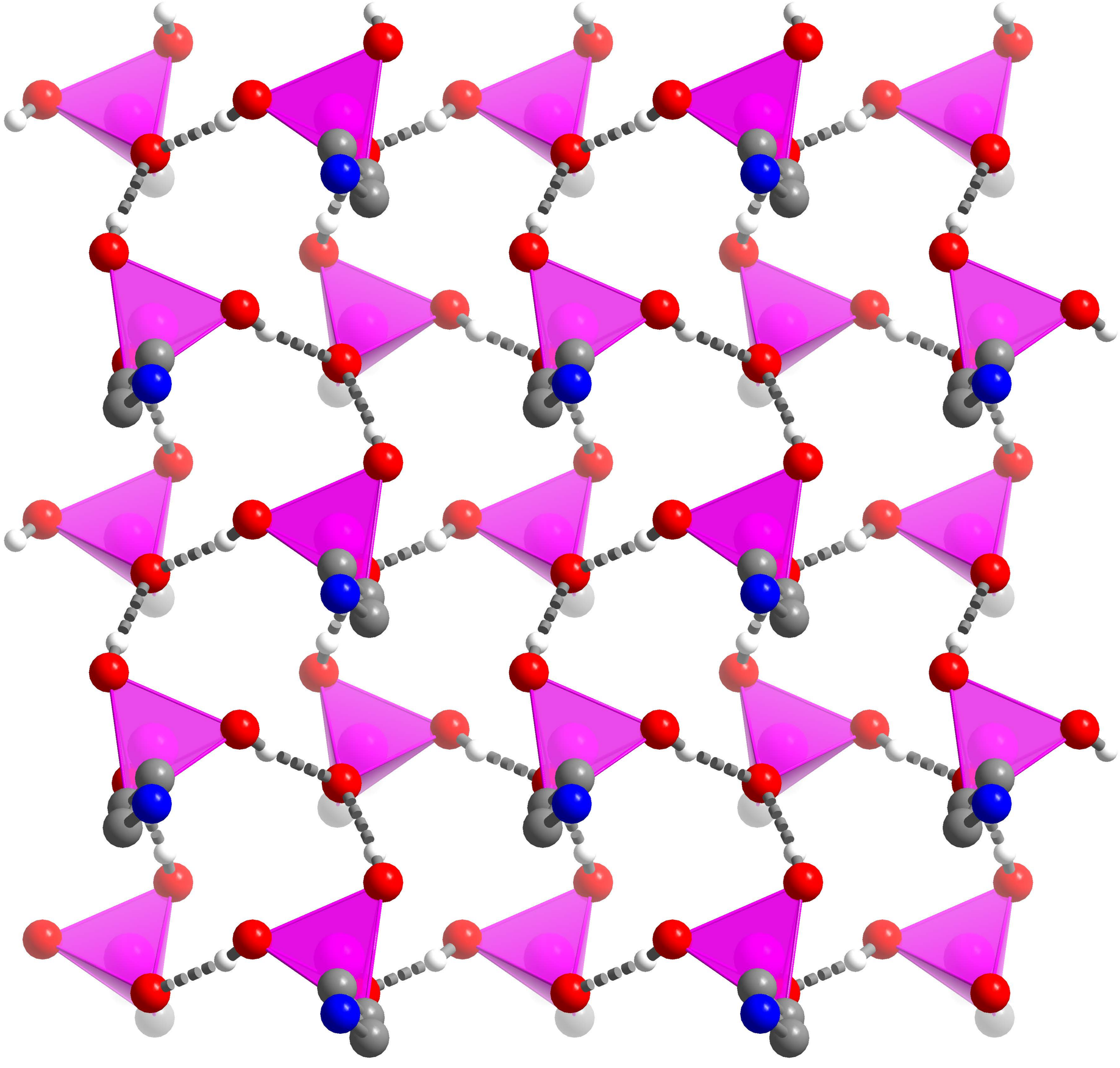
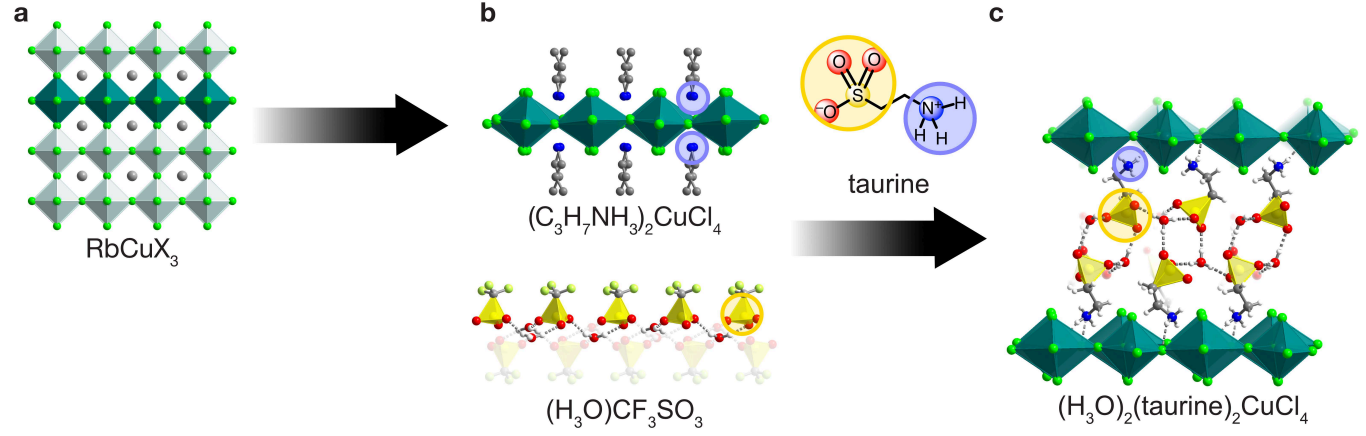
