Supplementary Information for

Photophysical properties of 1,2,3,4,5-pentaarylcyclopentadienyl hydrotris(indazolyl)borate ruthenium(II) complexes

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Table of content

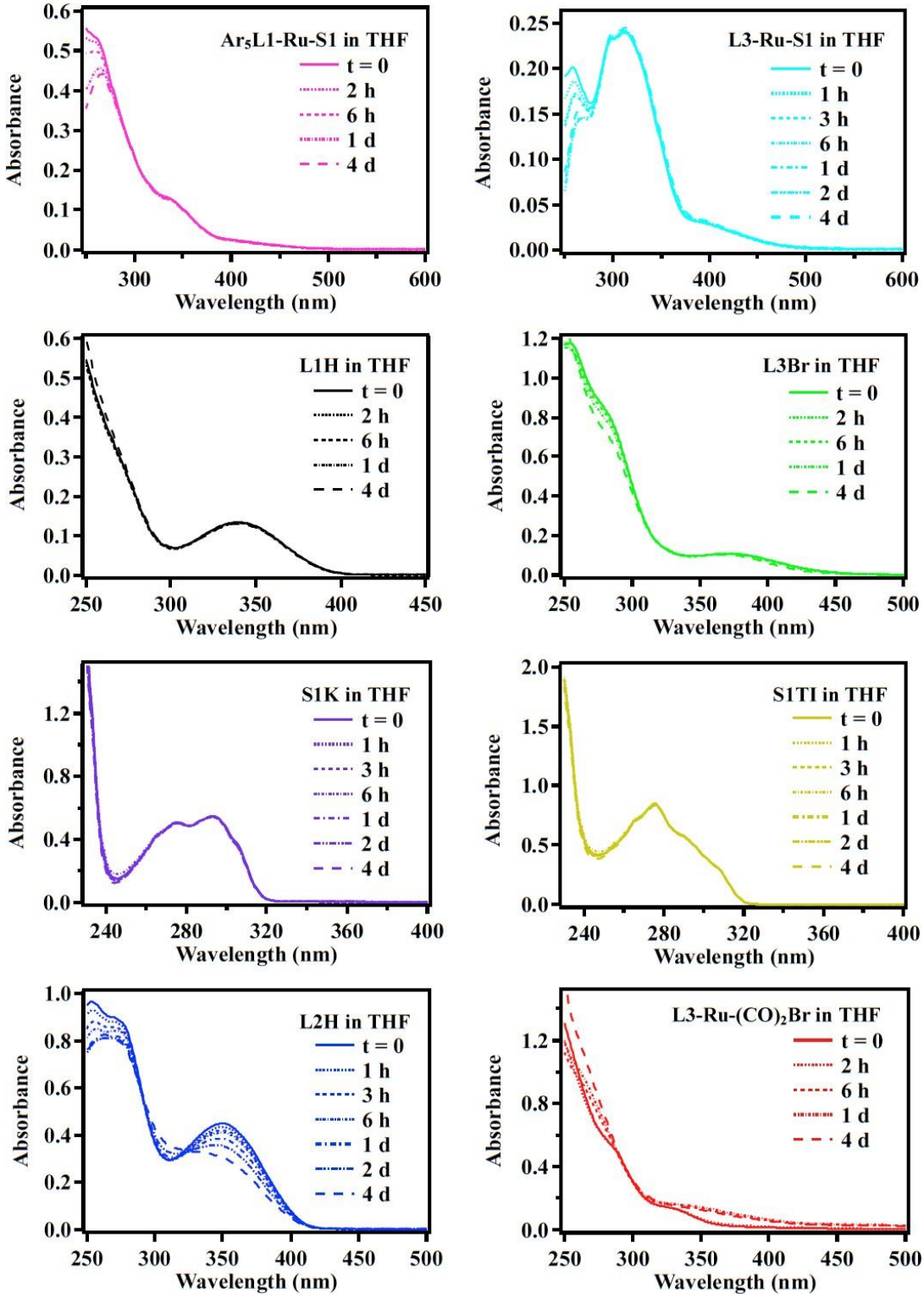

Figure S1. Photochemical stability tests in THF for molecular rotors **Ar_5L1-Ru-S1** and **L3-Ru-S1**, along with their related ligands/fragments **L1H**, **L2H**, **S1K**, **S1TI**, **L3Br** and **L3-Ru-$(CO)_2$Br** under ambient light at room temperature. The changes observed in the spectral region below 280 nm for Ar5L1-Ru-S1 and L3-Ru-S1 are due to scattering artifacts caused by the presence of small amount of undissolved samples that is reducing over time.

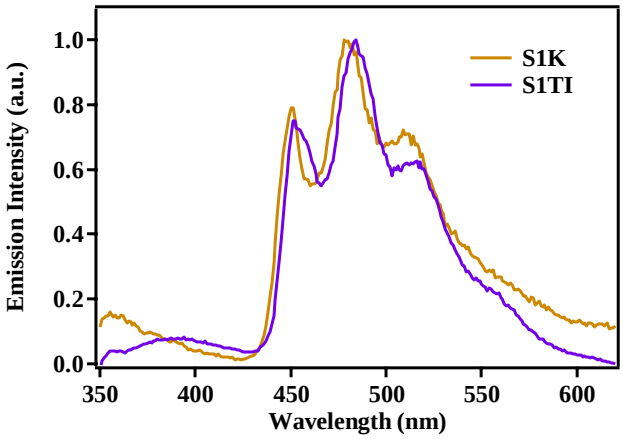

Figure S2. Emission spectra of compounds **S1K** and **S1TI** in THF at 77 K acquired by using a pulsed source and a gated detection.

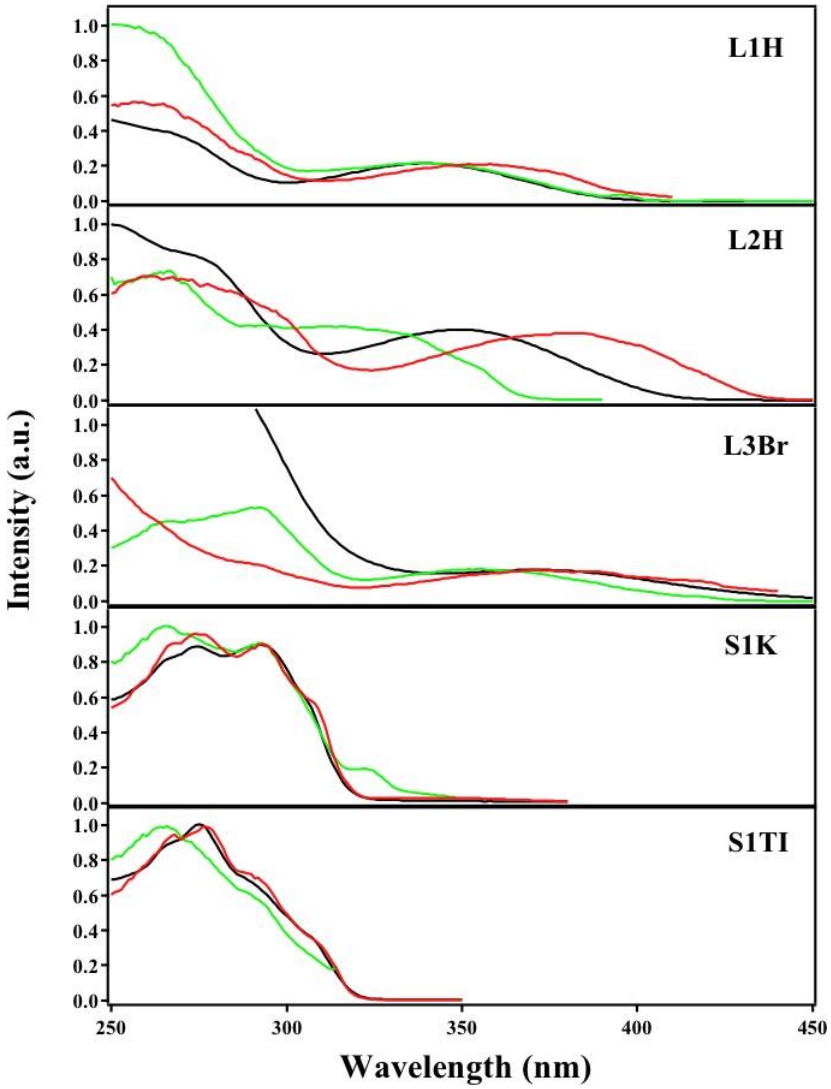

Figure S3. Arbitrarily scaled absorption spectra (black line) and excitation spectra of compounds **L1H**, **L2H**, **L3Br**, **S1K** and **S1TI** in THF recorded at 298 K (green line) and 77 K (red line).

