Supporting Information

Nanoporous covalent organic framework for green-reduction of CO_2 under visible light in water

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Materials

Phloroglucinol, Hexamethylenetetramine (HMTA), p-toluenesulfonic acid (PTSA) were received from sigma Aldrich, India. Trifluoroacetic acid and Triethanolamine (TEOA) were purchased from E-Merk, India. 1,3,5-Triformylphloroglucinol (TFP) was prepared from hexamethylenetetramine, dried phloroglucinol and trifluoroacetic acid following the previously reported literature procedure[1]. The used ammine *3,3′*-dimethoxybenzidine (DM) was obtained from sigma Aldrich, India and used without further purification. All the reactions were performed using oven-dried glassware under ambient atmosphere unless otherwise mentioned. DI water was used throughout the reactions.

Instrumentation

Absorption spectroscopy: UV-Vis absorption spectra of the catalyst was recorded on SHIMADZU, UV-2600 UV-Vis spectrometer with a standard 1 cm x 1 cm cuvette.

NMR Spectra: ^{13}C NMR spectra were recorded on a Bruker 400 MHz spectrometer. Chemical shifts for ^{13}Carbon are reported in parts per million (ppm).

PXRD: The PXRD analysis was performed by using an X-raydiffractometer (BRUKER, Powder X-Ray eco D8 ADVANCE) equipped with Ni-filtered Cu Kα (λ= 0.15406 nm) radiation.

IR Spectra: The FTIR spectra of the materials were recorded from a Perkin-Elmer spectrophotometer (FT-IR 783) on KBr pellets.

SEM: FESEM images of the catalyst were acquired by using Scanning Electron Microscope (SEM) [JEOL JSM IT 300], was done to know about the morphological information of the sample.

TEM: Transmission Electron Microscope (TEM) [JEOL JEM 2100] was used obtain the morphological information of the sample.

BET: The N_2 adsorption-desorption analysis of TFPG-DAAQ COF sample was conducted by using a BET Surface Analyzer [QUANTACHROME ASIQCOV602-5].

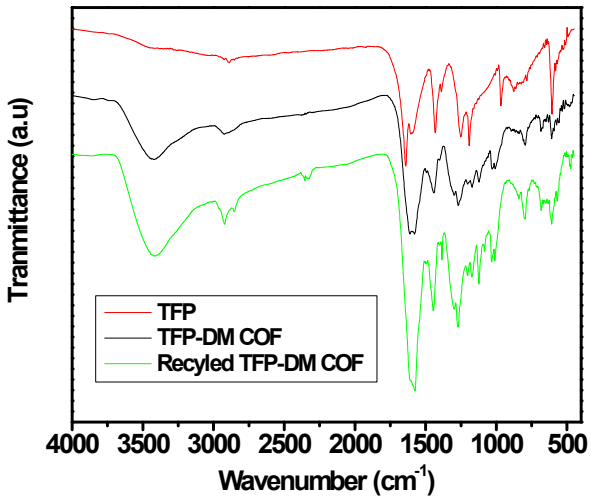

Figure S1. FTIR spectra of TFP, synthesized TFP-DM COF and the recycled COF.

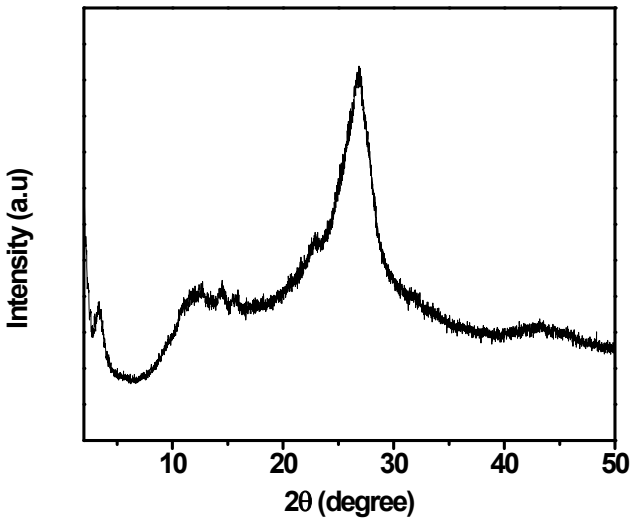

Figure S2. XRD pattern of synthesized the recycled COF.

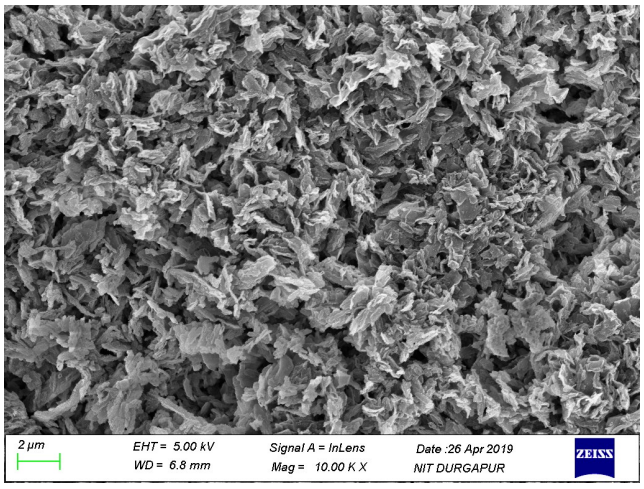

Figure S3. FESEM image of the recycled COF.

