

## Supporting Information

*for*

### **A novel strontium-based MOF: Synthesis, characterization, and promising application for the removal of $^{152+154}\text{Eu}$ radionuclide**

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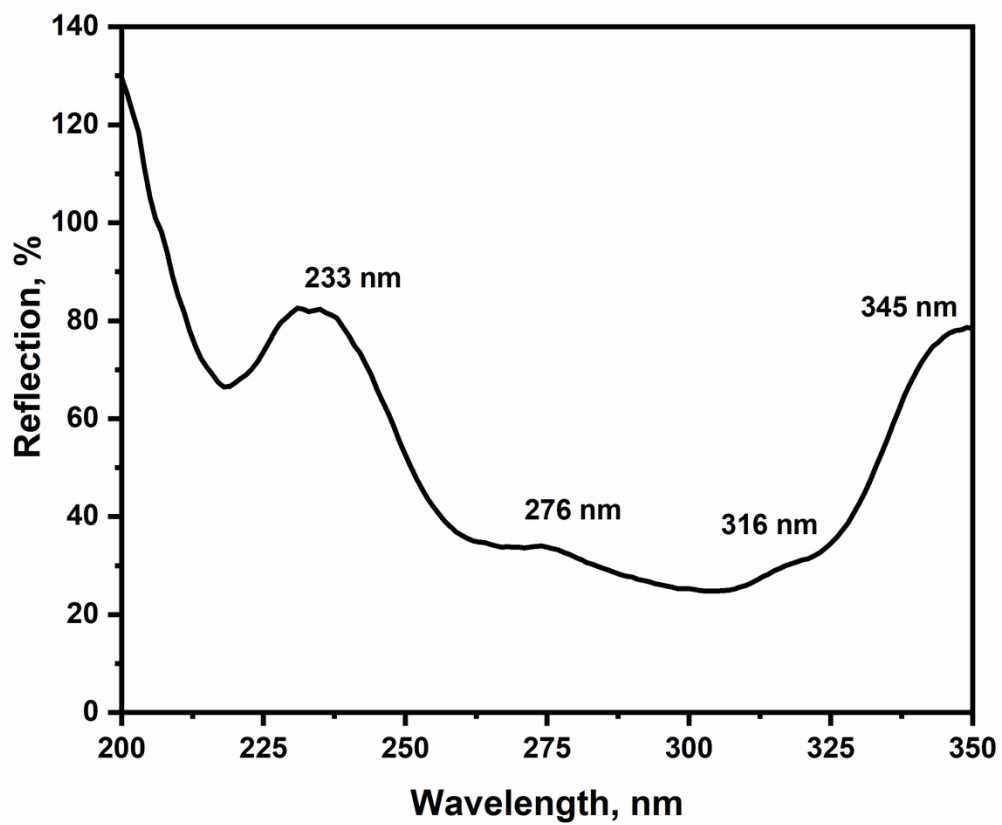


Fig. S1: The electronic-reflection spectrum of the MTSr-MOF.