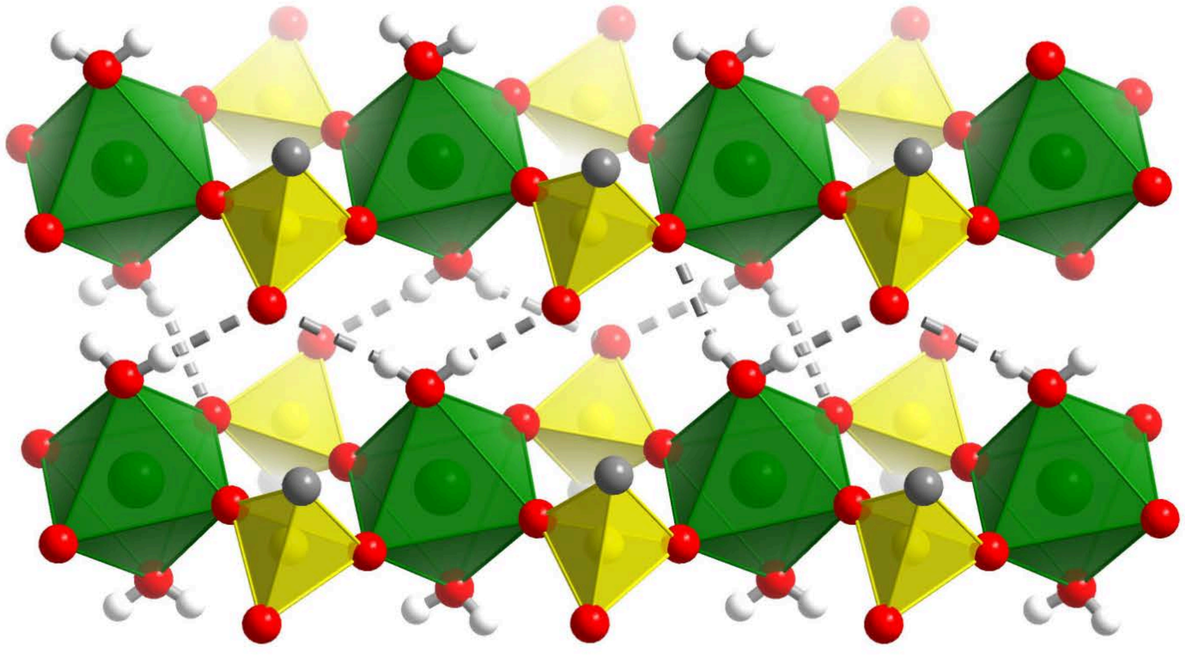
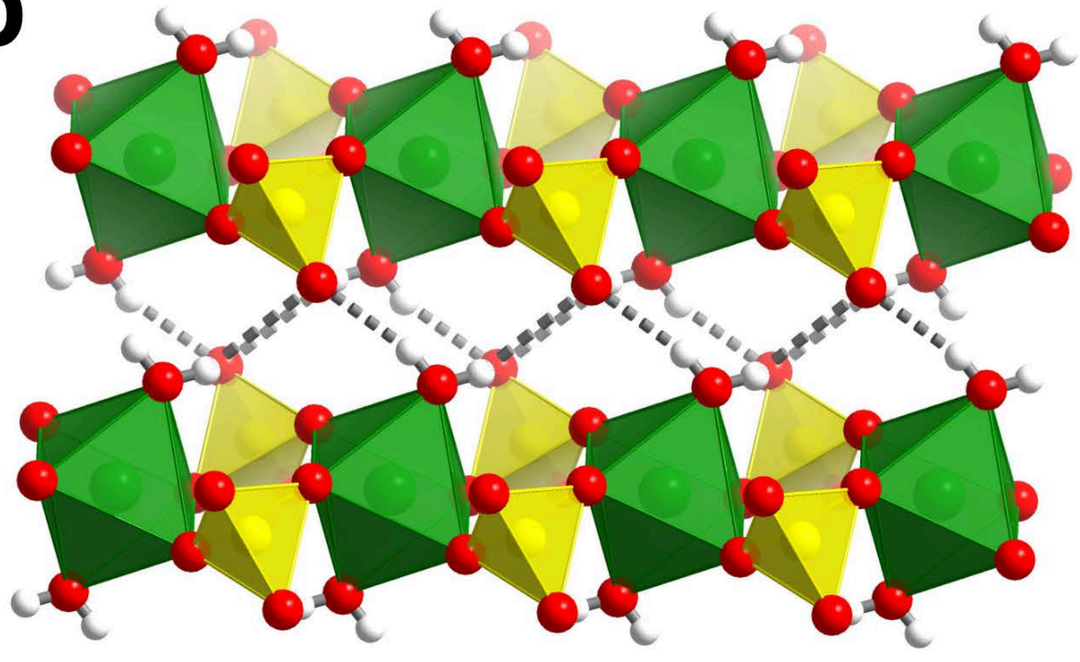