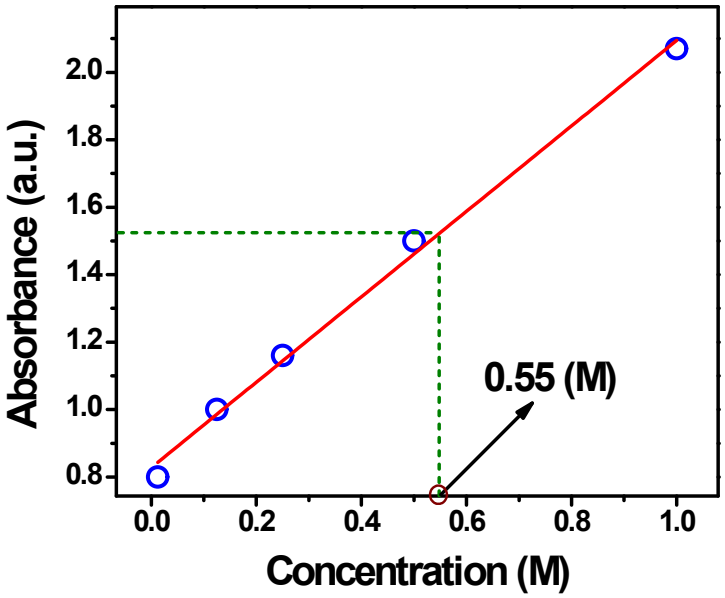

Figure S4. Calibration curve of formic acid for determination of concentration of Formic acid produced.

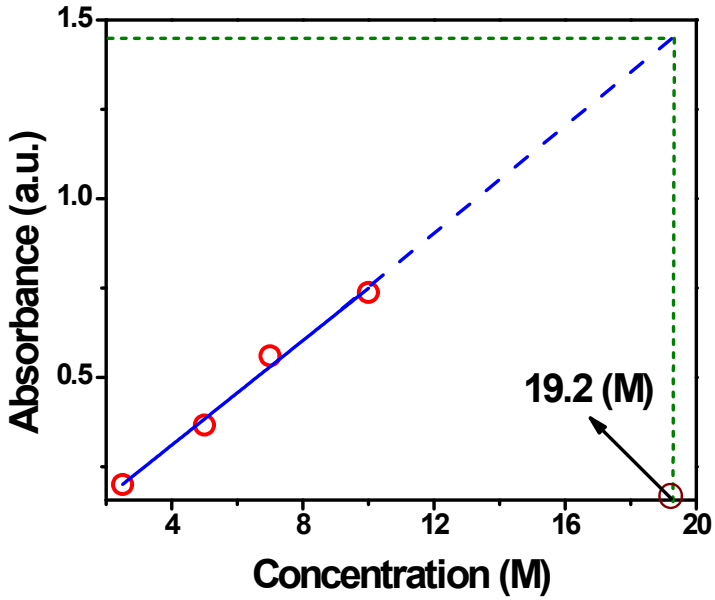

Figure S5. Calibration curve of formaldehyde for determination of concentration of Formaldehyde produced.

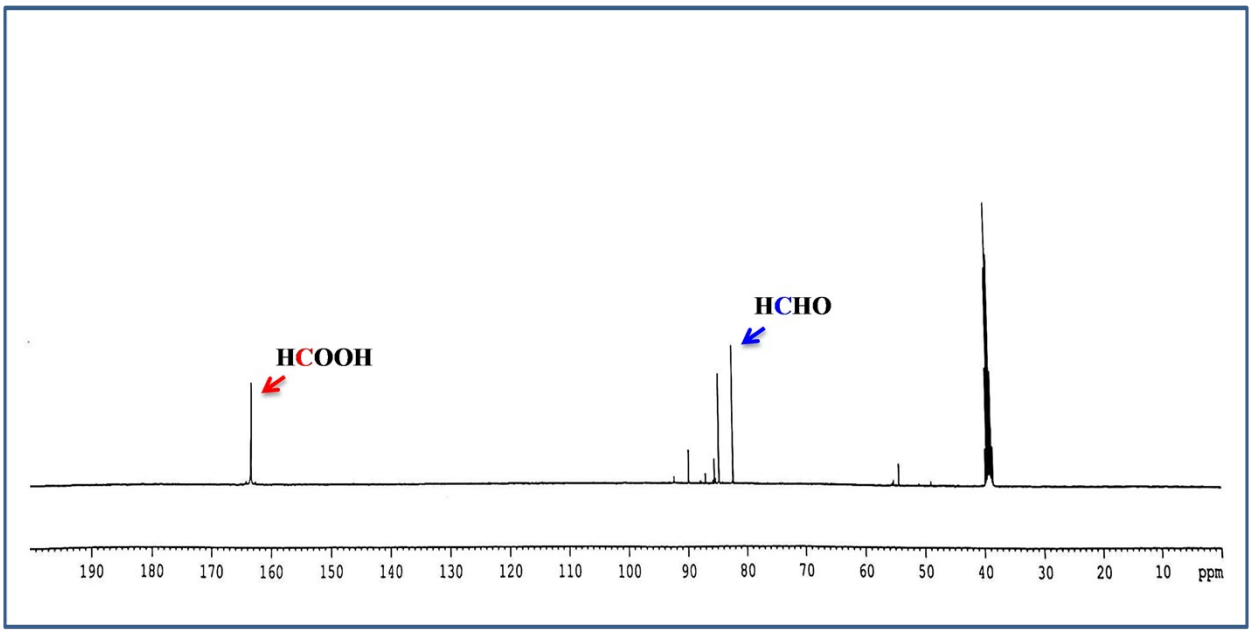

Figure S6. ^{13}C-NMR spectra of products.

(1) J. H. Chong, M. Sauer, B. O. Patrick, M. J. MacLachlan, *Org. Lett*., **2003**, *5*, 3823–3826.