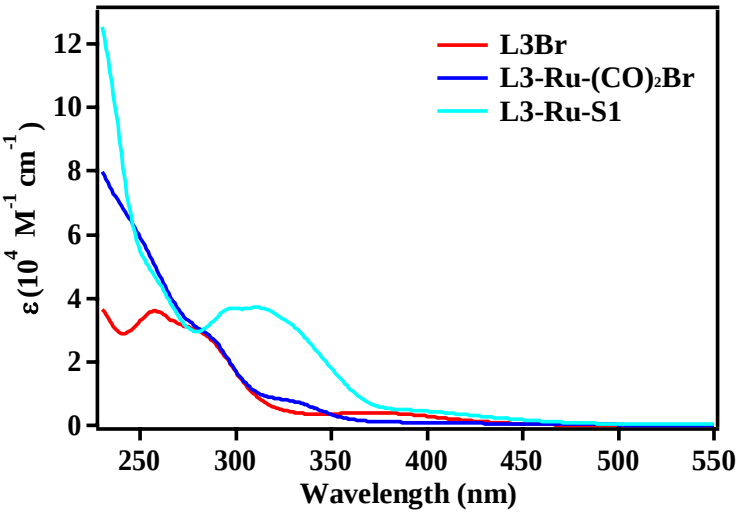

Figure S4. Absorption spectra of the compounds **L3Br**, **L3-Ru-(CO)$_2$Br**, and **L3-Ru-S1** in THF solution at 298 K.

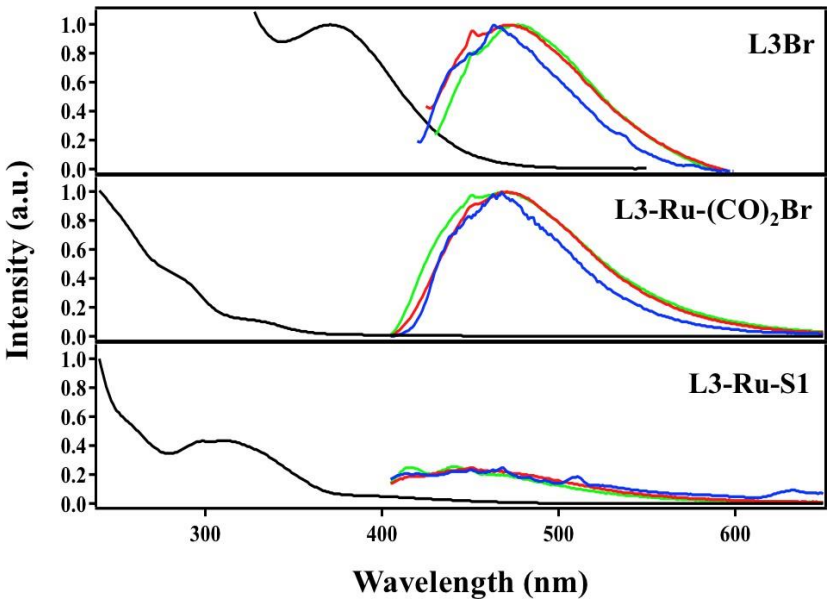

Figure S5. Normalised absorption spectra (black line) and emission spectra of compounds **L3Br**, **L3-Ru- (CO)$_2$Br** and **L3-Ru-S1** in air-equilibrated (green line) and deoxygenated (red line) THF both at 298 K and 77 K (blue line). The excitation wavelengths are 370 nm for **L3Br**, 360 nm for **L3-Ru-(CO)$_2$Br** and 350 nm for **L3-Ru-S1**.

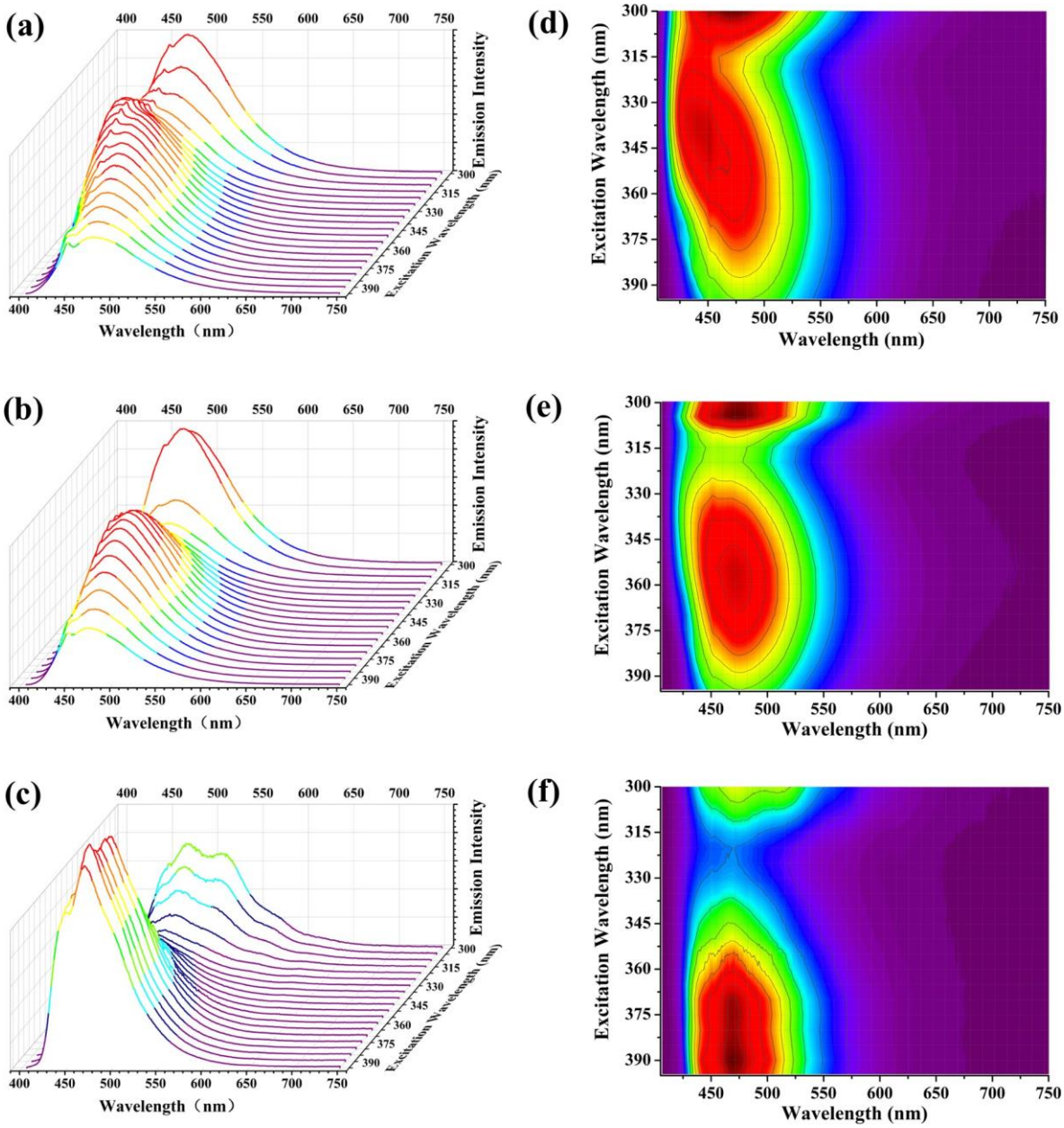

Figure S6. Emission maps for **L3-Ru-$(CO)_2$Br** in air-equilibrated (a and d) and deoxygenated (b and e) THF at 298 K and in frozen THF at 77 K (c and f). The maps are presented both as emission spectra distribution (left) and as contour plots (right). Excitation was moved from 300 nm to 395 nm with a 5 nm step.