a
RbCuX3
b
(C3H7NH3)2CuCl4
(H3O)CF3SO3
taurine
c
(H3O)2(taurine)2CuCl4

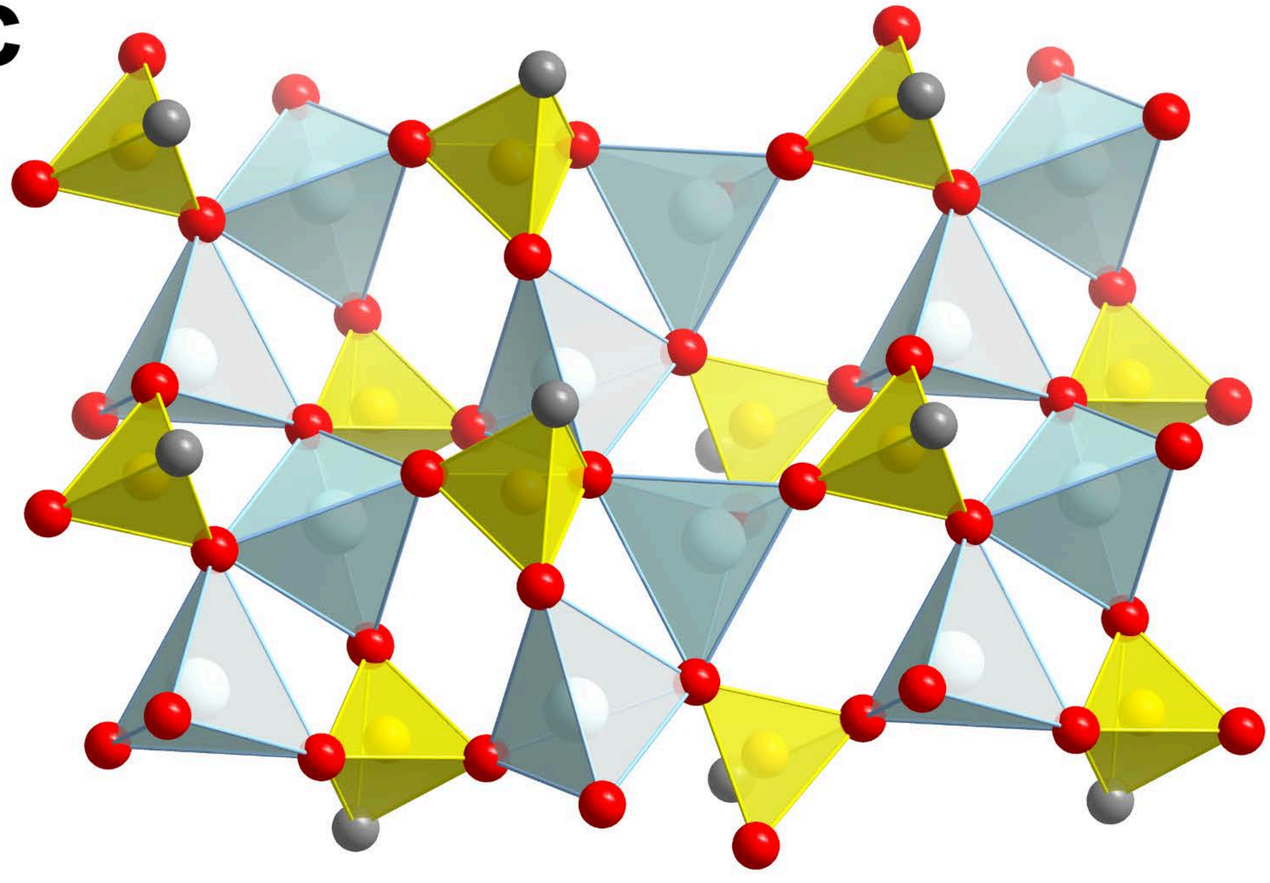
a



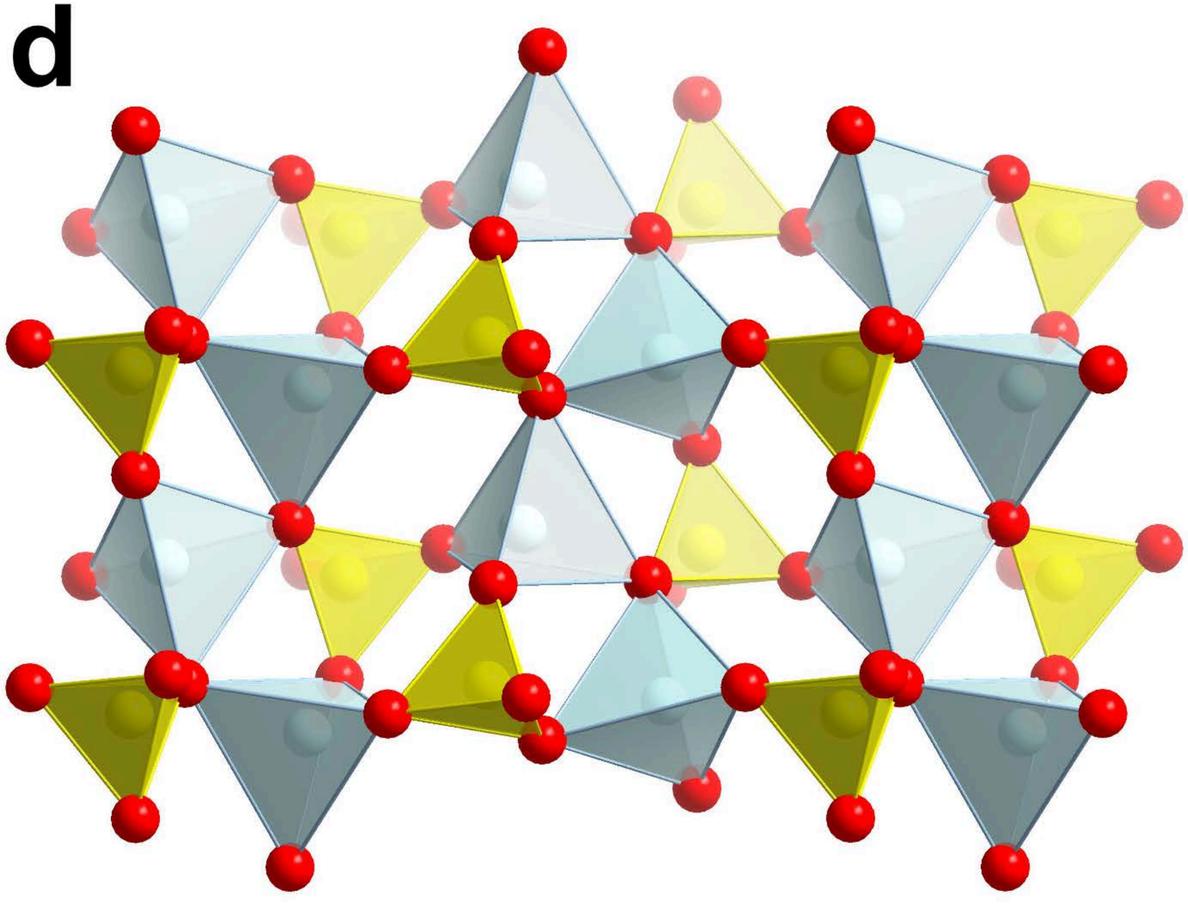
b

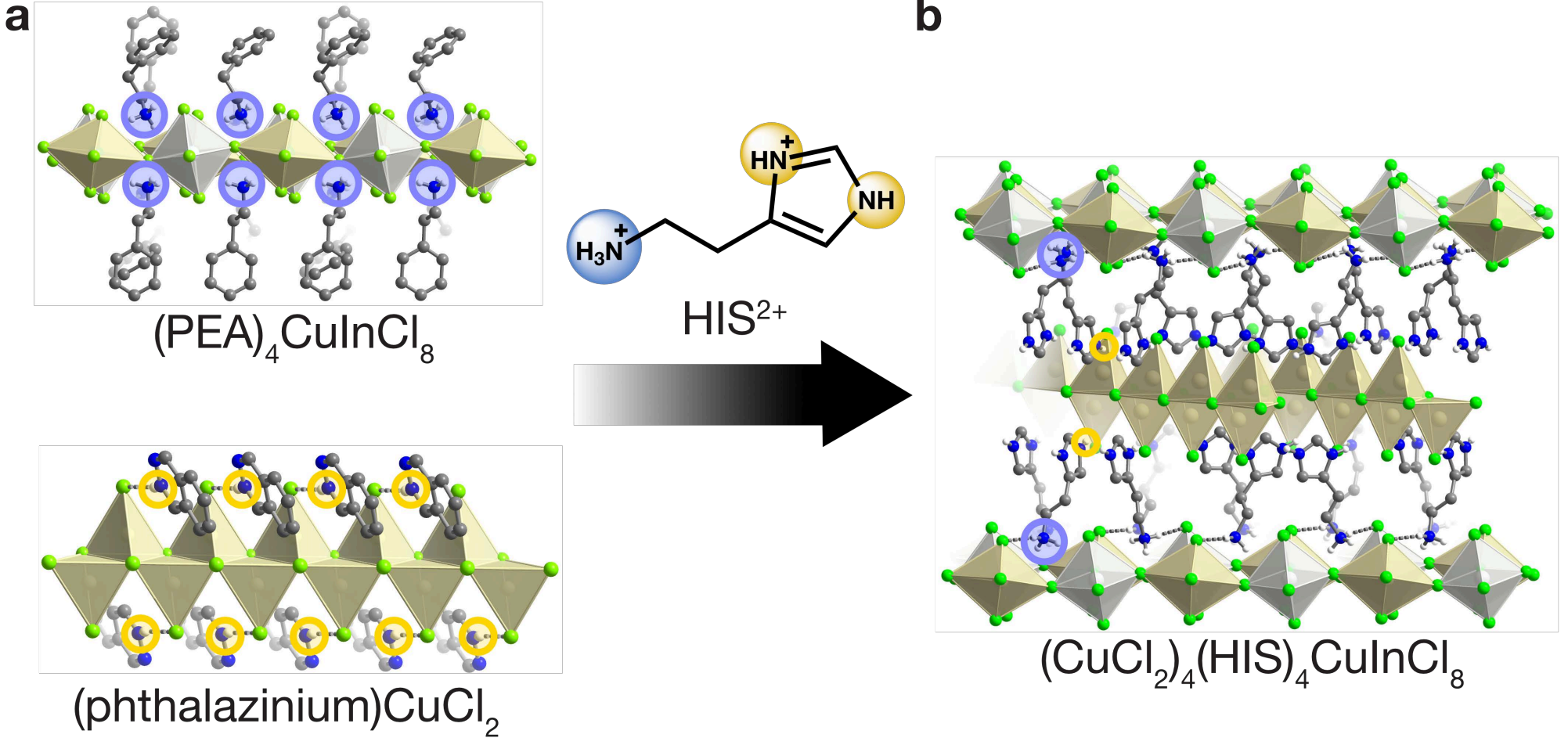


c



d




a
b
HN+
NH
H3N+
HIS2+
(PEA)4CuInCl8
(phthalazinium)CuCl2
(CuCl2)4(HIS)4CuInCl8

a

b

c

$CsPbBr_3$

$PbBr_2$

$(BA)_2PbBr_4$

(001) slice of $PbBr_2$

$AMTP^+$

$(PbBr_2)_2(AMTP)_2PbBr_4$

$PbCl_2$

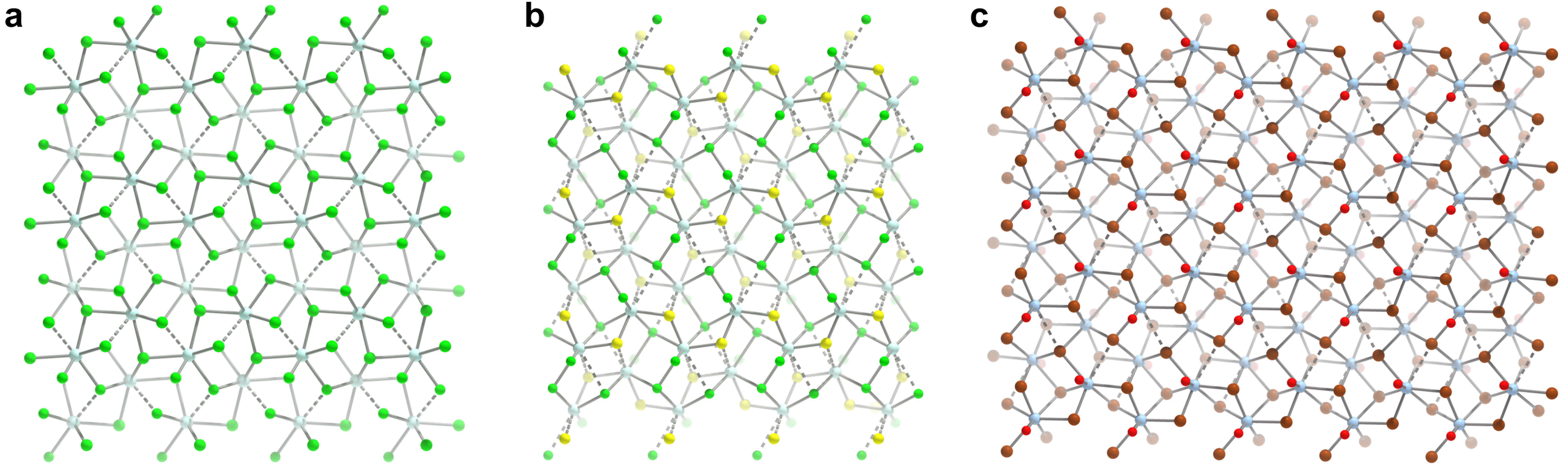
$CsPbCl_3$

