Supplementary Material (ESI) for New Journal of Chemistry

Large Photoactive Supramolecular Ensembles Prepared from C_{60}-Pyridine Substrates and Multi-Zn(II)-Porphyrin Receptors

Ali Trabolsi,[a] Maxence Urbani,[b,c] Juan Luis Delgado,[c] Fettah Ajamaa,[c] Mourad Elhabiri,[a] Nathalie Solladié,*[b] Jean-François Nierengarten,*[c] and Anne-Marie Albrecht-Gary*[a]

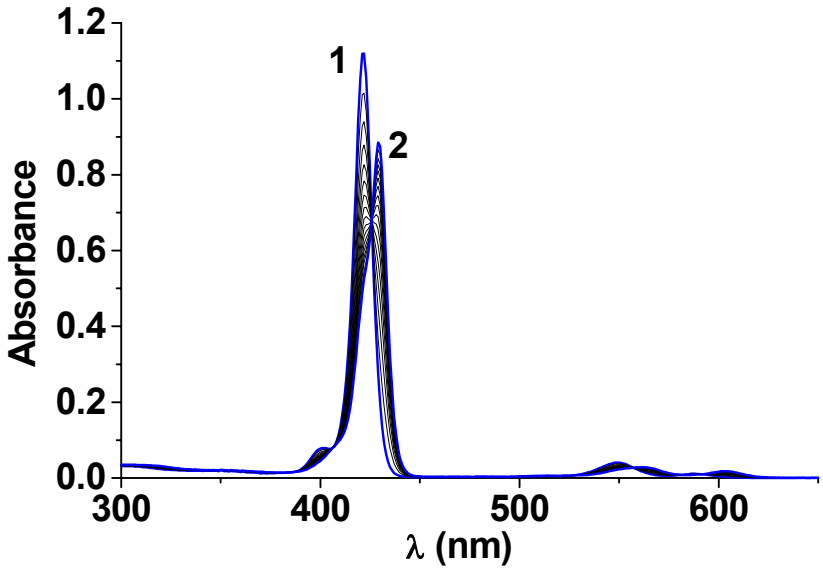
[a] *Laboratoire de Physico-Chimie Bioinorganique, ULP-CNRS (UMR 7177), Institut de Chimie, ECPM,, 25 rue Becquerel, 67200 Strasbourg, France. Fax: 33 (0) 3 90 24 26 39; Tel: 33 (0) 3 90 24 26 38; E-mail: amalbre@chimie.u-strasbg.fr*

[b] *Groupe de Synthèse de Systèmes Porphyriniques, Laboratoire de Chimie de Coordination du CNRS, 205 route de Narbonne, 31077 Toulouse Cedex 4, France; Fax: 33 (0) 5 61 55 30 03; Tel: 33 (0) 5 61 33 32 02; E-mail: nathalie.solladie@lcc-toulouse.fr*

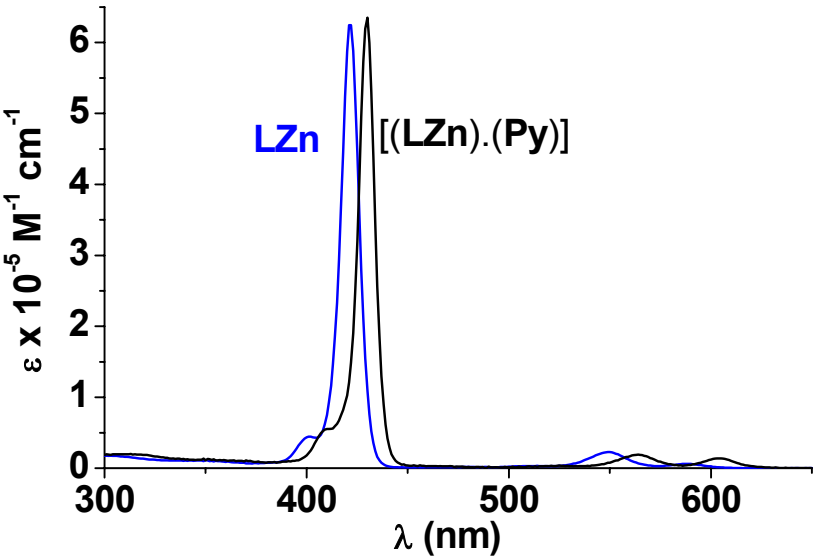
[c] *Groupe de Chimie des Fullerènes et des Systèmes Conjugués, Laboratoire de Chimie de Coordination du CNRS, 205 route de Narbonne, 31077 Toulouse Cedex 4, France; Fax: 33 (0) 5 61 55 30 03; Tel: 33 (0) 5 61 33 31 00; E-mail: jfnierengarten@lcc-toulouse.fr*