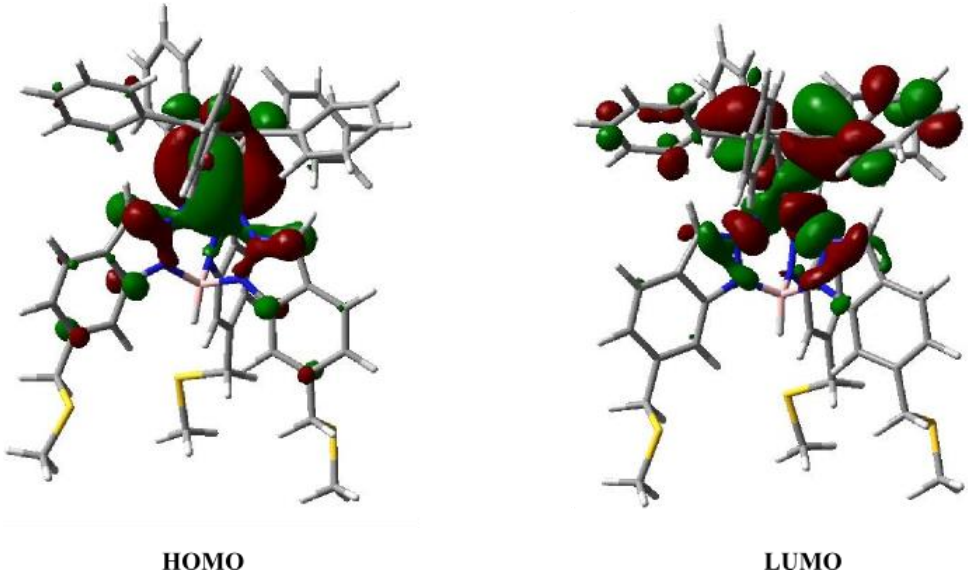

Figure S7. Absorption. HOMO-LUMO orbitals of the lowest electronic transition of **L1-Ru-S1'**.

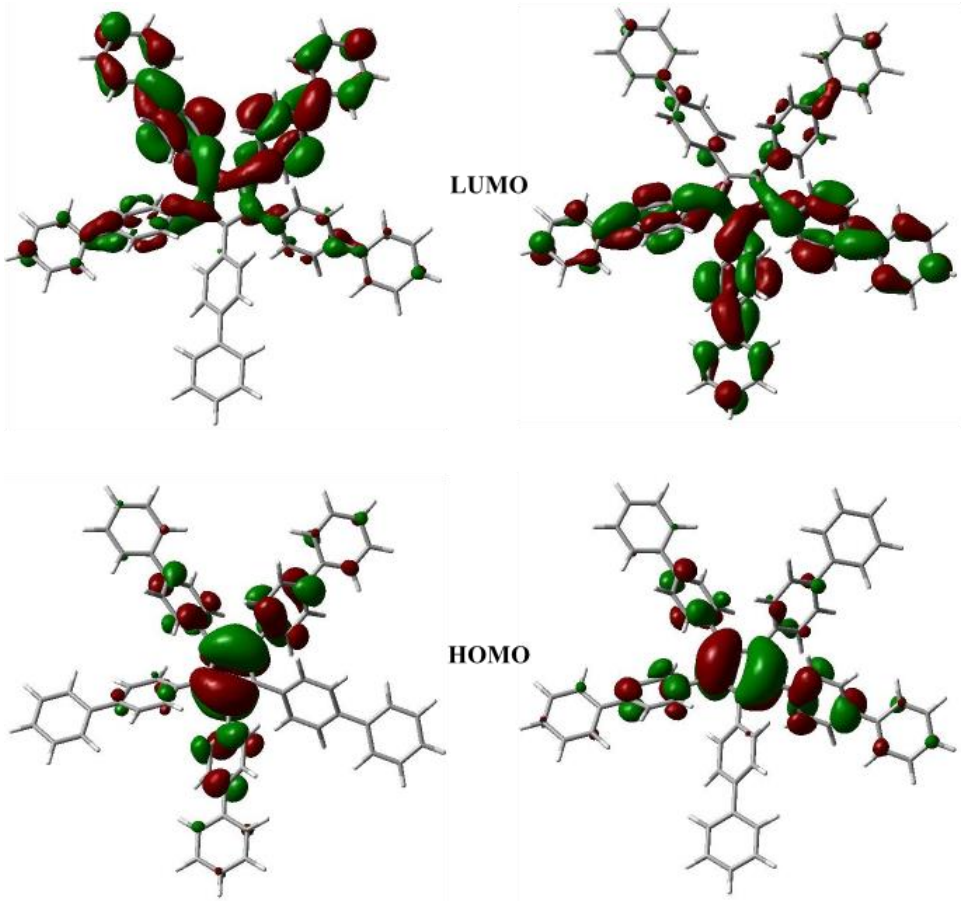

Figure S8. Absorption. Couple of the HOMO-LUMO degenerate orbitals of the lowest electronic transition of **Ph_5L1**.

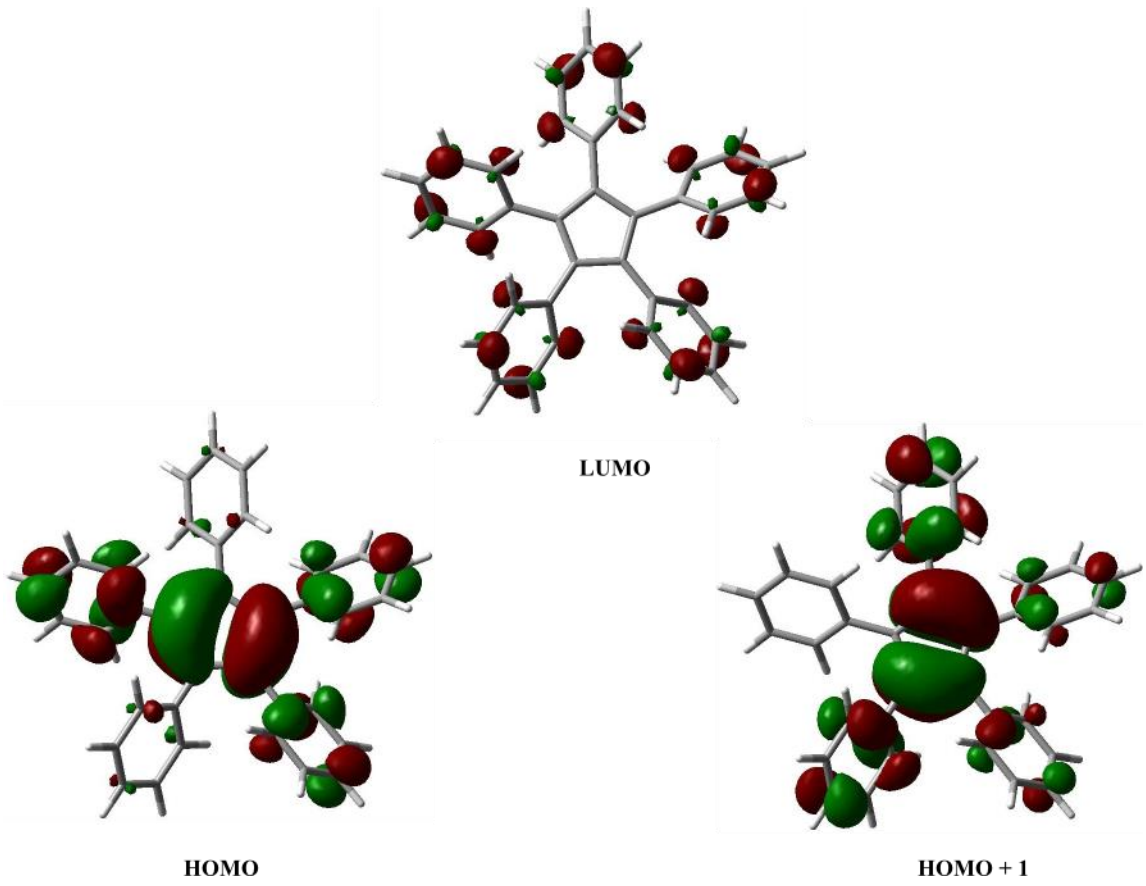

Figure S9. Absorption. HOMO, LUMO and HOMO+1 representing the two transitions to the same energy of **L1**.