(001) slice of $PbCl_2$

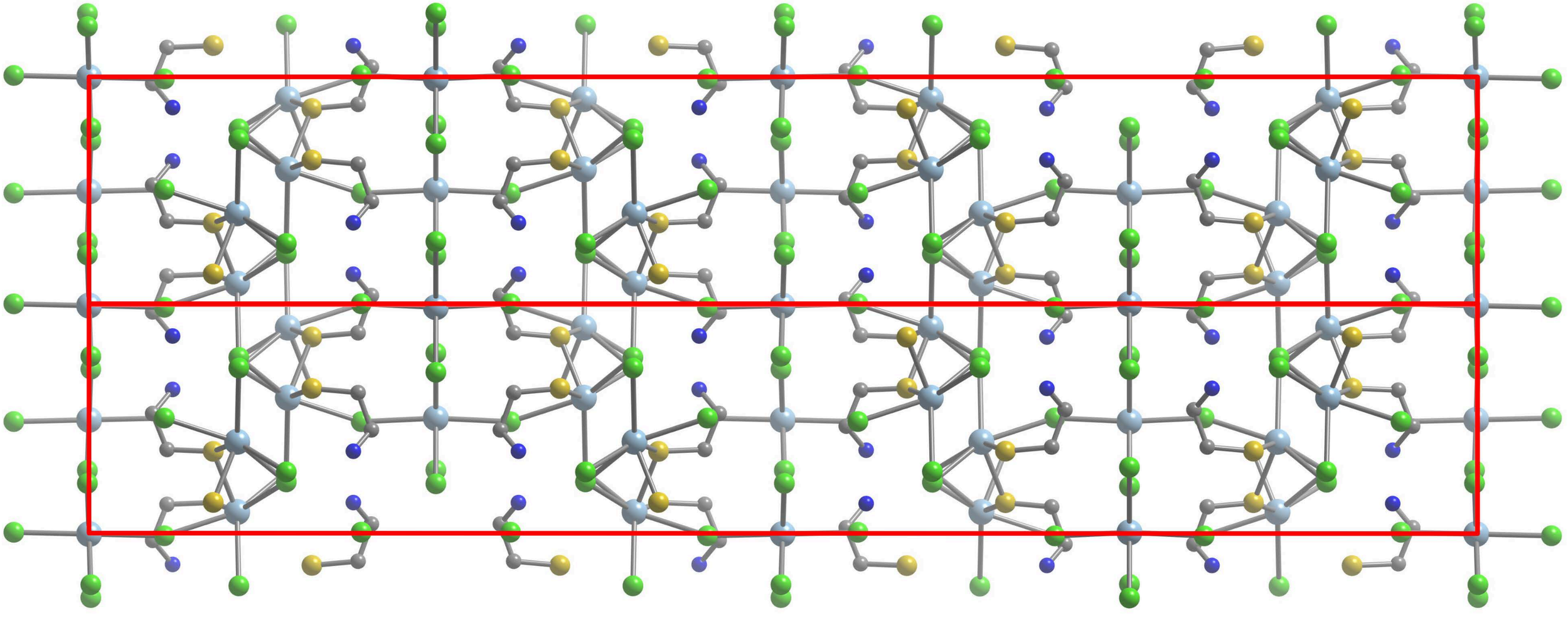
$(BDA)PbCl_4$

CYS

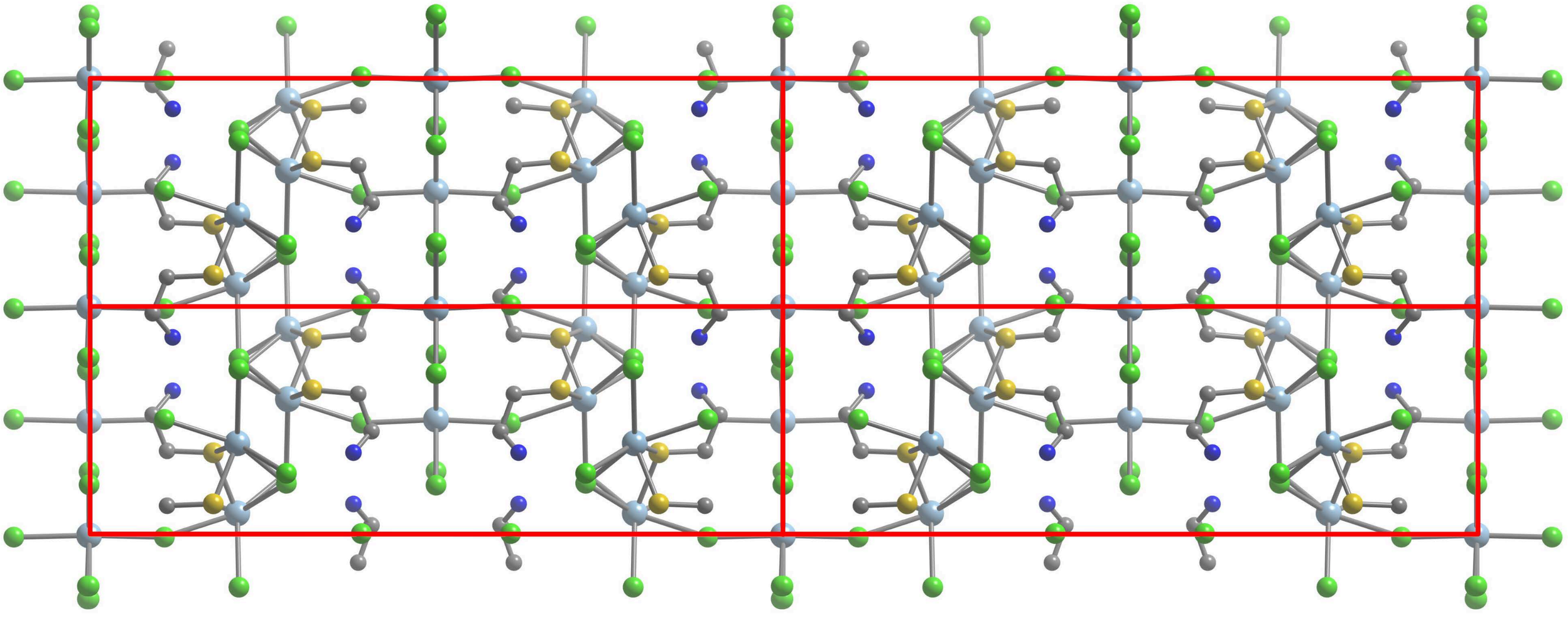
$(Pb_2Cl_2)_2(CYS)_2PbCl_4$


a
b
c

a



b



Heterostructure	Intergrowth parent	Strain || *a*	Strain || *b*	Strain || *ab*	Volumetric strain
$Li_2(taurine)_2CuCl_4$	α-$Li(NH_4)SO_3$ [16]	0.73%	3.0%	3.8%	−0.11%
$Li_2(taurine)_2MnCl_4$	α-$Li(NH_4)SO_3$ [16]	0.53%	2.3%	2.8%	−2.4%
$(Mg(H_2O)_2)(taurine)_2CuCl_4$	$KMg(H_{0.5}SO_4)_2(H_2O)_2$ [20]	11.0%	−5.7%	4.1%	1.24%