Supporting Information

LZn + Py

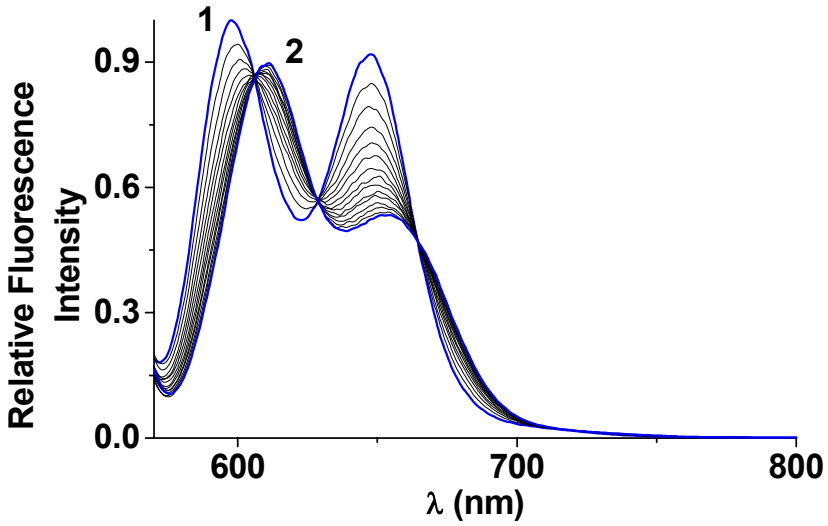


(a)

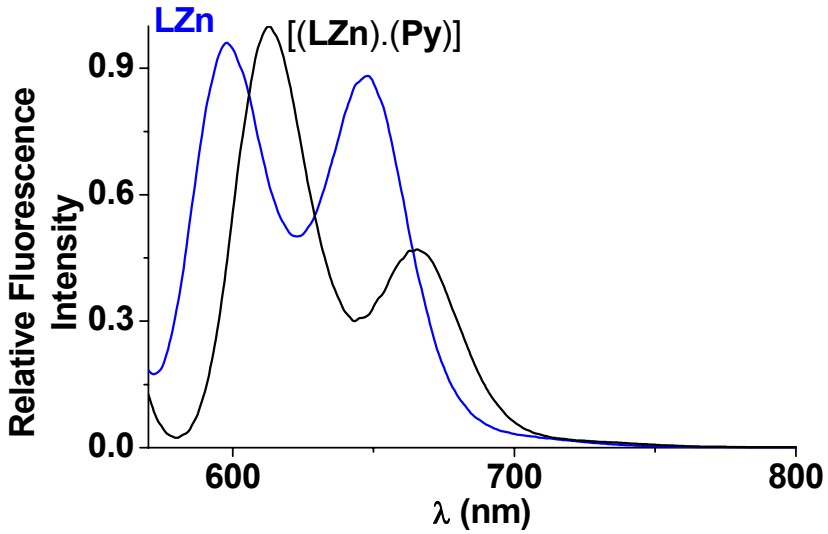


(b)

a) UV-visible absorption spectrophotometric titration of **LZn** with **Py**. l = 1 cm; 1) $[\mathbf{LZn}]_{tot}$ = 1.79×10^{-6} M; 2) $[(\mathbf{Py})]_{tot}/[\mathbf{LZn}]_{tot}$ = 363. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Absorption electronic spectra of **LZn** and [(**LZn**).(**Py**)]. Solvent: CH_2Cl_2; T = 25.0(2) °C.