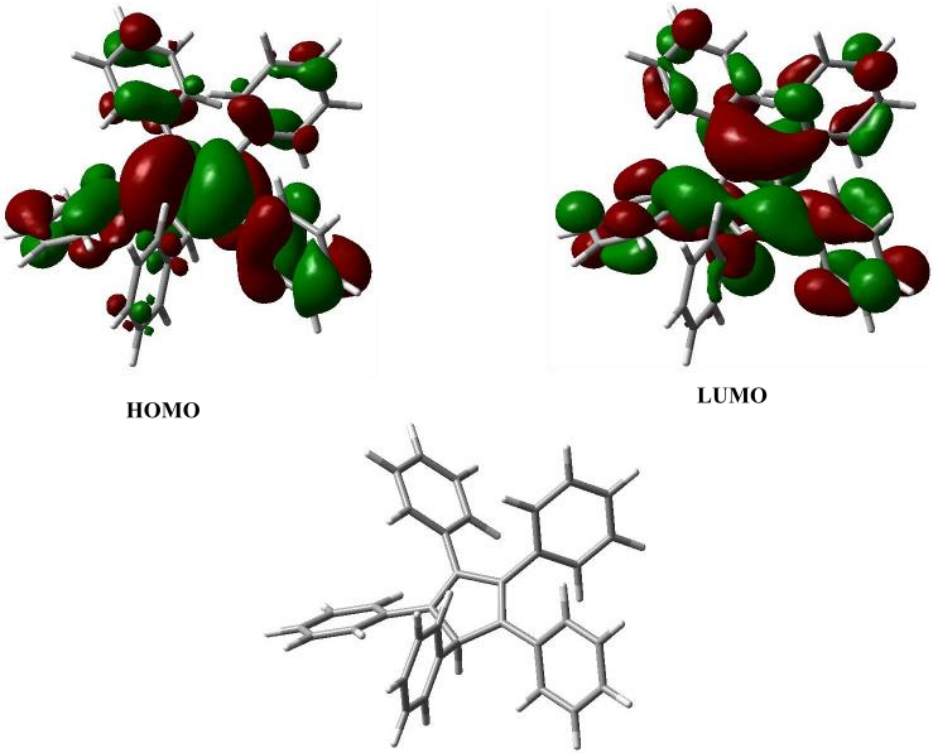

Figure S10. Absorption. Geometry and HOMO-LUMO orbitals of the lowest electronic transition of **L1H**.

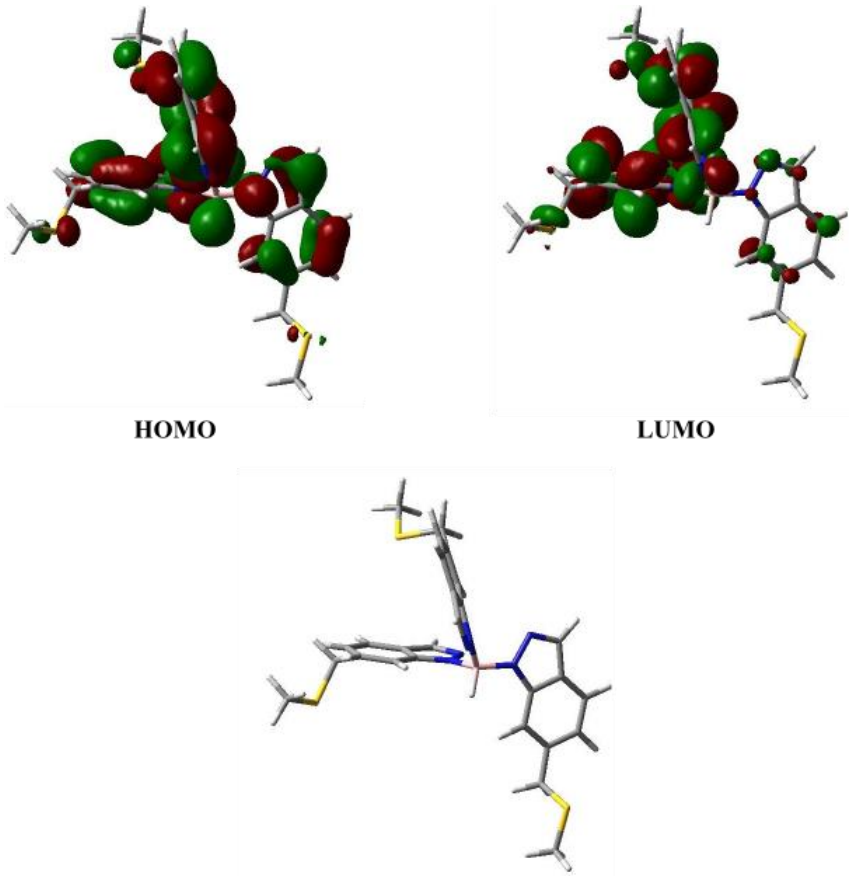

Figure S11. Absorption. Geometry and HOMO-LUMO orbitals of the lowest electronic transition of **S1'**.

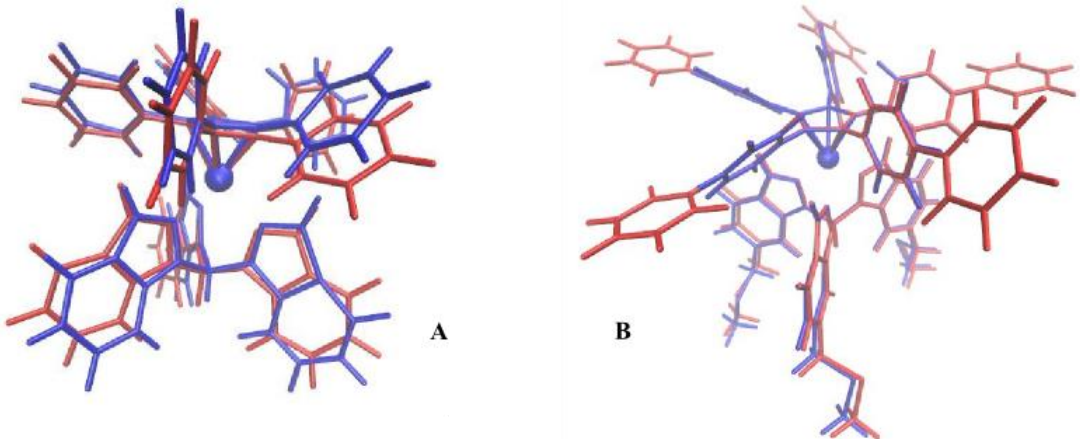

Figure S12. (A) Overlap between part of the calculated **L1-Ru-S1** (in red) and the corresponding X-ray structure of a parent compound (in blue) and (B) overlap between calculated **Ph_5L1-Ru-S1** (in red) and calculated **L1-Ru-S1** (in blue) structures.

XYZ optimised geometries

DFT M06 optimised energies

Basis set 6-31g(d,p) for C,N,O,H,S atoms

SDD for Ru atom

Implicit solvent SCRF=Tetrahydrofuran

L1H

E = -1348.374519

DG = -1347.940460

0 charge 1 molteplicity

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L1

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DG = -1347.461989

-1
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Ph_5L1

E = -2502.317549

DG = -2501.525508

-1
1

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C	-1.17984600	-0.27829700	0.01284200
C	-0.10021500	-1.19961100	0.01784000
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C	-5.19653700	-8.33487100	0.02987400
H	-3.34791400	-9.30342600	-0.50225300
H	-6.86874500	-7.08544300	0.56018600

