

Supporting Information

Removal of Acid Orange 7 from Aqueous Solution by Metal-Organic Frameworks

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<u>Table of Contents</u>	<u>Pages</u>
Full spectrum of PXRD of MOFs	2
SEM images	2
Full spectrum of FT-IR of MOFs	3
N ₂ sorption isotherms	3
UV-vis absorbance spectra	4
Proposed interaction of AO7 with MOFs	5
Comparison of adsorption abilities of different MOFs for the removal of AO7	6
Effect of NaCl on adsorption of AO7	6

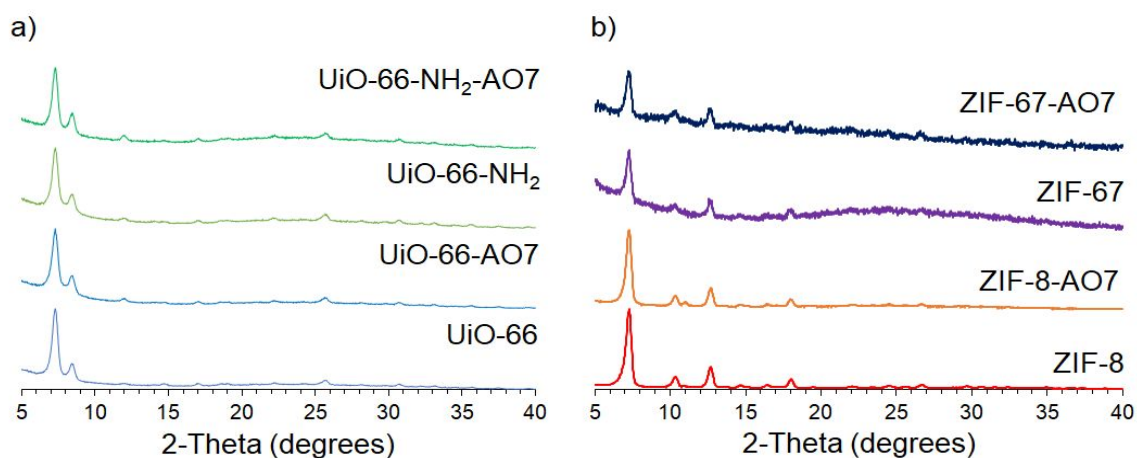


Figure S1. Full spectrum of PXRD of a) UiO-66 and UiO-66-NH₂ and b) ZIF-8 and ZIF-67 before and after dye adsorption.

