Supporting Information

Thermal Properties and Crystal Structures of Rhenium(I) Carbonyl Complexes with Tridentate Ligands: Preparation of Rhenium-Containing Ionic Liquids

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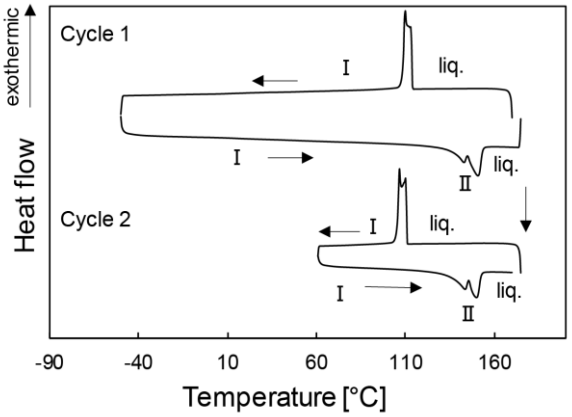
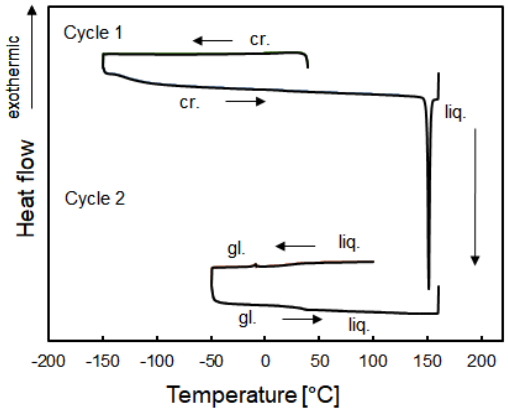
a) [**1**]PF_6



b) [**2**]PF_6



c) [**2-Cl**]

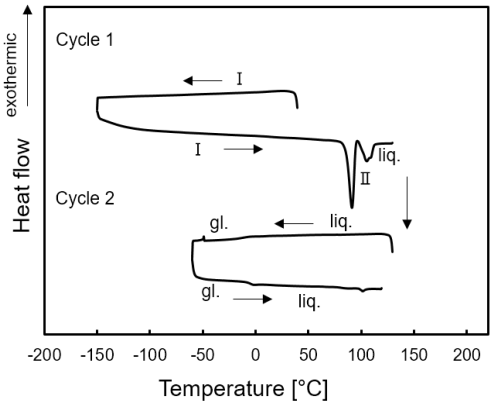
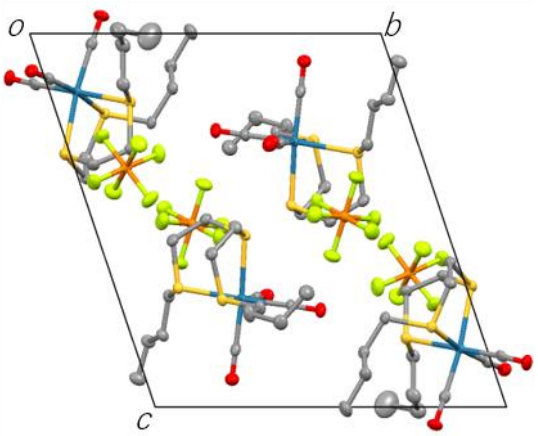
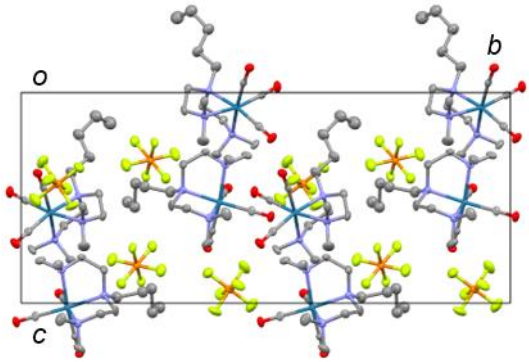


Figure S1. DSC traces.

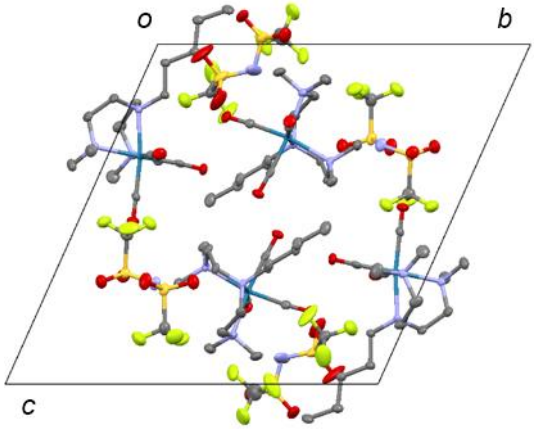
a) [**1**]PF_6



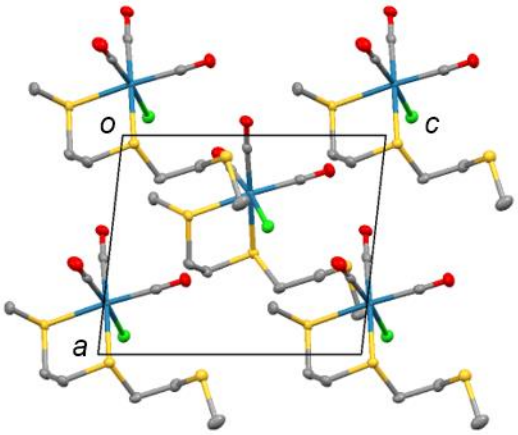
b) [**2**]PF_6



c) [**2**]Tf_2N



d) [**1'-Cl**]



