

Template-Directed Synthesis of Metal-Organic Materials

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Table S1 The template@MOMs highlighted herein. Network topology was classified using TOPOS 4.0 software⁹¹ when not found in the 5 RCSR database.*

Compound Name and Formula	Dimensionality	Interpenetration	Template(s)	Network Topology (point symbol)	Reference
USF-3 {Zn ₆ (BTC) ₄ (isoquinoline) ₆ (MeOH)·H ₂ O·(benzene) ₂ } _n	3	no	Benzene	sqc5588*	Zaworotko ²⁰
USF-4 {[Zn ₆ (BTC) ₄ (isoquinoline) ₄ (MeOH) ₂ ·(MeOH) ₈ ·(chlorobenzene)] _n	3	no	Chlorobenzene	3,3,4,4T41*	Zaworotko ²⁰
{Zn ₂ (BTC)(NO ₃)(DMA) ₃ } _n	3	no	DMA	srs	Su ²¹
{Zn ₁₁ (BTC) ₆ (NO ₃) ₄ (DEE) ₉ } _n	3	no	DEE	tfe	Su ²¹
{Zn ₁₁ (BTC) ₆ (NO ₃) ₄ (DEP) ₈ } _n	3	no	DEP	tfe	Su ²¹
{Zn(BTC)·DMA·Me ₂ NH ₂ } _n	3	no	DMA/[Me ₂ NH ₂] ⁺	rtl	Su ²¹
{Zn ₃ (BTC) ₃ ·3(Me ₂ NH ₂)·4DMA} _n	3	no	DMA/[Me ₂ NH ₂] ⁺	new: (3,3,4,5)-connected 4-nodal net (6 ³) ₃ (6 ⁴ .8 ²)(6 ⁶ .8 ² .10 ²)	Su ²¹
{Zn ₉ (BTC) ₆ (OH) ₂ ·2(Me ₂ NH ₂)·15DEE} _n	3	no	DEE/[Me ₂ NH ₂] ⁺	new: (3,4,6)-connected 3-nodal net (6 ¹² .10 ³) ₄ (6 ³) ₁₂ (6 ⁴ .8 ₂) ₃	Su ²¹
{Zn ₉ (BTC) ₅ (OH) ₃ (C ₂ O ₄)·2(Et ₂ NH ₂)·5DEE} _n	3	no	DEE/[Et ₂ NH ₂] ⁺	new: (3,3,3,5,6)-connected 5-nodal net (5.6 ²) ₂ (5 ² .6 ⁶ .8 ²)(5 ² .6 ³) ₃ (5 ³ .6 ⁶ .7.8 ³) ₂	Su ²¹
ZIF-11 [Zn(PhIM) ₂ ·(DEF) _{0.9}] _n	3	no	Toluene	rho	Wang ²²
ZIF-12 [Co(PhIM) ₂] _n	3	no	Toluene	sod	Wang ²²
ALF-1 {(EMIm)[In(d-cam) ₂]} _n	3	no	[EMIm] ⁺	dia	Bu ²⁵
ALF-2 (Pr ₄ N)[In(d-cam) ₂] _n	3	no	[Pr ₄ N] ⁺	dia	Bu ²⁵
ALF-3 (EMIm) ₃ [In(obb) ₂ ·(Es) ₂ ·(H ₂ O)] _n	3	no	[EMIm] ⁺ /[Es] ⁻	cds	Bu ²⁵
ALF-4 (EMIm) ₂ [In ₂ (d-cam) ₃ (d-Hcam) ₂] _n	3	no	[EMIm] ⁺ /d-Hcam	ths	Bu ²⁵
SIFSIX-2-Cu [Cu(dpa)2(SiF ₆)] _n	3	no	Ethanol/ ethylene glycol	pcu	Zaworotko ²⁶
SIFSIX-2-Cu-i [Cu(dpa)2(SiF ₆)] _n	3	2-fold	Methanol/ DMSO	pcu	Zaworotko ²⁶
MOF-5 [Zn ₄ O(1,4-BDC) ₃] _n	3	no	DEF	pcu	Yaghi ^{5f}
MOF-5-i [Zn ₄ O(1,4-BDC) ₃] _n	3	2-fold	DMF	pcu	Chen ²⁷
{meso-[LCu ₂ (H ₂ O) ₂]·(DMF) ₈ ·(H ₂ O) ₄ } _n	3	2-fold	DMF/H ₂ O	4,4T14*	Wen ²⁸
{[LCu ₂ (H ₂ O) ₂]·(DEF) ₁₂ ·(H ₂ O) ₁₆ } _n	3	no	DEF/H ₂ O	4,4T14*	Wen ²⁸
JUC-49 {[Cd(HBTC) ₂] ₂ ·(HDETA)·4(H ₂ O)} _n	2	no	[HDETA] ⁺	sql	Qiu ²⁹