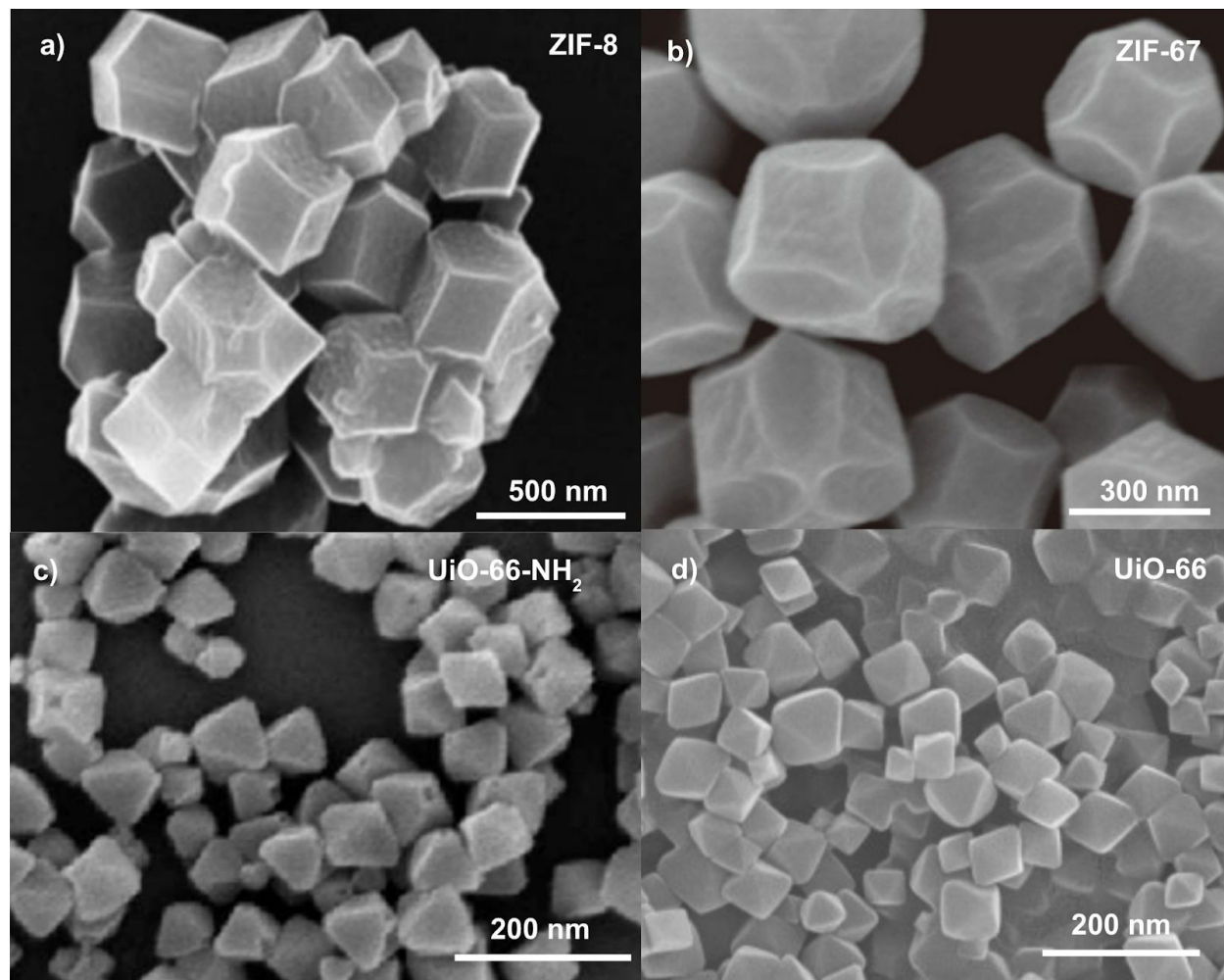


Figure S2. SEM image of expected sodalite structures of (a) ZIF-8 and (b) ZIF-67 and octahedral shapes of (c) UiO-66-NH₂, and (d) UiO-66.

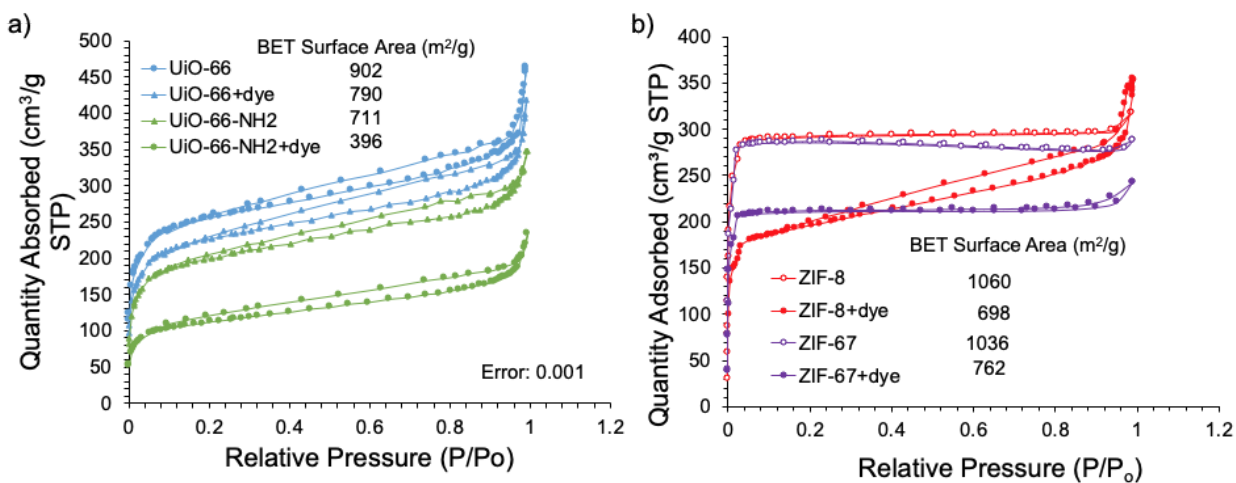


Figure S3. N₂ isotherms and BET surface areas of (a) UiO-66 (blue) and UiO-66-NH₂ (green) and (b) ZIF-8 (red) and ZIF-67 (purple) before and after AO7 adsorption.