H	-5.77529900	9.25543200	0.03342800
C	-6.81066100	-1.63719700	0.00242800
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H	-0.40901700	-9.67744100	2.02733600
H	-0.80534000	-10.86822500	-0.11908500
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C	6.70848000	-3.99468700	-0.21094700
C	7.57978600	-1.83052700	0.35849900
C	7.99673200	-4.51541400	-0.20556600
H	5.86372300	-4.65110800	-0.41188800
C	8.86802700	-2.35130100	0.36975200
H	7.42631300	-0.77039500	0.55214500
C	9.08410900	-3.69681500	0.08613200
C	-2.13826200	-1.09165300	-2.89374600
C	-1.87662600	-1.99355600	-0.62477000
C	-1.33925400	-0.22242100	-3.68204100
C	-3.37744500	-1.74019200	-3.02895700
C	-3.10226500	-2.61659300	-0.77008800
H	-1.30657900	-2.09179100	-0.29760300
H	-1.53124000	-0.15116600	-4.68232500
C	-3.84768700	-2.48472300	-1.96875800
H	-3.95722300	-1.64964000	-3.94534400
H	-4.81187800	-2.98759500	-2.03810400
C	-0.96540500	-0.87474500	-0.85000900
C	-1.39646300	-0.65186600	-2.17718300
C	-1.60760900	-1.80083500	-0.01204400
C	-0.51383600	-0.35606100	-2.64461700
C	-2.48617500	-1.37716900	-2.68792500
C	-2.68347700	-2.49976700	-0.52850700
H	-1.28188400	-1.95097800	-1.01723000
H	-0.48129500	-0.82757600	-3.62090900
C	-3.11113700	-2.28843400	-1.86483200
H	-2.83436800	-1.21823400	-3.70641100
H	-3.96024900	-2.86439600	-2.23172600
N	1.84600600	-1.27198500	-0.63108500
N	-0.26664000	-0.47014000	-1.82038600
N	0.08423900	0.03930100	-0.60596700
N	1.51165400	-2.58135200	-0.75931300
N	0.35138100	-0.70769900	-1.70763800
N	-0.24709400	-0.14251300	-3.03519200
C	-3.67994000	-3.38137800	-0.37962300
H	-4.37907300	-4.15622400	-0.03995700
H	-2.89506500	-3.85824400	-0.97965600
C	6.02292300	0.96364200	-0.97856500

H	8.15094900	-5.57056200	-0.42066200
H	9.70983200	-1.69882600	0.59128800
H	10.09219700	-4.10441800	0.09247700

S1' [With methyl groups instead of ethyl in S1]

E = -2592.806614

DG = -2592.371810

-1
1

H	1.36789400	0.87970300	-1.09133200
B	0.81009600	-0.14790500	-0.76274100
C	3.11624500	-1.15770700	-0.14972000
C	3.63432600	-2.46230300	0.01348300
C	3.87576000	-0.02190000	0.16842300
C	2.55948500	-3.29629300	-0.39210100
C	4.94339200	-2.63949600	0.49090500
C	5.16026400	-0.21344400	0.64509200
H	3.46546400	0.97948300	0.04898800
H	2.52335700	-4.37970000	-0.43294400
C	5.68802400	-1.52115600	0.79757700
H	5.35937000	-3.63643300	0.62146700
H	6.70615700	-1.62699200	1.17130400
C	-1.39871100	-1.22480400	-1.69697600
H	5.42254200	1.87230000	1.10801300
H	6.59584400	0.79252600	1.89961700
C	-3.39454800	3.51350100	-0.31246400
H	-3.21309600	3.34165100	-1.38029900
H	-4.47799700	3.49082800	0.13632100
S	-2.79525000	5.19949900	0.11092100
S	7.22816300	1.25579500	-0.37912000
S	-4.59974800	-2.21824700	1.46685200
C	-3.86870700	6.15206400	-1.00251000
H	-3.63068400	7.21001000	-0.86904200
H	-3.68843700	5.87717600	-2.04655700
H	-4.92381900	5.99193400	-0.75851600
C	8.12221400	2.65565500	0.35611600
H	8.89947300	2.96048400	-0.34860900
H	7.44851200	3.50106800	0.52809700
H	8.59345500	2.36470700	1.30048000
C	-5.21778500	-3.41825200	2.68301900
H	-4.38740800	-3.92646500	3.18357900
H	-5.79629200	-2.86818900	3.42908800
H	-5.86723100	-4.15996600	2.20685900

L1-Ru-S1'

E = -4035.381491

DG = -4034.492357

0 1

C	-2.08370100	-0.53914500	2.37217700
C	-1.24644500	-1.23356100	3.27252600
C	-1.79710100	-1.85945100	4.40574200
C	-3.15815200	-1.78026800	4.59401500
C	-3.99703800	-1.08257000	3.68552200
C	-3.47093600	-0.46210200	2.56779200
C	0.04354600	-1.11114800	2.70943700
H	-1.16474500	-2.39480500	5.10980000
H	-3.61873800	-2.26108300	5.45596500
H	-4.11532000	0.06234000	1.86434600
H	2.64070500	0.14168100	3.51273900
N	-0.00826400	-0.40530300	1.58668400
R	1.49922600	-0.06478400	-0.00255400
N	0.37522100	1.77804500	-0.30849000
C	0.78178300	3.03065000	-0.48191900
C	-1.44831500	3.02793400	-0.53753700
C	-0.33042900	3.88546800	-0.64009000
H	1.83634700	3.27584300	-0.49404200
C	-2.76015500	3.51586900	-0.64254500
C	-0.51624800	5.26340100	-0.85538700
C	-2.92591800	4.87085000	-0.86024000
H	-3.61967900	2.85359600	-0.56084300
C	-1.80392100	5.73601400	-0.95933200
H	0.33610600	5.93312900	-0.94028100
H	-1.98481400	6.79737100	-1.12392900
N	-0.12040300	-1.06579700	-1.12153100
C	-0.12133100	-2.20737900	-1.79969700
C	-2.23891700	-1.53614800	-1.59923600
C	-1.44258300	-2.56692100	-2.14661300
H	-2.13371300	-1.68737400	-6.21113300
H	-3.74911000	-2.42006900	-6.06061900
S	-2.02970600	-4.10647900	-6.20564500
S	6.15283700	0.67775900	-4.77713400
S	-2.56186700	3.14426400	-6.21823000
C	6.83335900	0.21107900	-6.39498200
H	7.29735300	1.10103600	-6.82681200
H	7.59351400	-0.56922900	-6.28728800
H	6.04100600	-0.13681700	-7.06530700
C	-7.99077200	-2.34396400	-3.99281200
H	-1.97941800	-4.91504900	-8.44941600
H	-3.41548700	-3.89517000	-8.19218800
H	-1.80852100	-3.14356200	-8.42694500
C	-7.94052800	-2.29573800	-3.65545200
H	-1.35505700	-3.24980500	-8.32628000
H	-3.12277000	-3.25862400	-8.53412200
H	-2.28872500	-4.74669700	-8.02618100
C	1.57223100	1.73407200	3.84583200
C	2.53209800	2.21571200	2.95339900
C	1.55306800	2.23747900	5.15200000
C	3.45907100	3.17191200	3.36003000
H	2.52944600	1.85015500	1.92745600
C	2.47607500	3.19383000	5.55808300
H	0.79730600	1.87346000	5.84816500
C	3.43397500	3.66280500	4.66170000
H	4.19766000	3.54107500	2.65201300
H	2.44586300	3.57728800	6.57541100
H	4.15525800	4.41326400	4.97666500
C	-1.45917500	2.36232800	3.51983600
C	-2.66958400	2.45295700	4.22055100
C	-0.80665300	3.55396700	3.17209800
C	-3.22098000	3.68859700	4.53913800

H	0.8047020	-2.7326630	-2.0029910
C	-3.6394370	-1.5635410	-1.6861760
C	-2.0491220	-3.6401220	-2.8246010
C	-4.2208370	-2.6350670	-2.3380190
H	-4.2508430	-0.7788290	-1.2439130
C	-3.4219610	-3.6576340	-2.9152300
H	-1.4484390	-4.4374250	-3.2556290
H	-3.9248230	-4.4750400	-3.4303310
C	3.44799900	0.54889200	0.73893500
C	3.28028700	-0.8577710	1.03370000
C	3.06139100	-1.5632970	-0.2014070
C	3.41948500	0.69587200	-0.7025330
C	3.16589100	-0.5919920	-1.2831190
N	-1.4073810	-0.6313250	-1.0124120
N	-0.9853710	1.76259200	-0.3405680
N	-1.3038560	-0.0331240	1.37715900
B	-1.7487960	0.48172300	-0.0071930
H	-2.9317930	0.69654000	-0.0112340
C	-4.3019510	5.45249800	-0.9530850
H	-4.3416720	6.26283600	-1.6924590
H	-5.0392910	4.69042200	-1.2330950
C	-5.4757030	-1.0691820	3.91699100
H	-5.7121130	-1.0871980	4.98844100
H	-5.9417420	-0.1812110	3.47262400
C	-5.7094810	-2.7106290	-2.4738810
H	4.53010900	-3.1784820	1.54304700
C	3.48665200	-1.3610330	4.78924200
H	0.98451500	-1.5056470	3.07112900
C	4.16837100	-2.5724040	4.86239800
H	5.08507200	-4.1605070	3.73167100
H	3.19782900	-0.8399370	5.69896900
H	4.41515500	-3.0046000	5.82922800
C	2.81158700	-3.0123230	-0.3544680
C	1.83361900	-3.6521950	0.42055100
C	3.53363400	-3.7766940	-1.2771370
C	1.58451300	-5.0096110	0.27499500
H	1.24515800	-3.0623270	1.12193200
C	3.27552600	-5.1370230	-1.4308110
H	4.30331500	-3.3030570	-1.8819900
C	2.30136000	-5.7580310	-0.6572490
H	0.81600700	-5.4836450	0.88128500
H	3.84441900	-5.7118700	-2.1580960
H	2.09886500	-6.8194630	-0.7794620
C	3.31136600	-0.8821890	-2.7318330
C	2.25477800	-0.8939040	-3.6427470
C	4.60977500	-1.1067320	-3.2074020
C	2.48632000	-1.1480160	-4.9924370
H	1.24754000	-0.6834010	-3.2908020
C	4.84269700	-1.3603740	-4.5535710
H	5.44176300	-1.0785390	-2.5032140