$(CuCl_2)_4(HIS)_4CuInCl_8$	(phthalazinium)$CuCl_2$ [24]	−1.3%	−0.94%	−2.5%	−0.84%
$(Pb_2Cl_2)(CYS)_2PbCl_4$	$PbCl_2$ [25]	−2.6%	−2.6%	−5.2%	5.5%
$(PbBr_2)_2(AMTP)_2PbBr_4$	$PbBr_2$ [25]	−12.0%	−2.6%	−14.3%	−17.5%

Heterostructure	Perovskite parent	Strain || *a*	Strain || *b*	Strain || *ab*	Volumetric strain
$Li_2(taurine)_2CuCl_4$	$(C_3H_7NH_3)_2CuCl_4$ [18]	−3.8%	−2.0%	−5.7%	−4.5%
$Li_2(taurine)_2MnCl_4$	$(C_2H_5NH_3)_2MnCl_4$ [54]	−2.2%	−0.99%	−3.1%	−1.6%
$(Mg(H_2O)_2)(taurine)_2CuCl_4$	$(C_3H_7NH_3)_2CuCl_4$ [18]	0.93%	−2.4%	−1.6%	−2.2%
$(CuCl_2)_4(HIS)_4CuInCl_8$	$(phenethylammonium)_2CuInCl_8$	−2.9%	−1.8%	−4.7%	−2.5%
$(Pb_2Cl_2)(CYS)_2PbCl_4$	$(C_3H_7NH_3)_2PbCl_4$ [26]	−4.2%	10.7%	7.0%	−7.96%
$(PbBr_2)_2(AMTP)_2PbBr_4$	$(C_4H_9NH_3)_2PbBr_4$ [55]	−1.5%	−1.5%	−3.0%	−3.1%

Heterostructure	ε_{xx}	ε_{yy}	ε_{zz}	ε_{yz}	ε_{xz}	ε_{xy}
$Li_2(taurine)_2CuCl_4$	−0.03806	−0.0206	0.01555	−0.022585	0.040635	0.00404