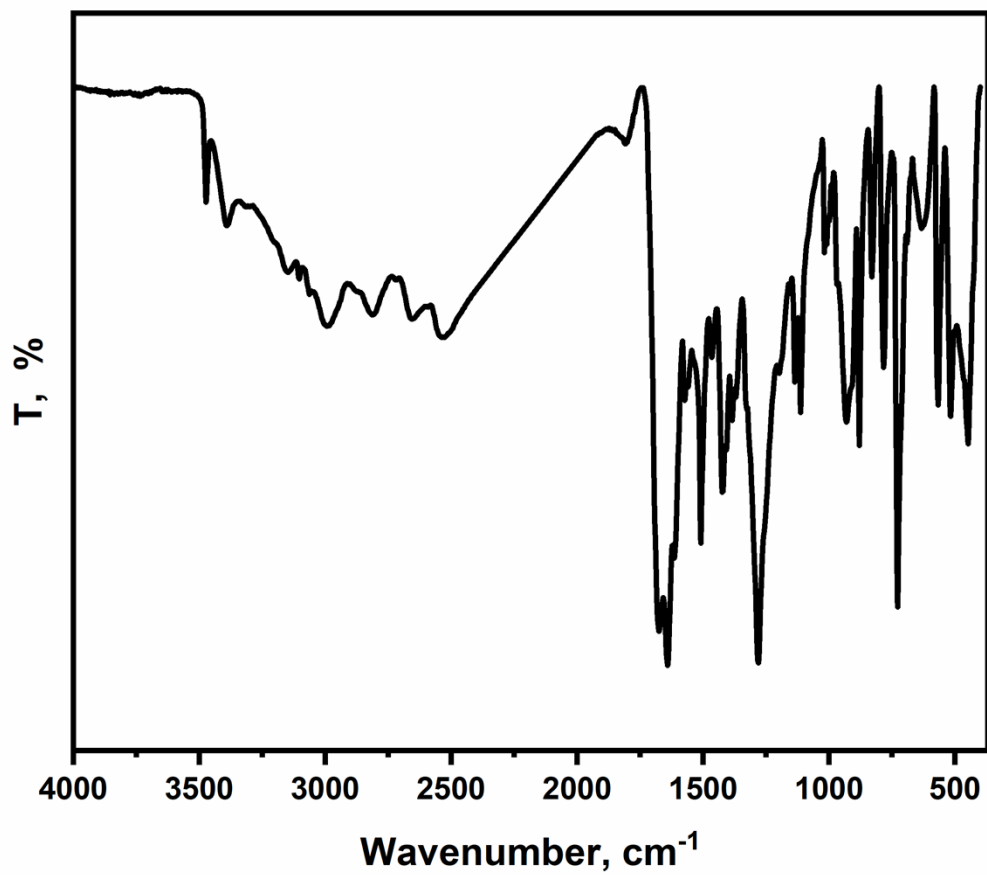


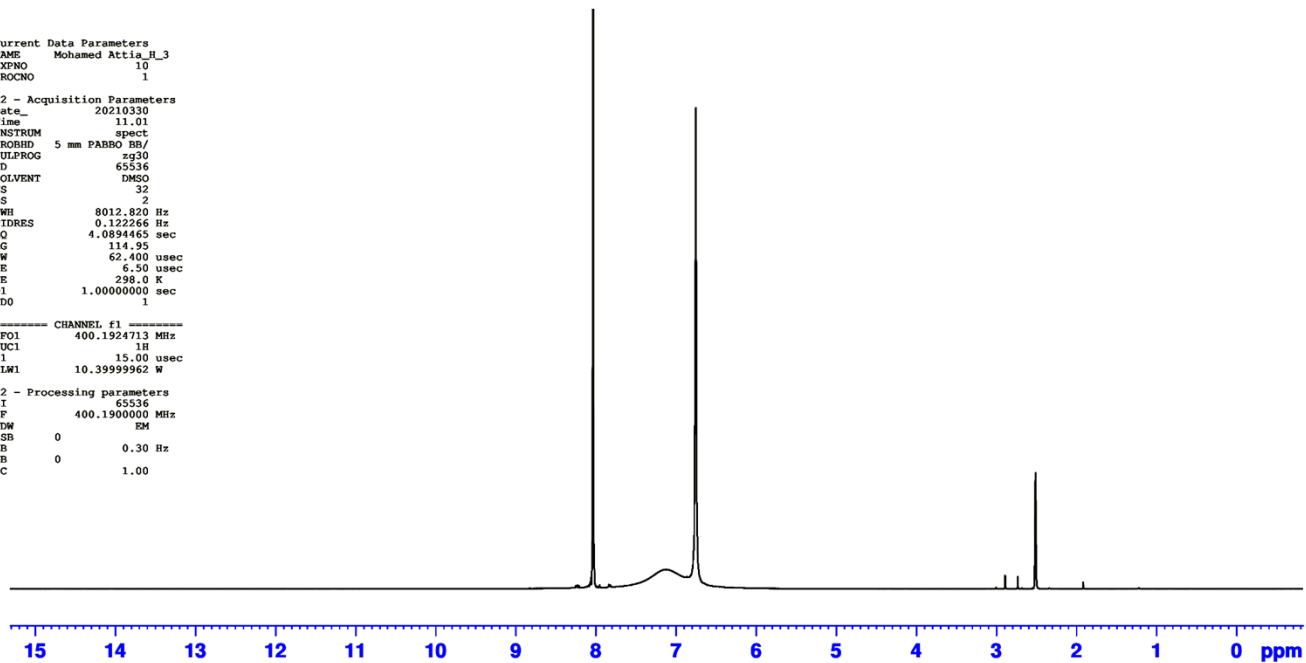
Fig. S2: FT-IR spectrum of the MTSr-MOF.