C	3.77741100	-1.38677800	-5.45079000
H	1.65087400	-1.15119400	-5.68886900
H	5.85782200	-1.53260600	-4.90376900
H	3.95569900	-1.58424200	-6.50518900
C	3.70829600	1.92281100	-1.47179100
C	2.98418500	2.25148600	-2.62664700
C	4.73463200	2.78400100	-1.06528500
C	3.27145600	3.40515000	-3.34386200
H	2.16481900	1.61150000	-2.94311800
C	5.01859600	3.94274900	-1.78187200
H	5.31808100	2.54443900	-0.17976700
C	4.28731200	4.25949500	-2.92165600
H	2.68950500	3.64427300	-4.23091600
H	5.81885700	4.59803800	-1.44577900
H	4.50683900	5.16708600	-3.47903900

Ph_5L1-Ru-S1'

E = -5189.77363392
DG = -5188.514972

0 1

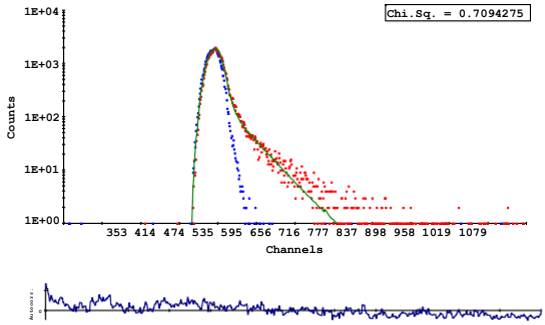
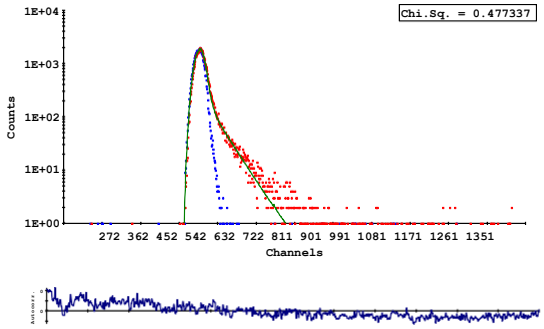
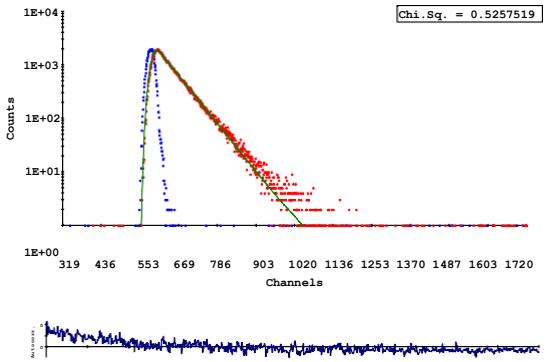
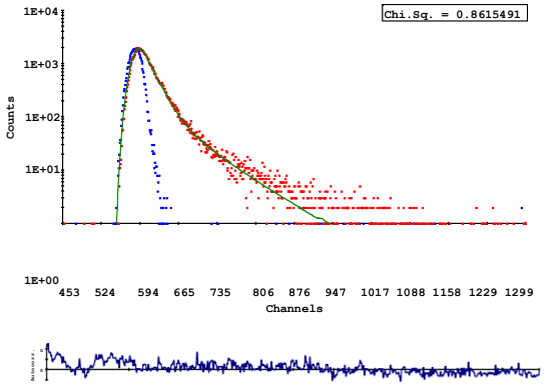
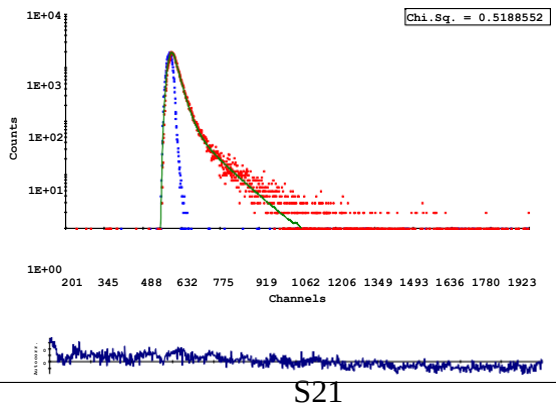
C	1.30463100	2.02413600	3.23314100
C	0.98619500	3.22339700	2.55897200
C	1.28831900	4.46506600	3.14770900
C	1.89773900	4.46695900	4.38100300
C	2.21538900	3.25919800	5.05759000
C	1.92986900	2.03165800	4.48998300
C	0.39696200	2.79503700	1.34912200
H	1.04567100	5.39598600	2.64104300
H	2.14898100	5.40988500	4.86478900
H	2.18029100	1.10560200	5.00399900
H	-2.22928900	3.23640900	0.00873100
H	4.01873800	-1.44867400	3.54275900
C	6.19844300	-1.59392000	0.89754000
H	5.74267700	-1.26848600	-1.17726100
H	7.25599000	-1.78664500	0.72223100
C	-2.07063000	0.64662700	-1.32777600
C	-1.01261300	1.52541300	-1.77960400
C	0.03372900	0.72240500	-2.35580200
C	-1.71174600	-0.70203200	-1.71842400
C	-0.41403600	-0.66531200	-2.33068900
N	2.19478400	-0.85889400	1.42255500
N	-0.04609200	-1.33019000	2.46724500
N	0.90072600	0.98375600	2.45297000
B	1.24403000	-0.51495400	2.58151500
H	1.77844800	-0.73074500	3.63722200
C	-0.66695200	-3.93671300	6.68799500
H	-0.99367200	-4.97366500	6.83962300
H	0.42014700	-3.89150900	6.82555600
C	2.90653100	3.32959000	6.38339800
H	2.53351300	4.17121800	6.98124800
H	2.76413800	2.40581000	6.95709500
C	6.67801700	-1.96624400	3.33684100
H	6.29933600	-1.62649600	4.30839500
H	7.65733200	-1.50154100	3.16388800
S	6.92306500	-3.78574500	3.40799100
S	-1.46200400	-2.90014400	7.97994100
S	4.70718800	3.58023900	6.11762200
C	-0.85910000	-3.79338500	9.44174900
H	-1.25287700	-3.28464300	10.32485500
H	-1.21493100	-4.82859600	9.43971200
H	0.23467800	-3.78009700	9.48252700
C	8.16865800	-3.83195000	4.72884100
H	8.42939900	-4.87907200	4.90008000
H	9.06962900	-3.28500000	4.43313500
H	7.76917000	-3.40925200	5.65614100
C	5.21494700	3.71069900	7.85646600