$Li_2(taurine)_2MnCl_4$	−0.0215	−0.00987	0.01812	0.036995	−0.036785	0.00702
$(Mg(H_2O)_2)(taurine)_2CuCl_4$	0.00927	−0.02406	−0.00182	0.049645	0.04753	0.022
$(CuCl_2)_4(HIS)_4CuInCl_8$	−0.02917	−0.01828	0.03846	0.11858	0.03411	−0.00632
$(Pb_2Cl_2)(CYS)_2PbCl_4$	−0.04223	0.10717	0.01817	0	0	0
$(PbBr_2)_2(AMTP)_2PbBr_4$	−0.01481	−0.01531	0.00058	0.02207	0.02734	−0.0227

Heterostructure	ε_{xx}	ε_{yy}	ε_{zz}	ε_{yz}	ε_{xz}	ε_{xy}
$Li_2(taurine)_2CuCl_4$	0.00737	0.03043	−0.00575	0.067015	0.166215	−0.00546
$Li_2(taurine)_2MnCl_4$	0.00531	0.02254	−0.05005	−0.01844	−0.02118	−0.00022
$(Mg(H_2O)_2)(taurine)_2CuCl_4$	0.10961	−0.05699	−0.02479	0.022315	0.046105	−0.07370
$(CuCl_2)_4(HIS)_4CuInCl_8$	−0.01327	−0.00944	0.01688	−0.00960	0.00272	0.04657
$(Pb_2Cl_2)(CYS)_2PbCl_4$	−0.02648	−0.02632	0.11604	−0.05143	0.00012	0
$(PbBr_2)_2(AMTP)_2PbBr_4$	−0.12031	−0.02589	−0.02735	−0.09558	−0.00002	0.00003