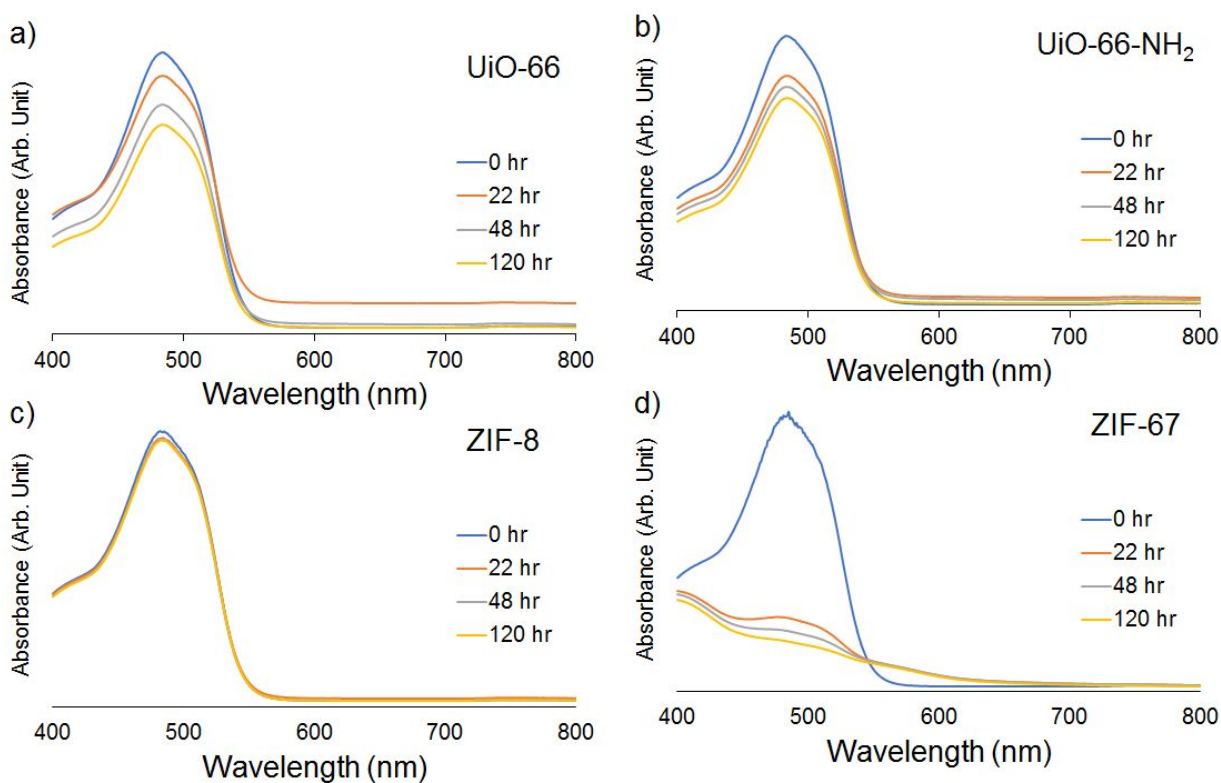


Figure S4. UV-visible absorbance spectra of water samples containing AO7 dye with (a) UiO-66, (b) UiO-66-NH₂, (c) ZIF-8, and (d) ZIF-67. These were recorded over the course of the decontamination experiment.

