Supporting Information

Table S1.

Raman data for Pt(diimine)(thiolate)$_2$ 2 and 4 and related compounds, obtained under 785 nm excitation. The bands enhanced in the resonance Raman spectra of 2 and upon excitation at 457 and 486 nm are marked with an asterisk.

Pt(bpy)Cl_2	Pt(phen)Cl_2	4-CN-C_6F_5SH	Pt(bpy)(4-CN-$C_6F_4S)_2$	Pt(phen)(4-CN-$C_6F_4S)_2$
202	181 s	156 w	165 w	171
212		183 w	208	197
	225 s	217 s	228	215
262, 271	265	268, 257 w	247	
	296	288	Manifold 165-490 nm	
295				
		323	302	
	330	349	328	320
340(w)	346	361	350	346
386.9	362 s	382	*392	371
		401	405	414 vs
417(w)		420		434
430.3(w)		434	442	447
454(w)	451 s	472		
490(w)		485	484	484
	512	505 w		
		521 s	*531	520
546		552 s	*556	552
	575	623 w		

		637 w		
646		652 w	665	660
658	666	677 w		
675	716 w	695 w		
769.4	735 w	736 w		
	759 s	756	*784	753
		834 w		
	894	865	862	857
	935	932		928
1027		1036 s	*1040 s + 1054 sh	1032
	1063 s	1157 w	1123	1067
1176.7	1150, 1164 w		*1190 (2 bands)	1156 w
1276+1286	1214 w		*1295	
1324	1317 s	1307 w	*1336 s	1318
	1442 w	1406	*1404 s+1396 (sh)	1390
1500	1464 s	1414 s	*1514	1439
1563.6	1524 w	1474 w	*1579 w	1460
1608	1588			1591
	1614	1614 w	1623 sh	1611
	1636 w	1653 vs	*1647 vs	1644
		2257 s	* 2253	2253
		2551 w		

For 4-CN-C_6F_5SH, “s” represents strong bands, with the intensity up to 50%; and “w” represents weak bands having less than 5% of the intensity of the strongest band (1654 cm^{-1}).