e) [**2-Cl**]

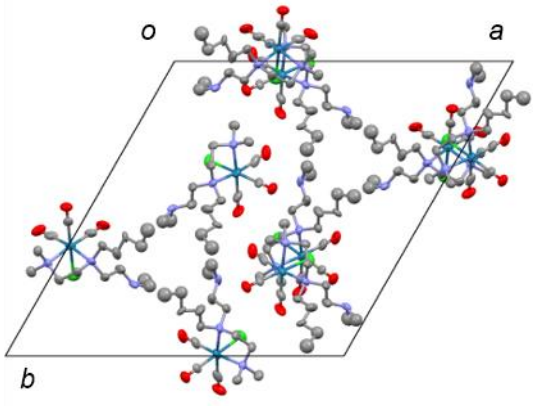


Figure S2. Packing diagrams. In the disordered part, the lower occupancy moieties have been omitted.

Table S1. Crystallographic parameters

	[**1**]PF_6	[**2**]PF_6	[**2**]Tf_2N
Empirical formula	$C_{15}H_{26}S_3O_3ReF_6P$	$C_{16}H_{31}N_3O_3RePF_6$	$C_{18}H_{31}F_6N_4O_7ReS_2$
Formula weight	681.71	644.61	779.79
Crystal system	Triclinic	Monoclinic	Triclinic
Space group	*P*–1	*C*c	*P*–1
a [Å]	12.101(3)	13.490(11)	9.7417(10)
b [Å]	13.378(3)	28.17(2)	17.7109(18)
c [Å]	15.687(4)	12.581(11)	18.1194(19)
α [°]	70.089(3)	90	111.7300(10)
β [°]	71.784(3)	105.98(2)	103.9650(10)
γ [°]	82.403(3)	90	96.0330(10)
V [Å^3]	2267.1(10)	4596.0(7)	2751.9(5)
Z	4	8	4
ρ_{calcd} [g cm^{-3}]	1.997	1.863	1.882
F(000)	1328.0	2528	1536
μ (mm^{-1})	5.77	5.426	4.652
Temperature [K]	100	90	90
Reflns collected	9938	12551	12907
R (int)	0.0204	0.0118	0.0246
$R_1{}^a$, $R_w{}^b$ ($I > 2\sigma$)	0.0252, 0.0600	0.0220, 0.0584	0.0256, 0.0639
$R_1{}^a$, $R_w{}^b$ (all data)	0.0314, 0.0663	0.0228, 0.0587	0.0290, 0.0651
Goodness of fit	1.138	1.041	1.063

$^aR_1 = \Sigma||F_o| - |F_c|| / \Sigma|F_o|$. $^bR_w = [\Sigma w (F_o^2 - F_c^2)^2 / \Sigma w (F_o^2)^2]^{1/2}$.

Table S2. Crystallographic parameters

	[**1'-Cl**]	[**2-Cl**]
Empirical formula	$C_9H_{14}S_3O_3ReCl$	$C_{16}H_{31}N_3O_3ReCl$
Formula weight	488.03	535.09
Crystal system	Monoclinic	Trigonal
Space group	$P2_1/n$	$R3c$
a [Å]	7.9569(15)	22.703(4)
b [Å]	19.283(4)	22.703(4)
c [Å]	9.5161(18)	20.758(3)
α [°]	90	90
β [°]	96.405(2)	90
γ [°]	90	120
V [Å^3]	1451.0(5)	9266(3)
Z	4	18
ρ_{calcd} [g cm^{-3}]	2.234	1.726
F (000)	928	4752
μ (mm^{-1})	8.982	6.049
Temperature [K]	100	90
Reflns collected	7536	17133
R (int)	0.0201	0.0234
$R_1{}^a$, $R_w{}^b$ ($I > 2\sigma$)	0.0166, 0.0429	0.0298, 0.0674
$R_1{}^a$, $R_w{}^b$ (all data)	0.0169, 0.0430	0.0367, 0.0712
Goodness of fit	1.133	1.054

$^aR_1 = \Sigma||F_o| - |F_c|| / \Sigma|F_o|$. $^bR_w = [\Sigma w (F_o^2 - F_c^2)^2 / \Sigma w (F_o^2)^2]^{1/2}$.