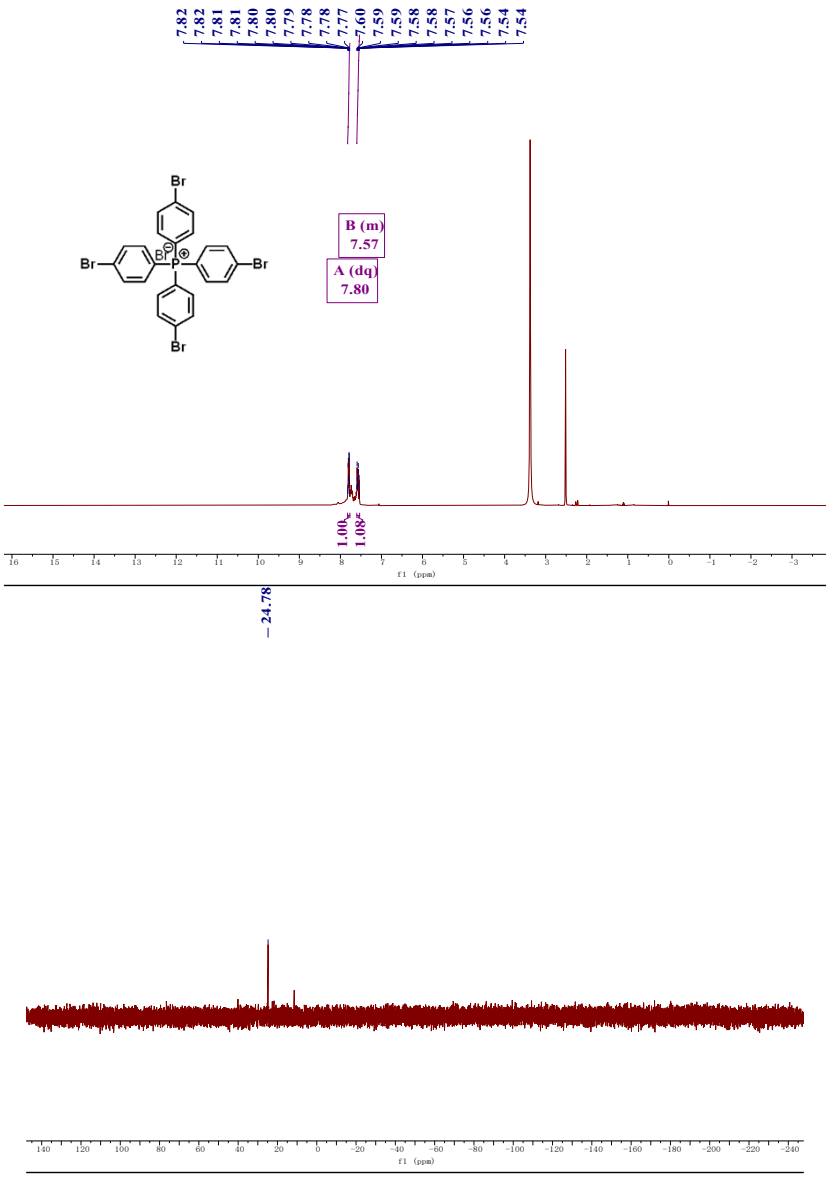


Figure S5. ^{1}H NMR and ^{31}P NMR spectra of the as-prepared monomer QP.

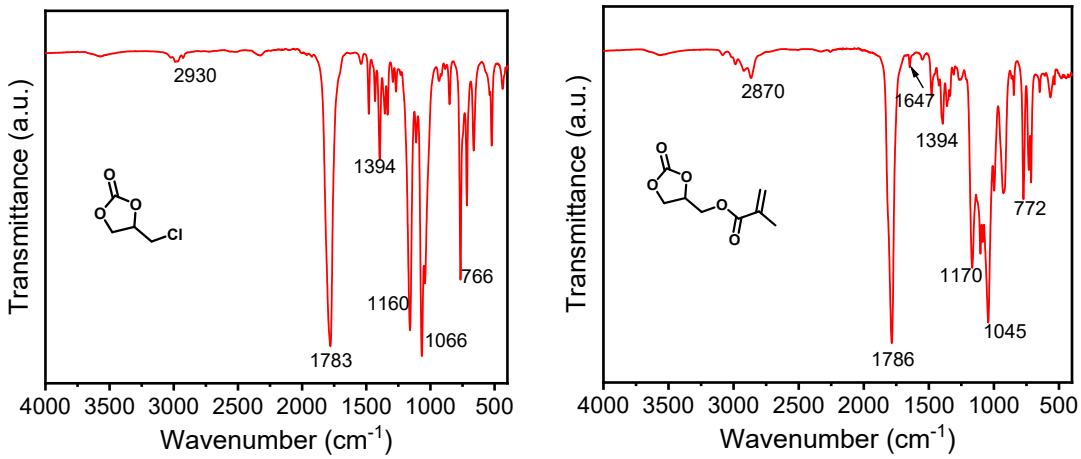


Figure S6. FT-IR spectra of typical cyclic carbonates.

4. NMR spectra