JUC-50 {[Cd ₂ (BTC) ₂ (H ₂ O) ₂]·2(HCHA)·2(EtOH)·2(H ₂ O)} _n	3	no	[HCHA] ⁺	rtl	Qiu ²⁹
JUC-51	3	no	[HTEA] ⁺	sqc5588*	qiu ²⁹

$\{[\text{Cd}_5(\text{BTC})_4\text{Cl}_4] \cdot 4(\text{HTEA}) \cdot 2(\text{H}_3\text{O})\}_n$					
JUC-52 $\{[\text{Cd}_3(\text{BTC})_3(\text{H}_2\text{O})] \cdot (\text{HTEA}) \cdot 2(\text{H}_3\text{O})\}_n$	3	no	$[\text{HTEA}]^+$	3,3,3,4,4,6T4*	qiu ²⁹
JUC-53 $\{[\text{Zn}(\text{BTC})(\text{H}_2\text{O})] \cdot (\text{HTPA}) \cdot (\text{H}_2\text{O})\}_n$	2	no	$[\text{HTPA}]^+$	fes	qiu ²⁹
JUC-54 $\{[\text{Cd}(\text{BTC})] \cdot (\text{HTPA}) \cdot (\text{H}_2\text{O})\}_n$	3	no	$[\text{HTPA}]^+$	rtl	qiu ²⁹
JUC-55 $\{[\text{Cd}_2(\text{BTC})(\text{HBTC})] \cdot (\text{HTBA}) \cdot (\text{H}_2\text{O})\}_n$	3	no	$[\text{HTBA}]^+$	ins	qiu ²⁹
$\{[\text{NH}_2\text{Et}_2]_2[\text{Zn}_3(\mu\text{-BDC})_4] \cdot 2.5\text{DEF}\}_n$	3	no	$[\text{NH}_2\text{Et}_2]^+$	bcg	Burrows ³⁰
$[\text{Me}_2\text{NH}_2]_2[\text{Cd}_2(\text{BPDC})_3] \cdot 4\text{DMA}$	3	no	$[\text{Me}_2\text{NH}_2]^+$	new: 6-connected uninodal net {4 ⁴ .6 ¹¹ }	Su ³¹
$[\text{Me}_2\text{NH}_2]_2[\text{Cd}_2(\text{NH}_2\text{BDC})_3] \cdot 4\text{DMA}$	3	no	$[\text{Me}_2\text{NH}_2]^+$	pcu	Su ³¹
<i>rho</i> -ZMOF $\text{In}_{48}(\text{C}_5\text{N}_2\text{O}_4\text{H}_2)_{96}(\text{C}_7\text{N}_3\text{H}_{15})_{24}(\text{DMF})_{36}(\text{H}_2\text{O})_{192}$	3	no	HPP	rho	Eddaoudi ³²
<i>sod</i> -ZMOF $\text{In}(\text{C}_5\text{N}_2\text{O}_4\text{H}_2)_2(\text{C}_3\text{N}_2\text{H}_5)(\text{DMF})_4(\text{CH}_3\text{CN})(\text{H}_2\text{O})_4$	3	no	Imidazole	sod	Eddaoudi ³²
$[\text{Ln}(1,3\text{-BDC})_2(\text{H}_2\text{O})]_n$	3	no	$[\text{HAmTAZ}]^+$	scu-3,6-Pnna*	Yao ³³
Mn-5TIA-2 $\{\text{C}_{43.7}\text{H}_{10}\text{Mn}_2\text{N}_6\text{O}_8\}_n$	3	no	Pyrazine	apo	Banerjee ³⁴
Mn-5TIA-3 $\{\text{C}_{10}\text{H}_5\text{MnN}_3\text{O}_4\}_n$	3	no	4,4'-bipy	rtl	Banerjee ³⁴
$\{[\text{Cu}_2(4,4'\text{-bipy})_4] \cdot (\text{d-Heam})_2 \cdot (4,4'\text{-bipy})_2 \cdot 12\text{H}_2\text{O}\}_n$	3	2-fold	D-(+)-camphorate anions/ 4,4'-bipy	dia	Bu ³⁵
$\{[\text{Zn}_2(1,4\text{-BDC})_2(\text{bimx})]_n \cdot (1,4\text{-BDC})\}_n$	3	no	1,4-BDC anions	pcu	Wiebecke ³⁶