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PROCNO   1

F2 - Acquisition Parameters
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PULPROG  zg30
TD       65536
SOLVENT  DMSO
NS       32
DS       2
SWH      8012.820 Hz
FIDRES   0.122266 Hz
AQ       4.0894465 sec
RG       114.95
DW       62.400 usec
DE       6.50 usec
TE       298.0 K
D1       1.00000000 sec
TDO      1

----- CHANNEL f1 -----
SFO1     400.1924713 MHz
NUC1     1H
P1       15.00 usec
P1M1    10.3999962 W

F2 - Processing parameters
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SF       400.1900000 MHz
WDW      EM
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LB       0.30 Hz
GB       0
PC       1.00
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**Fig. S3:** <sup>1</sup>H-NMR spectrum of the MTSr-MOF.

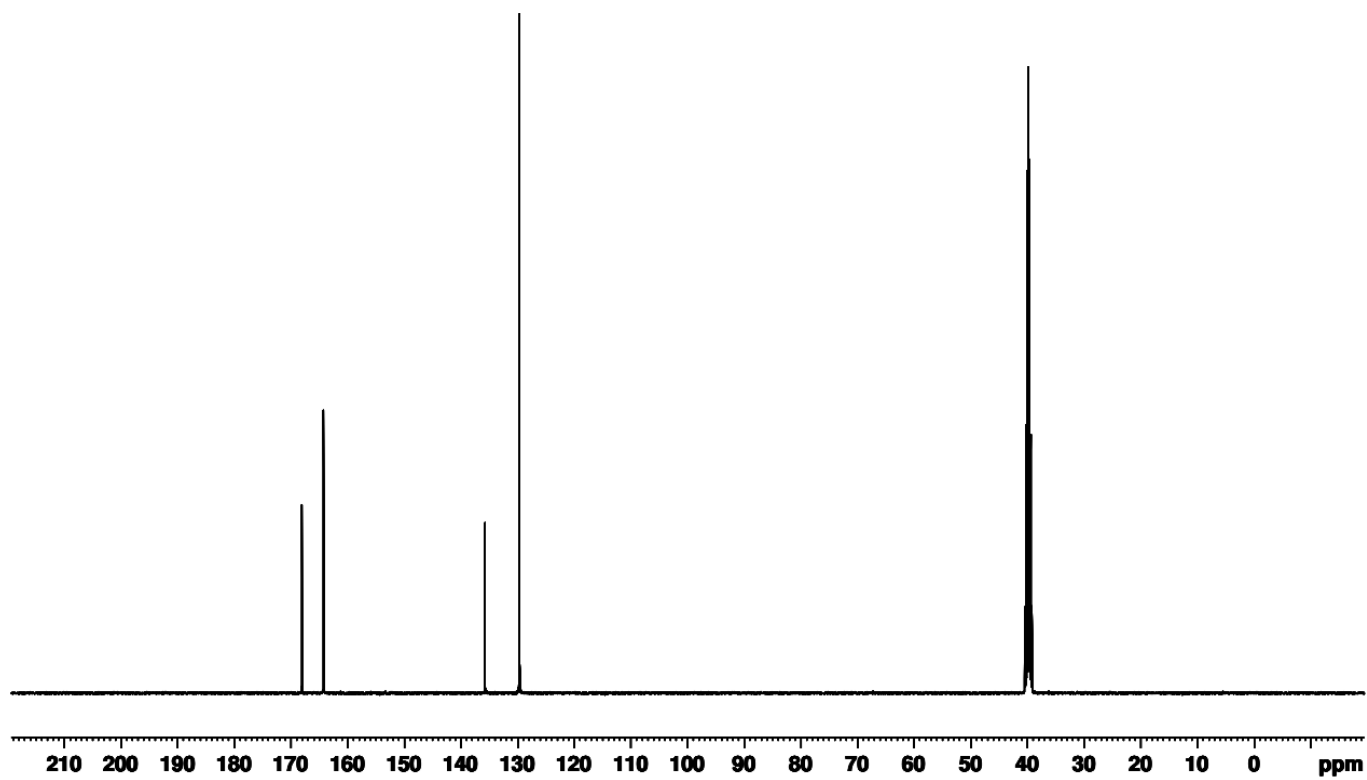


Fig. S4:  $^{13}\text{C}$ -NMR spectrum of the MTSr-MOF.