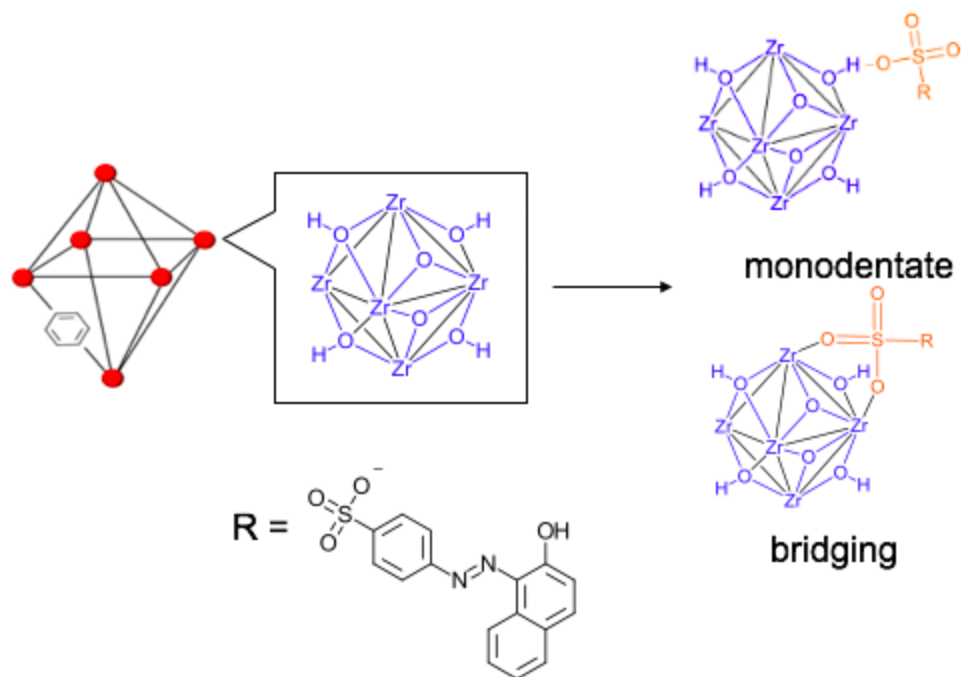


Figure S5. Proposed interaction between AO7 and UiO-66 through monodentate and bridging motifs. Black lines represents a coordinating carboxylate from the organic linkers.

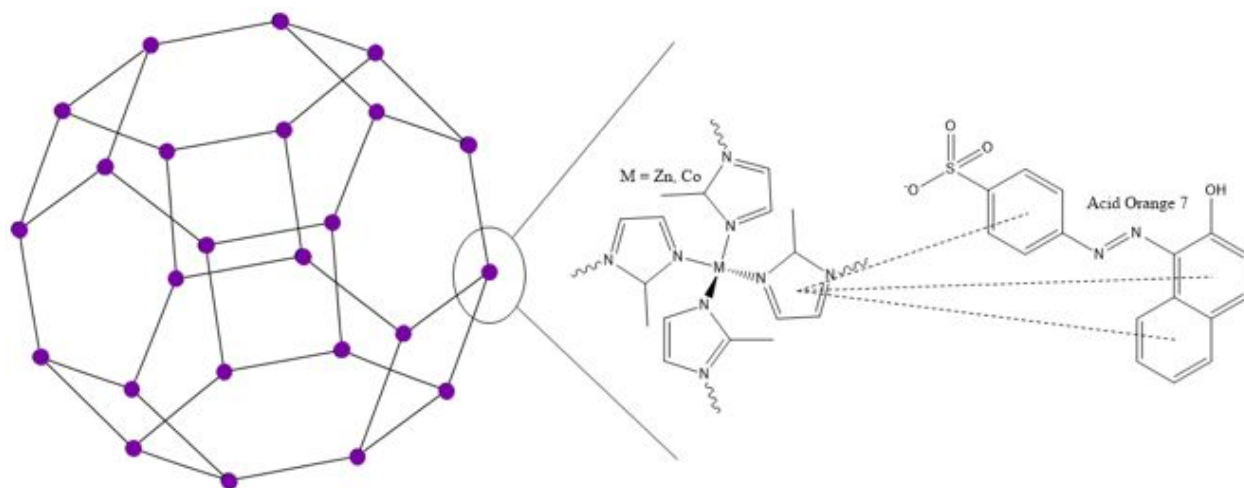


Figure S6. Proposed mechanism of ZIF-8 and ZIF-67 and AO7 interaction. Black lines represent methylimidazole linkers and purple dots represent metal ions. Dashed lines indicate proposed pi-pi stacking interactions.

Adsorbent	Dye	q _t (mg/g)	Ref.
ZIF-67	Malachite Green	161	[1]
ZIF-8	Methylene Blue	20.2	[2]
UiO-66	Methyl Orange	39.42	[3]
UiO-66-NH ₂	Methyl Orange	28.97	[3]
ZIF-67	AO7	272.7	This work
ZIF-8	AO7	16.9	This work
UiO-66	AO7	106.6	This work
UiO-66-NH ₂	AO7	85.0	This work
MIL-100 (Fe)	AO7	27.10	[4]
Activated Carbon	AO7	87.67	[5]
Soil	AO7	3.47	[6]
Canola Stalks	AO7	25.06	[7]

Table S1. Comparison of the maximum adsorption abilities of different MOFs for the removal of dyes.

NaCl Concentration (M)	Adsorbed amount (mg AO7/g adsorbent)			
	UiO-66	UiO-66-NH ₂	ZIF-8	ZIF-67
0	106.5	84.9	13.5	272.6
0.043	12.48	19.77	8.46	141.45
0.13	11.88	21.98	9.28	139.8

Table S2. Effect of chloride anions on adsorption of AO7 by studied MOFs.

References

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