PCN-6' $\{\text{Cu}_6(\text{H}_2\text{O})_6(\text{TATB})_4 \cdot \text{DMA} \cdot 12\text{H}_2\text{O}\}_n$	3	no	Oxalate anions	tbo	Zhou ^{26b}
porph@MOM-4,-5,-6 $[\text{M}_{12}(\text{BTC})_8(\text{S})_{12}]\text{Cl}_6 \cdot x \text{MTMPyP} (\text{M} = \text{Fe}, \text{Mn}, \text{Co})$	3	no	$[\text{MTMPyP}]^{4+}$	tbo	Zaworotko ¹⁵
porph@MOM-9 $[\text{Zn}_{18}(\text{OH})_4(\text{BTC})_{12}(\text{S})_{15}] \cdot x \text{ZnTMPyP} \cdot (\text{H}_3\text{O})_{(4-4x)}$	3	no	$[\text{ZnTMPyP}]^{4+}$	tbo	Zaworotko ¹⁵
porph@MOM-10 $\{[\text{Cd}_6\text{Cl}_4(\text{BPT})_4] \cdot [\text{Cd}(\text{C}_{44}\text{H}_{36}\text{N}_8)(\text{Solvent})] \cdot [\text{Solvent}]\}_n$	3	no	$[\text{CdClTMPyP}]^{3+}$	zzz	Zaworotko ³⁹
porph@MOM-11 $\{[\text{Cd}_4(\text{BPT})_4] \cdot [\text{Cd}(\text{C}_{44}\text{H}_{36}\text{N}_8)(\text{Solvent})] \cdot [\text{Solvent}]\}_n$	3	no	$[\text{CdTMPyP}]^{4+}$	rtl	Zaworotko ³⁹
$\{[\text{Gd}_4(1,3\text{-BDC})_7(\text{H}_2\text{O})_2][\text{Cu}(2,2'\text{-bipy})_2]_2\}_n$	3	no	$[\text{Cu}(2,2'\text{-bipy})_2]^+$	4,4,4,6T3*	Hong ⁴⁰
$\{[\text{Fe}(2,2'\text{-bipy})_3] \cdot [\text{Fe}_2(\text{oxalate})_3]\}_n$	3	no	$[\text{Fe}(2,2'\text{-bipy})_3]^{2+}$	srs	Decurtins ⁴¹
$\{[\text{Cu}_6(\text{pybz})_8(\text{OH})_2] \cdot \text{I}_5 \cdot \text{I}_7\}_n$	2	2-fold	Iodine	SP*	Zeng ⁴²
$\{[\text{Ln}_2\text{Cu}_5(\text{OH})_2(\text{pydc})_6(\text{H}_2\text{O})_8] \cdot \text{I}_8\}$	3	no	Iodine	mab	Su ⁴³
$\{[\text{Gd}_2\text{Cu}_3(\text{pydc})_6(\text{H}_2\text{O})_{12}] \cdot 4\text{H}_2\text{O}\}_n$	3	no	Iodine	new: 3,3,4,4-connected 4-nodal net {6 ⁷ .8.9.10} {6 ² .7.8 ² .9} {6 ² .7} {7 ² .8}	Ma ⁴⁴
NENU-11 $\{\text{H}_3[(\text{Cu}_4\text{Cl})_3(\text{BTC})_8]_2[\text{PW}_{12}\text{O}_{40}] \cdot (\text{C}_4\text{H}_{12}\text{N})_6 \cdot 3\text{H}_2\text{O}\}_n$	3	no	$[\text{PW}_{12}\text{O}_{40}]^{3-}$	the	Su ⁴⁵
$[(\text{CH}_3\text{NH}_2)_3] \cdot [(\text{Cu}_4\text{Cl})_3(\text{BTC})_8] \cdot 9\text{DMA}$	3	no	$[(\text{Me}_2)_2\text{NH}_2]^+$	the	Zhang ⁴⁶
$\{[\text{M}^{\text{III}}(\text{HCOO})_3] \cdot 3/4\text{CO}_2 \cdot 1/4\text{H}_2\text{O} \cdot 1/4\text{HCOOH}\}_n$	3	no	CO ₂	reo	Tian ⁴⁷
Meso-HKUST-1 $\{\text{Cu}_3(\text{BTC})_2\}_n$	3	no	CTAB	tbo	Qiu ^{48b}