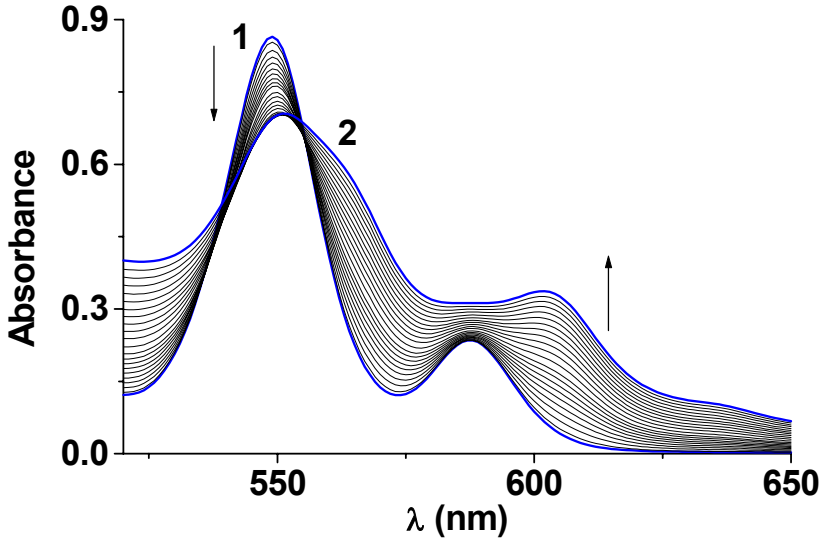
(a)



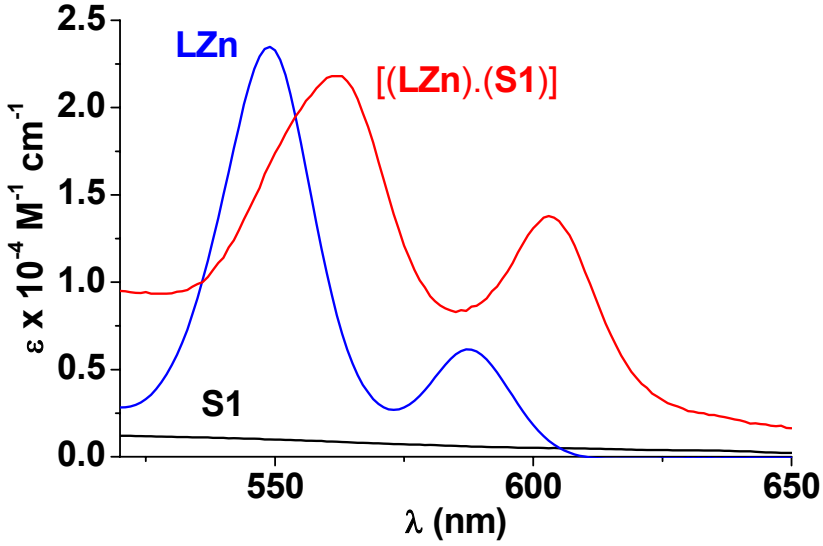
(b)

a) Luminescence spectrophotometric titration of **LZn** with **Py**. λ_{exc} = 557 nm; emission and excitation slit widths 15 nm and 20 nm respectively; 1) $[\mathbf{LZn}]_{tot}$ = 1.79 × 10^{-6} M; 2) $[(\mathbf{Py})]_{tot}/[\mathbf{LZn}]_{tot}$ = 314. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Relative recalculated fluorescence spectra of **LZn** and [(**LZn**).(**Py**)]. Solvent: CH_2Cl_2; T = 25.0(2) °C.