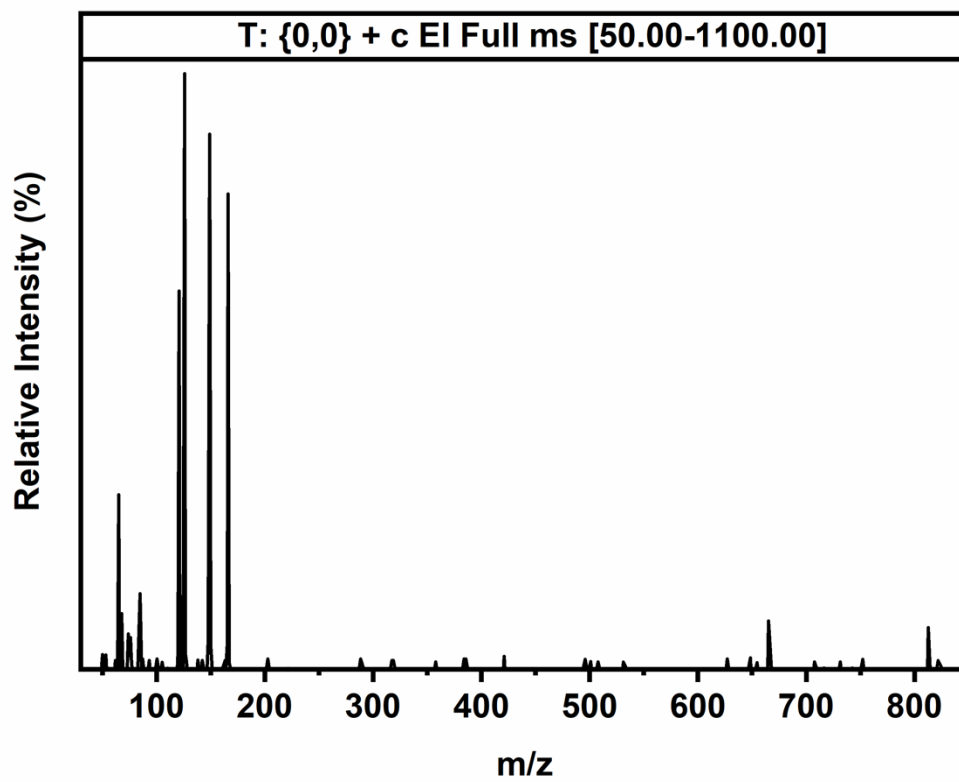
