Supporting Information

MOF modified C_3N_4 for efficient photo-induced removal of uranium under air without sacrificial agents

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Characterization

The photocatalysts were characterized by SEM, XPS, XRD, BET, PL, FT-IR. The morphology of samples was observed with scanning electron microscopy (ZEISS Gemini SEM 360). X-ray photoelectron spectroscopy (XPS) measurements were performed on the PHI Quantro SXM, ULVAC-PHI, Japan. X-ray diffraction (XRD) measurements were performed using the Rigaku Corporation. Brunauer-Emmett-Teller (BET) surface areas of samples were measured by means of N_2 adsorption over the Trista II. Fluorescence spectroscopy of samples were measured by Perkin Elmer LS 55. Fourier Transform Infrared Spectroscopy (FTIR, IRTracer-100, Japan) was used to investigate the stability of the samples in the range of 500-4000 cm^{-1}.

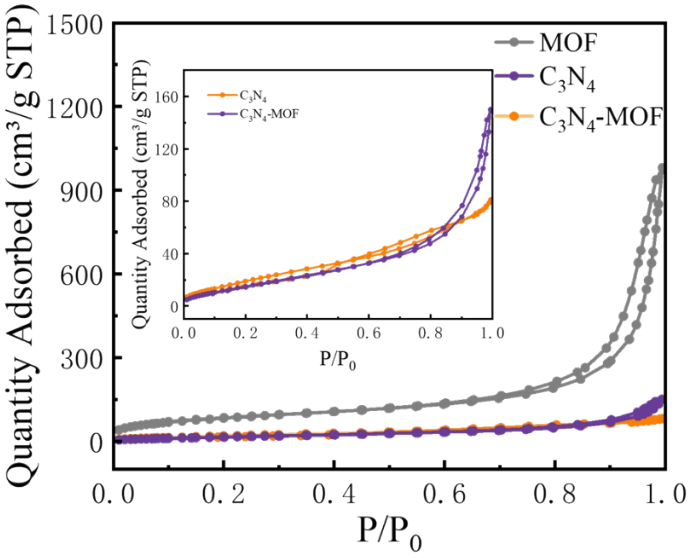

Fig. S1 Nitrogen adsorption-desorption isotherms of synthesized materials.

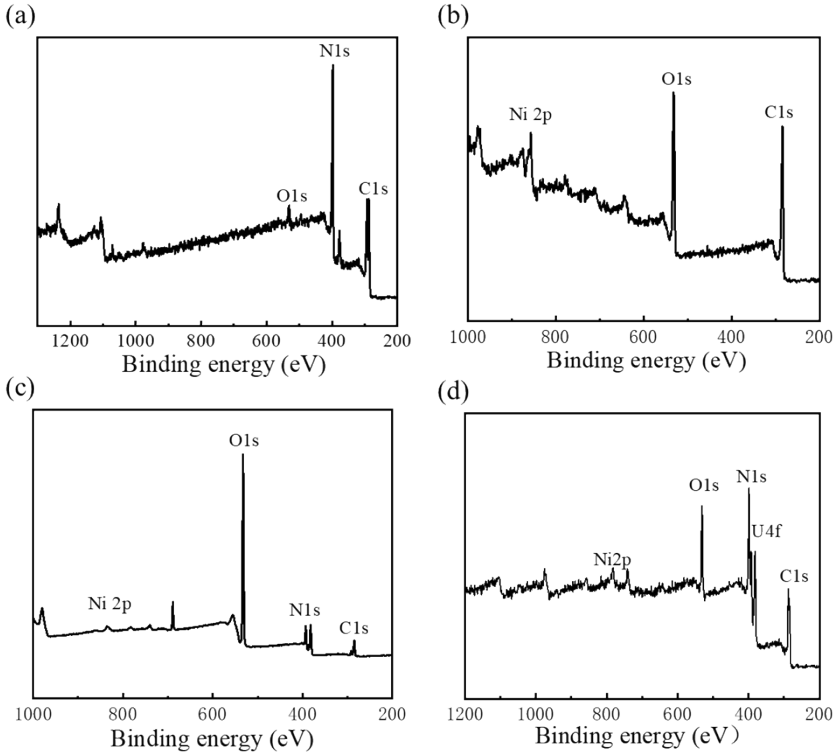

Fig. S2 XPS survey spectrum of (a) C_3N_4, (b) MOF, (c) C_3N_4-MOF and (d) C_3N_4-MOF after the photocatalytic removal of uranium.

Table S1. The atomic ratios of C, N, O, Ni and U elements in materials obtain from XPS.

