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Supporting Information

Materials for the Photoluminescent Sensing of Rare Earth Elements: Challenges and Opportunities

Scott E. Crawford,* Paul R. Ohodnicki, Jr. and John P. Baltrus

National Energy Technology Laboratory, 626 Cochrans Mill Road, Pittsburgh, PA 15236

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Table S1. MOFs Capable of Post-Synthetic REE Sensitization

Name	Elements Sensitized	Loading Solvent	Loading Time	Measured Solvent	Ref.
([Cd(4,4′-bipy)(H_2O)(L)]·(4,4′-bipy)·11(H_2O))	Tb, Eu, Nd	H_2O	1.5 hours	N/A	[1]
[$(CH_3)_2NH_2$][In(L)]·CH_3CH_2OH	Tb, Eu, Dy, Sm	DMF	72 hours	N/A	[2]
[Ca(H4L)$(DMA)_2$]·2DMA	Eu, Tb	H_2O	72 hours	N/A	[3]
[$Cd_2(H_2L)_2(H_2O)_5$]. $5H_2O$.2DMF	Eu	H_2O	48 hours	H_2O	[4]
[Cd_2L_3(DMF)(NO_3)]·2DMF·$3H_2O$	Eu	DMF	120 hours	H_2O	[5]
[Cd_3(L)(tib)$(DMF)_2$]	Tb, Dy, Eu	H_2O	0.5 hours	H_2O	[6]
[Cd_3L_2]$^{2-}$	Tb, Eu	DMF	25 days	N/A	[7]
[Cu(HCPOC)$_2$]n	Tb	H_2O	0.5-72 hours	H_2O	[8]
[Cu_2(3,3′-dpdc)$_2$(bpp)]	Tb, Eu	H_2O	N/A	H_2O	[9]
[Cu_2(3,4-pydc)$_2(H_2O)_5]_n$.$2nH_2O$	Tb	H_2O	1 minute	H_2O	[10]
[HDMA]$_2$[$Zn_2(BDC)_3$(DMA)]·6DMF	Eu, Tb, Sm, Dy, Nd, Yb	DMF	72 hours	N/A	[11]
[NH_4]$_2$[ZnL]·$6H_2O$	Eu, Tb	H_2O	N/A	H_2O	[12]
{[$Mg_3(ndc)_{2.5}(HCO_2)_2(H_2O)$][$NH_2Me_2$] ·$2H_2O$·DMF}	Eu	EtOH	7 days	EtOH	[13]
[Pb_2(TZI)(μ_3-OH)(H_2O)·(H_2O)]$_n$	Tb, Eu, Sm, Dy	H_2O	48 hours	N/A	[14]
[Sr(BDC)DMAC·H_2O]n	Tb	EtOH	24 hours	EtOH	[15]
[Zn$(BPTC)_{0.5}$(Tz)]·DMF·CH_3OH	Tb, Eu	H_2O	48 hours	N/A	[16]
[Zn$(OBA)_2$(PTD)·2DMF·$2H_2O]_n$	Eu, Tb	DMF	24 hours	N/A	[17]
[Zn(O-OBA)(BPP)]·$0.5H_2O$	Tb, Eu, Dy, Sm	H_2O	72 hours	H_2O	[18]
[Zn(μ-L)(μ-1,3-dpp)]	Tb,Eu	H_2O	~5 minutes	H_2O	[19]
[Zn_2(btb)$_2$(bbis)][Me_2NH_2)$_2$·6DMF	Tb, Eu, Sm, Dy	EtOH	48 hours	Various Organic	[20]
[$Zn_{21}(BTC)_{11}(\mu_3$-OH)$_3(\mu_4$-O)$_3(H_2O)_{18}$]·21EtOH	Tb, Eu	EtOH	2 hours	N/A	[21]
[Zn_3(Hbptc)$_2$(DMF)$_2$]·2DMF	Tb, Sm, Eu, Dy	Acetone	72 hours	N/A	[22]
[Zn_3(Httca)$_2$(4,4′-bpy)(H_2O)$_2]_n$	Tb	MeOH	15 days	N/A	[23]
[Zn_3(L)(H_2O)$_2$]·3 DMF·7 H_2O	Tb, Eu	DMF	48 hours	N/A	[24]
[Zn_3(L)$_2$(4,4′-bipy)$(DMF)_2$]·$2H_2O$}$_n$	Tb, Eu	H_2O	24 hours	N/A	[25]
[Zn_7L_6]·(H_2NMe_2)$_4$·(H_2O)$_{45}$	Tb, Eu	Acetonitrile	35 seconds	Acetonitrile	[26]
{(Me_2NH_2)[Zn(L)(H_2O)]·DMF}$_n$	Tb, Eu, Sm, Dy	DMF	48 hours	N/A	[27]
{[$(CH_3)2NH_2]_2$ [Zn_5 $(TDA)_4$ $(TZ)_4$].4DMF}$_n$	Tb, Eu	MeOH	24 hours	H_2O	[28]
{[$(CH_3)_2NH_2$]In(G-1)(H_2O)}·9DM	Eu, Tb	H_2O	N/A	H_2O	[29]
{[Cd_3(L)$_2$(H_2O)$_4$]·$4H_2O$}$_n$	Tb	H_2O	48 hours	H_2O	[30]
{[In(FDA)(HFDA)(H_2O)$_4$]·$2H_2O$}	Eu, Dy	H_2O	2 min	H_2O	[31]
{[Me_2NH_2]$_{0.125}$[$In_{0.125}(H_2L)_{0.25}$]·xDMF}$_n$	Eu, Dy, Sm, Tb	EtOH	48 hours	N/A	[32]
{[Zn(H_2thca)$_{0.5}$(tib)]·$5H_2O$}$_n$	Eu, Tb	H_2O	48 hours	H_2O	[33]
{[Zn(NDIC)·$2H_2O$]·$2H_2O$}$_n$	Tb, Eu	EtOH	24 hours	EtOH	[34]
{[Zn_2(L)·H_2O]·$3H_2O$·3DMAc·$NH_2(CH_3)_2$}$_n$	Tb, Eu	DMA	24 hours	N/A	[35]
[$Zn_8(OH)_4$(bpdc)$_6$(tipo)$_4$]·16DMF	Tb, Eu	DMF	48 hours	N/A	[36]
Al-MIL-53-COOH	Eu, Tb	EtOH	48 hours	H_2O	[37]
BioMOF-1	Tb, Eu, Sm, Yb, Nd	DMF	72 hours	H_2O, DMF, D_2O	[38-42]
BioMOF-100	Tb, Eu, Dy, Sm, Yb, Nd	H_2O	5 minutes	H_2O	[43]
Cd(ii)-MOF	Eu, Tb	H_2O	2-8 hours	N/A	[44]
Cd_2(DPDC)$_2$(BTB)]$_\infty$	Tb	MeOH H_2O	72 hours	H_2O	[45]
Cd-MOF	Tb	DMF	72 hours	Multiple	[46]
C-dots@MIL-53-COOH	Eu	EtOH	N/A	H_2O	[47]
COK-15	Eu, Tb, Sm, Dy	EtOH/H_2O	48 hours	N/A	[48]
COK-16	Eu	EtOH/H_2O	10 days	N/A	[49]
COMOC-4	Eu	EtOH	24 hours	N/A	[50,51]
HNU-25	Tb, Dy	DMF	1 minute	DMF	[52]
HPU-14	Tb, Eu	H_2O	0.5 hours	N/A	[53]
IFMC-10	Eu, Sm, Tb	DMF	48 hours	DMF	[54]
IFMC-2	Tb, Dy, Eu	DMF	48 hours	N/A	[55]