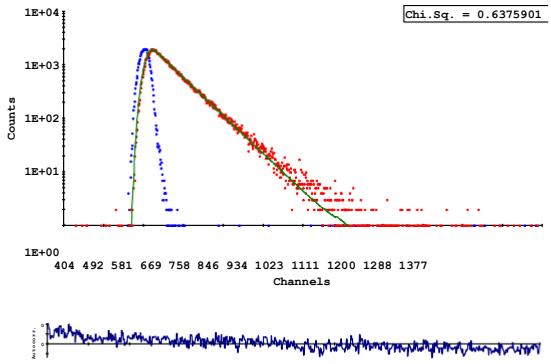
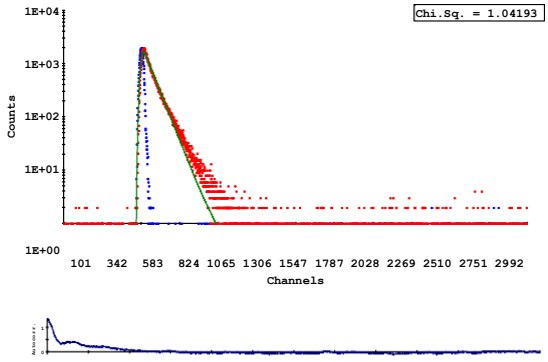
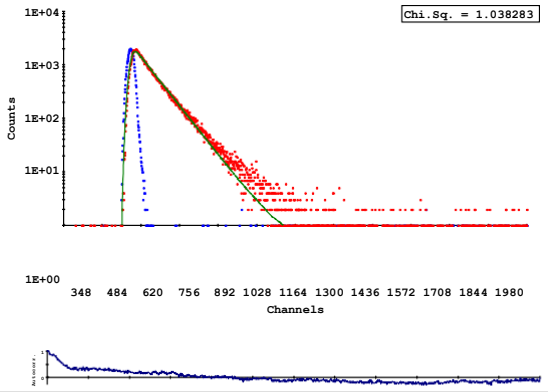
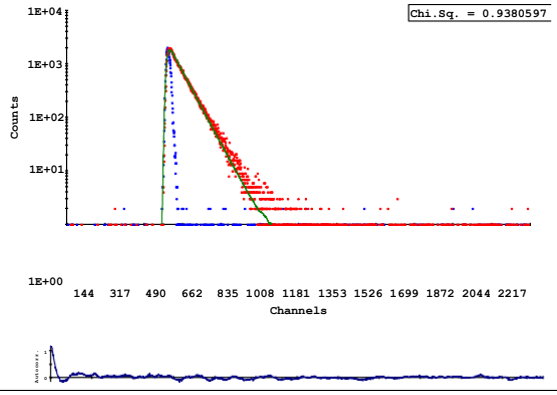
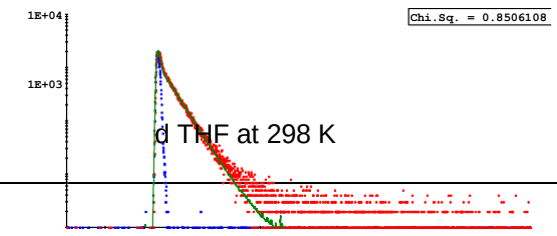
N	0.35215600	1.46983700	1.30285000
R	-0.24238600	0.07233600	-0.30025100
N	-0.86105800	-1.16517800	1.38945200
C	-1.97767800	-1.85213600	1.60290100
C	-0.65672100	-2.13784600	3.37753300
C	-1.91536000	-2.50588800	2.85193900
H	-2.77366500	-1.86191900	0.86927000
C	-0.22234600	-2.59678400	4.63090200
C	-2.76472500	-3.35592500	3.58360500
C	-1.06578800	-3.43564800	5.33514700
H	0.74630600	-2.30965800	5.03524200
C	-2.33264800	-3.80539500	4.80971000
H	-3.73253700	-3.65174800	3.18584600
H	-2.96433100	-4.46424600	5.40400000
N	1.80692700	-0.60758500	0.14095300
C	2.86761600	-0.72851400	-0.64822100
C	3.52991300	-1.12652900	1.44448300
C	4.00578600	-1.06764500	0.11545500
H	2.78609900	-0.56876800	-1.71693700
C	4.38661600	-1.41213700	2.51908000
C	5.36409000	-1.31092600	-0.15880000
C	5.72072500	-1.63662100	2.23448700
H	4.97943400	2.79107300	8.40145600
H	6.29639500	3.86552600	7.87335800
H	4.72667500	4.56167000	8.34198100
C	-3.37712100	1.10548000	-0.80317800
C	-3.71504000	1.00414500	0.54767600
C	-4.29608000	1.70126600	-1.67464300
C	-4.93745000	1.47472600	1.01167000
H	-2.99153600	0.57992400	1.24253800
C	-5.51548900	2.17294200	-1.21098300
H	-4.04411000	1.79129900	-2.73129700
C	-5.86092200	2.06689800	0.14276700
H	-5.16520300	1.41181400	2.07429900
C	-1.12166200	2.99728900	-1.83093700
C	-0.62358600	3.69119800	-2.94232900
C	-1.81774400	3.73807900	-0.86435300
C	-0.78872900	5.06260900	-3.06784900
H	-0.11883600	3.14411400	-3.73494700
C	-1.97563500	5.11072700	-0.98790400
H	0.01687500	3.38959100	0.52862300
C	-1.46209600	5.80416600	-2.09027800
H	-0.41463400	5.56289600	-3.95904200
H	-2.48981400	5.65759800	-0.19987500

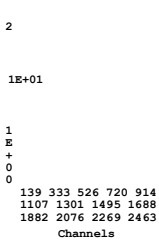
C	1.31843400	1.20772400	-2.89901500
C	2.12056400	2.09237100	-2.16375900
C	1.78412300	0.78763000	-4.14900200
C	3.34018400	2.52859100	-2.65427900
H	1.79361800	2.40417000	-1.17264000
C	3.01322000	1.21804500	-4.63528300
H	1.17710100	0.11814200	-4.75363200
C	3.81799100	2.09246300	-3.89834700
H	3.95607000	3.18576000	-2.04301300
H	3.34020400	0.88792800	-5.61964200
C	0.18852700	-1.81139500	-3.05533800
C	1.07885100	-2.72024100	-2.48279600
C	-0.20484000	-2.02115400	-4.38282500
C	1.58075300	-3.78622200	-3.21948700
H	1.36021200	-2.60310100	-1.43883500
C	0.29748800	-3.08387200	-5.11988000
H	-0.91122800	-1.32873100	-4.84133100
C	1.20759000	-3.98525600	-4.55284200
H	2.25214300	-4.49544000	-2.73882300
H	-0.00463800	-3.20574200	-6.15842500
C	-2.56384700	-1.90250000	-1.61996800
C	-2.03955800	-3.15820600	-1.28213000
C	-3.93691100	-1.81928900	-1.88084800
C	-2.85424400	-4.27591500	-1.19856600
H	-0.98511800	-3.24987600	-1.03667900
C	-4.75239000	-2.93996800	-1.79387000
H	-4.37416600	-0.86621500	-2.16745100
C	-4.23018500	-4.19078000	-1.44784900
H	-2.42065800	-5.22737400	-0.89640300
H	-5.81123800	-2.84537800	-2.02745900
C	5.12970600	2.53586000	-4.41078100
C	-7.23295700	-6.39133900	-0.78881400
H	-6.79272400	-4.30034200	-0.56673400
C	-6.75051200	-7.64402000	-1.15814000
H	-5.05980200	-8.73966200	-1.92066900
H	-8.24972500	-6.28616300	-0.41711800
H	-7.38989400	-8.52049300	-1.08442300
C	-1.63215500	7.26452100	-2.22208100
C	-2.79371900	7.89724700	-1.76151400
C	-0.63525000	8.05167300	-2.81220300
C	-2.95312400	9.27221300	-1.88679000
H	-3.59141900	7.29988000	-1.32335200
C	-0.79449100	9.42658900	-2.93808500
H	0.28592200	7.58215500	-3.15294100
C	-1.95421200	10.04274800	-2.47576000
H	-3.86622200	9.74316000	-1.52985900
H	-0.00478800	10.02087300	-3.39210700
H	-2.07893500	11.11850700	-2.57383800
H	-6.22272600	2.61146900	-1.91265500
C	-7.15922300	2.56745800	0.63800900
C	-7.84532500	1.89313900	1.65573300
C	-7.73593700	3.72544500	0.10146700
C	-9.06852900	2.36065100	2.12156100
H	-7.42526600	0.97742000	2.06830600
C	-8.95936600	4.19319500	0.56669600
H	-7.20579300	4.27842500	-0.67222500
C	-9.63107400	3.51257600	1.57856100
H	-9.58883400	1.81745900	2.90721300
H	-9.38629900	5.09903100	0.14211000
H	-10.58823800	3.87845800	1.94249600