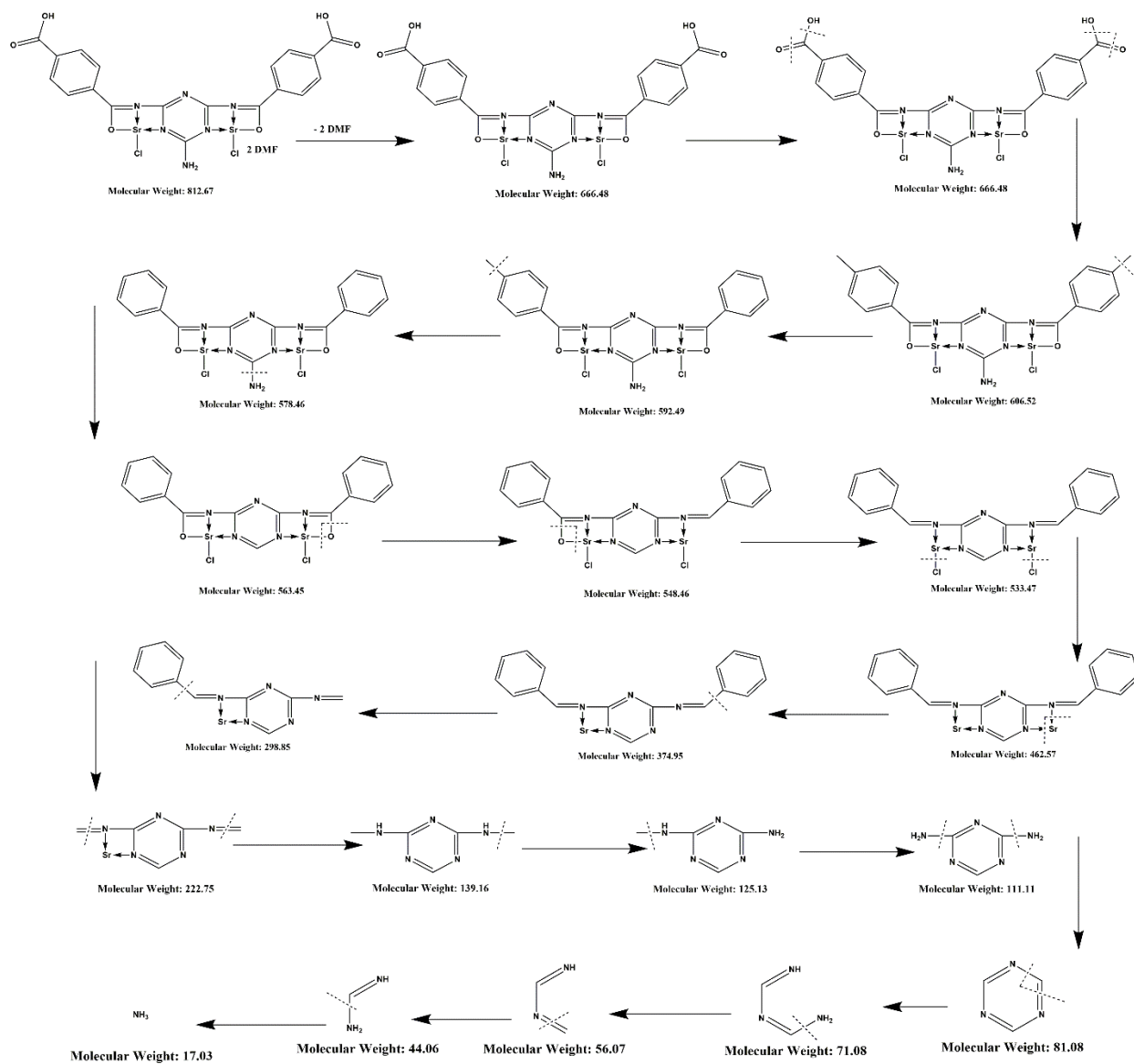