Element \ Sample	C_3N_4	MOF	C_3N_4 -MOF	C_3N_4 -MOF (photocatalytic)
C	56.31%	63.77%	52.53%	47.5%
N	39.31%	1.87%	30.43%	32.14%
Ni		5.21%	3.28%	1.48%
O	4.38%	29.15%	13.75%	17.38%
U				1.5%

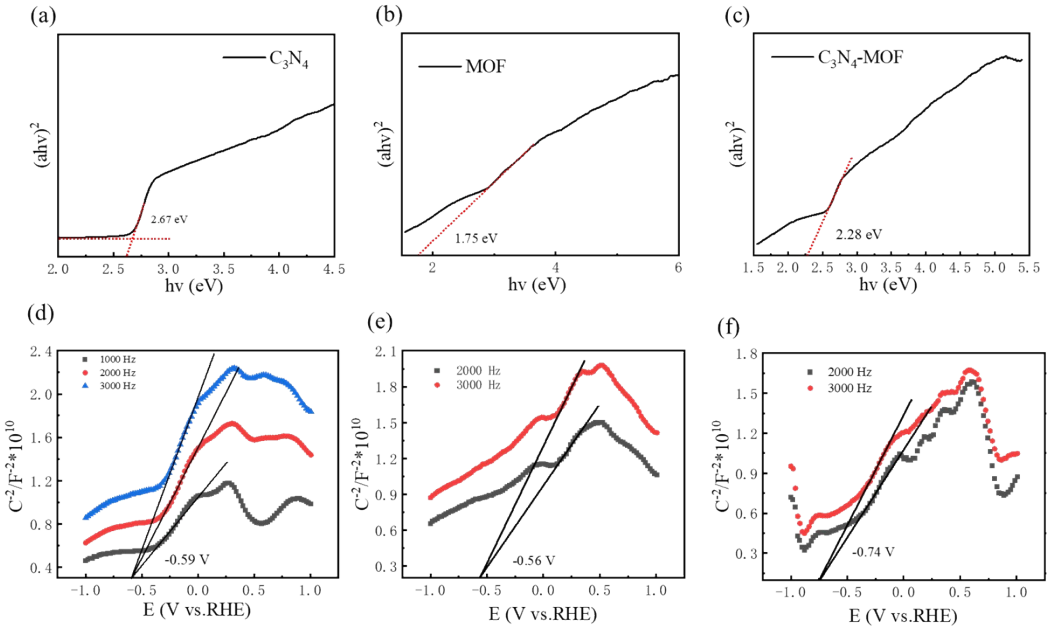

Fig. S3 Band gap calculated derived from the UV-Vis absorption spectrum of (a) C_3N_4, (b) MOF, (c) C_3N_4-MOF. Mott–Schottky plots of (d) C_3N_4, (e) MOF, (f) C_3N_4-MOF.

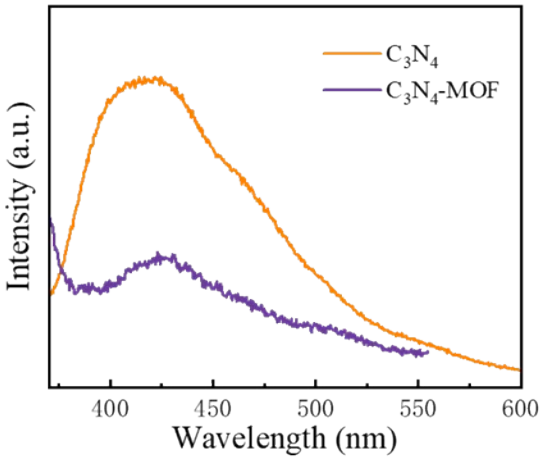

Fig. S4 The PL spectra of C_3N_4 and C_3N_4-MOF with an excitation wavelength of 380 nm.

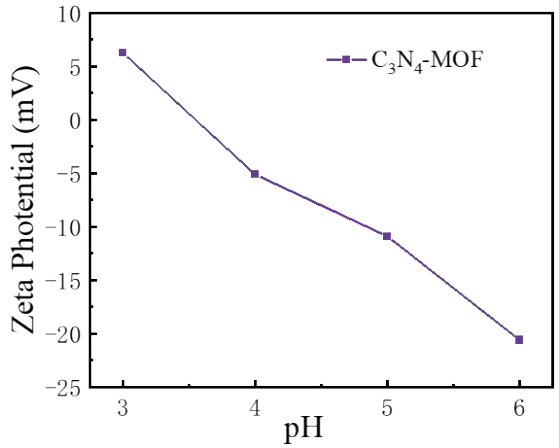

Fig. S5 The zeta potential of C_3N_4-MOF under different pHs.

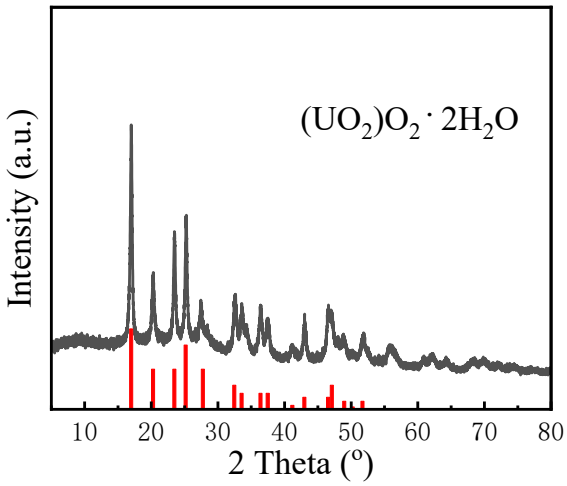

Fig. S6 XRD patterns of C_3N_4-MOF after the photocatalytic reaction under N_2 atmosphere.