		0	
C	5.93281200	1.6717070	-5.16580600
		0	
C	5.60351700	3.8286230	-4.15400300
		0	
C	7.16761900	2.0866490	-5.64994600
		0	
H	5.59494300	0.6538790	-5.35306700
		0	
C	6.83894900	4.2438210	-4.63695400
		0	
H	4.98424800	4.5234260	-3.58924000
		0	
C	7.62622400	3.3748170	-5.38751500
		0	
H	7.77902300	1.3970060	-6.22755700
		0	
H	7.18490000	5.2545260	-4.43241100
		0	
H	8.59277400	3.6995210	-5.76544100
		0	
C	1.75088500	-5.11534300	-5.33336900
C	3.06855600	-5.54887600	-5.14086600
C	0.96388200	-5.78069200	-6.28165900
C	3.58243100	-6.61398000	-5.87093400
H	3.70414600	-5.02815100	-4.42672800
C	1.47757700	-6.84542000	-7.01276200
H	-0.07093100	-5.47577300	-6.42793400
C	2.78893300	-7.26694800	-6.81024100
H	4.61072500	-6.93023600	-5.71097600
H	0.84702200	-7.35424600	-7.73837500
H	3.19052500	-8.10038400	-7.38171700
C	-5.09868700	-5.38041300	-1.34783600
C	-4.62643100	-6.64642600	-1.71622400
C	-6.41520600	-5.27143800	-0.88239800
C	-5.44361200	-7.76674400	-1.62215900
H	-3.61455300	-6.74825100	-2.10452800

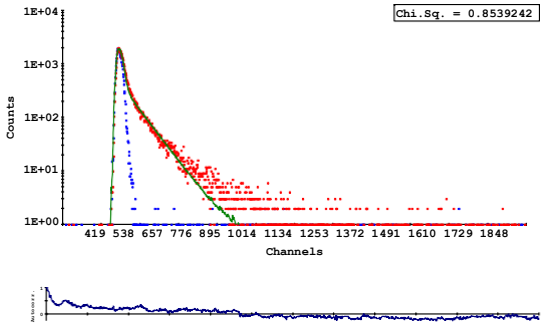
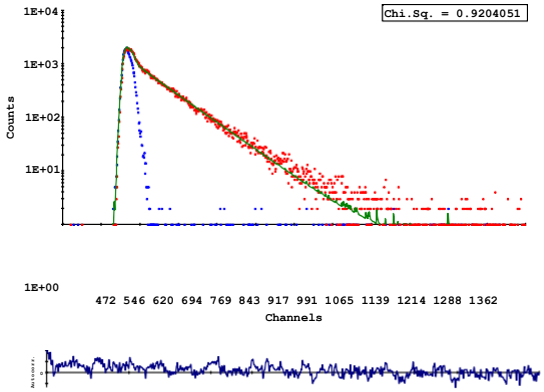
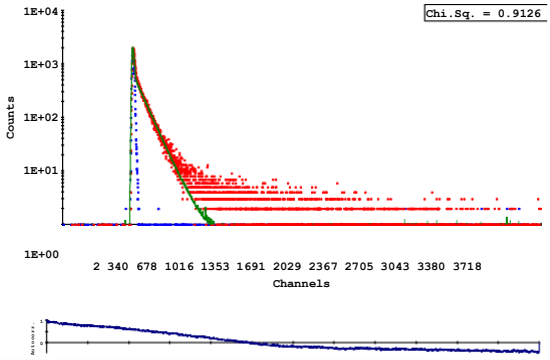
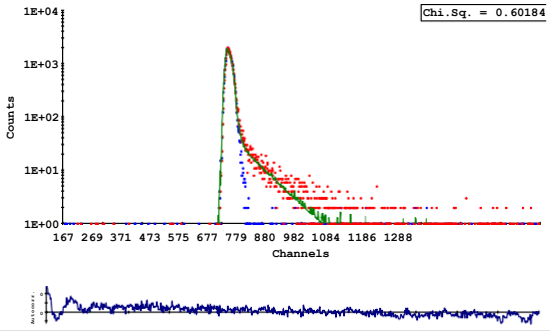
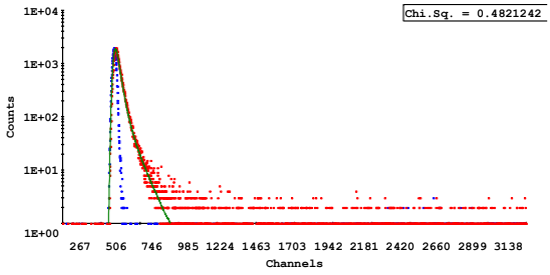
Table S1. Experimental conditions and fitting results for the ns lifetime measurements of all the compounds.

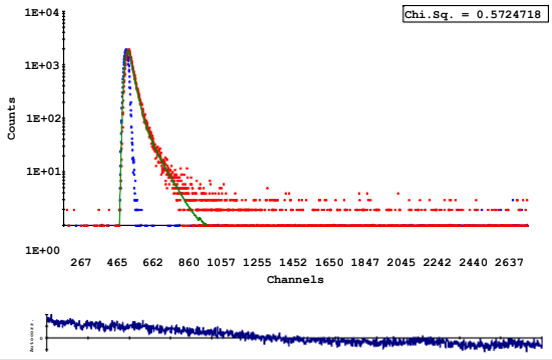
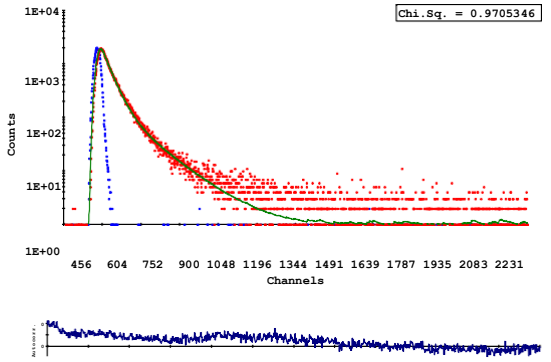
Compounds	Conditions	Decays (top) and residual distributions (bottom)	Model	τ (weighted amplitudes)
L1H	Air-equibirated THF at 298K		2	τ_1 = 0.2 ns (not considered) τ_2 = 1.9 ns
	Deoxygenated THF at 298 K		2	τ_1 = 0.2 ns (not considered) τ_2 = 1.9 ns
	THF at 77 K		1	3.1 ns
L2H	Air-equibirated THF at 298K		2	τ_1 = 1.0 ns (85%) τ_2 = 3.5 ns (15%)
	Deoxygenated THF at 298 K		2	τ_1 = 1.2 ns (86%) τ_2 = 5.2 ns (14%)

L2H K	THF at 77		1	3.0 ns
L3Br K	THF at 77		1	3.2 ns
L3-Ru-$(CO)_2$Br	THF at 77 K		1	3.5 ns
S1 K	Air-equibirated THF at 298K		1	3.0 ns
	Deoxygenated THF at 298 K			



τ_1 = 0.1 ns (not considered)
τ_2 = 4.0 ns

S1K K	THF at 77		2	τ_1 = 0.2 ns (not considered) τ_2 = 3.0 ns
	Air-equibirated THF at 298K		2	τ_1 = 0.1 ns (not considered) $_2$ = 3.5 ns
S1 TI	Deoxygenated THF at 298 K		2	τ_1 = 0.1 ns (not considered) $_2$ = 4.9 ns
	THF at 77 K		2	τ_1 = 0.1 ns (not considered) τ_2 = 3.3 ns
Ar_5L1-Ru-S1 equibirated	Air-THF at		2	τ_1 = 1.1 ns (82%) τ_2 = 3.2 ns (18%)

Ar_5L1-Ru-S1	Deoxygenated THF at 298 K		2	τ_1 = 1.1 ns (82%) τ_2 = 3.6 ns (18%)
	THF at 77 K		2	τ_1 = 1.8 ns (79%) τ_2 = 6.2 ns (21%)

Red dots indicate the luminescence decays of the samples; blue dots represent the pulse profile of the excitation source; the green lines indicate the fittings.

Fitting function model 1: $y(t) = y_0 + A * \exp(-t/\tau)$

Fitting function model 2: $y(t) = y_0 + A_0 * \exp(-t/\tau_0) + A_1 * \exp(-t/\tau_1)$

For model 2, the weighted amplitudes are expressed as: $A_3 = A_3\tau_3/\Sigma_4 A_4\tau_4$