Fig. S5: Mass spectrum of the MTSr-MOF.



**Fig. S6:** The proposed fragmentation scheme of the MTSr-MOF.

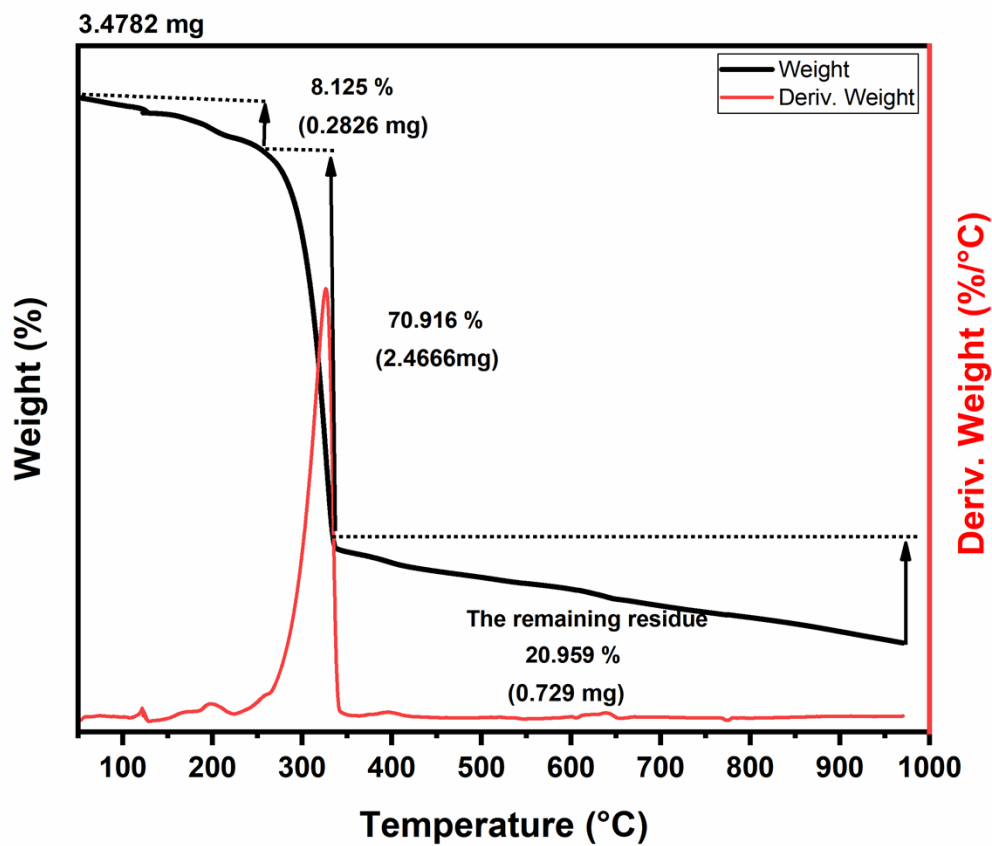


Fig. S7: The thermogravimetric analysis (TGA-DTA) of the MTSr-MOF.



**Table S1.** Theoretically calculated, found elemental analysis, and EDX analysis of MTSr-MOF.

Element	Theoretically calculated	Found CHN elemental analysis	Found EDX analysis			
			Weight %	Atomic %	Net Int.	Error %
C	36.95	37.61	36.66	51.62	10.50	0.05
H	3.22	2.94	---	---	---	---
N	13.79	13.69	12.87	14.51	0.5	0.29
O	15.75	---	21.19	25.89	17.06	0.04
Sr	21.56	---	20.93	4.04	40.8	0.04
Cl	8.72	---	8.35	3.94	5.20	0.16

**Table S2.** Various surface area of MTSr-MOF.

<b>Surface Area methods</b>	<b>MTSr-MOF</b>
<u>BET method</u>	
Single point BET	178.228 m <sup>2</sup> /g
Multi-point BET	74.0211 m <sup>2</sup> /g
Langmuir method	1652.22 m <sup>2</sup> /g
<u>BJH method</u>	
BJH adsorption	179.541 m <sup>2</sup> /g
BJH desorption	181.294 m <sup>2</sup> /g
<u>DH method</u>	
DH adsorption	185.003 m <sup>2</sup> /g
DH desorption	186.755 m <sup>2</sup> /g
V-t method external surface area	74.0211 m <sup>2</sup> /g
DR method micropore surface area	789.809 m <sup>2</sup> /g
DFT method cumulative surface area	272.903 m <sup>2</sup> /g

**Table S3.** The pore radius values of MTSr-MOF determined using different methods.

<b>Pore Size methods</b>	<b>MTSr-MOF</b>
<u>BJH methods</u>	
BJH adsorption pore radius	1.76371 nm
BJH desorption pore radius	1.78412 nm
<u>DH methods</u>	
DH adsorption pore radius	1.76371 nm
DH desorption pore radius	1.78412 nm
DR method micropore radius	2.55902 nm
DFT method pore radius (mode)	2.364 nm

**Table S4.** The Pore volume values of MTSr-MOF determined using different methods.

<b>Pore Volume methods</b>	<b>MTSr-MOF</b>
<u>BJH methods</u>	
BJH adsorption cumulative micropore volume	0.298405 cc/g
BJH desorption cumulative micropore volume	0.298361 cc/g
<u>DH methods</u>	
DH adsorption cumulative micropore volume	0.293931 cc/g
DH desorption cumulative micropore volume	0.293886 cc/g
DR method micropore volume	0.28138 cc/g
DFT method cumulative pore volume	0.402972 cc/g