IFMC-3	Tb, Dy, Eu, Sm	DMF	48 hours	N/A	56
In(OH)bpydc	Eu, Tb	DMF/MeOH	24-48 hours	H_2O	57-59
IRMOF-3	Nd, Eu, Tb	EtOH	72 hours	N/A	60,61
JXNU-4	Tb, Eu	H_2O	12 hours	H_2O	62,63
Mg-MOF	Eu, Tb	H_2O	30 seconds	H_2O	64
MIL-100	Eu,Tb,Dy,Sm	DMF	48 hours	N/A	26,65,66
MIL-116	Eu	EtOH	48 hours	H_2O	67
MIL-121	Sm, Dy, Nd, Yb, Er	H_2O	24 hours	H_2O	68-70
MIL-124	Eu	EtOH	24 hours	H_2O	71,72
MIL-125-(Ti)-NH2-AM	Eu	MeOH	6 hours	Various Organic	73
MIL-140C	Eu	DMF	24 hours	H_2O	74
MIL-61	Eu, Dy, Sm, Tb, Er, Nd, Yb	H_2O	24 hours	H_2O	75-77
MOF-253	Tb,Eu	EtOH	24 hours	H_2O	78-80
MOF-808	Tb	Ethanol	6 hours	Various, H_2O	81
MOF-SO3-	Tb, Eu	H_2O	12 hours	H_2O	82
NBU-9	Tb, Eu	DMF	72 hours	DMF	83
NENU-522	Eu, Tb, Sm, Dy	DMF	48 hours	DMF	84
Ni-BTC	Tb, Dy, Sm, Eu	EtOH	12 hours	H_2O	85,86
Pb_2L_2	Eu, Tb	H_2O	3 hours	H_2O	87
Sc-MOF	Eu	EtOH	10 hours	H_2O	88
UiO-66(DPA)	Eu	H_2O	24 hours	H_2O	89
Uio-66(Zr)-$(COOH)_2$	Eu	EtOH/H_2O	20 hours	H_2O	90-92
UiO-66-COOH	Eu	EtOH	24 hours	N/A	93,94
UiO-66-IPA	Eu, Tb	H_2O	24 hours	H_2O	95,96
UiO-67	Eu	MeOH	12 hours	H_2O	97
UiO-67(Bypdc)	Eu	MeOH	120 hours	H_2O	98
$Zn_4O(L_1)_{1.5}$	Eu, Tb	DMF	48 hours	N/A	99
Zn-Hbtc-BPY	Tb, Eu	EtOH	24 hours	H_2O and others	100
Zn-MOF	Tb	H_2O	-	H_2O	101,102

*EtOH: Ethanol; MeOH: Methanol; DMF: Dimethylformamide; DMA: Dimethylacetamide. N/A indicates that this information was not provided or that the measurements were conducted in the solid state.

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