LZn + S1

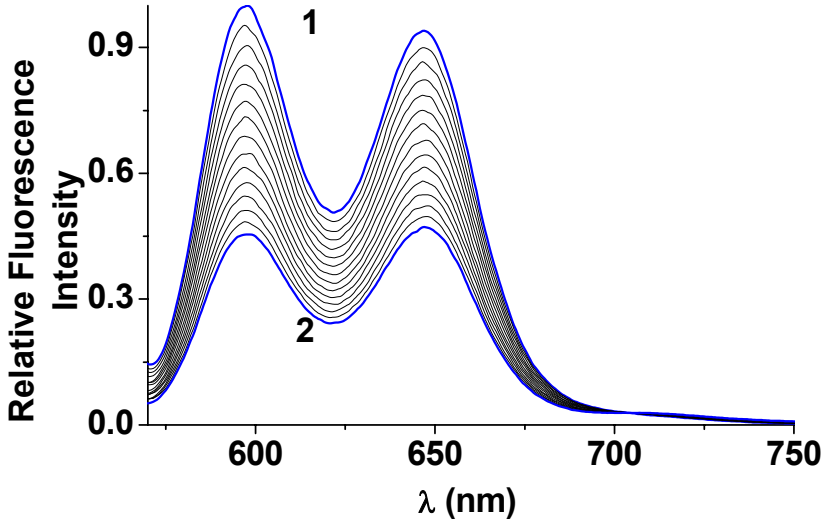


(a)

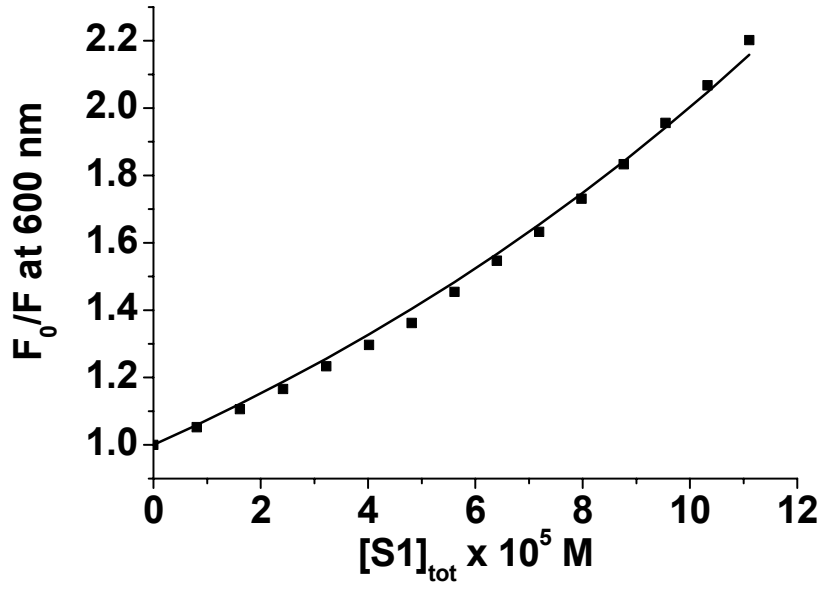


(b)

a) UV-visible absorption spectrophotometric titration of **LZn** with **S1**. l = 0.2 cm; 1) $[\mathbf{LZn}]_{tot}$ = 1.85 × 10^{-4} M; 2) $[\mathbf{S1}]_{tot}/[\mathbf{LZn}]_{tot}$ = 6.8. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Absorption electronic spectra of **S1**, **LZn** and [(**LZn**).(**S1**)] complex. Solvent: CH_2Cl_2; T = 25.0(2) °C.



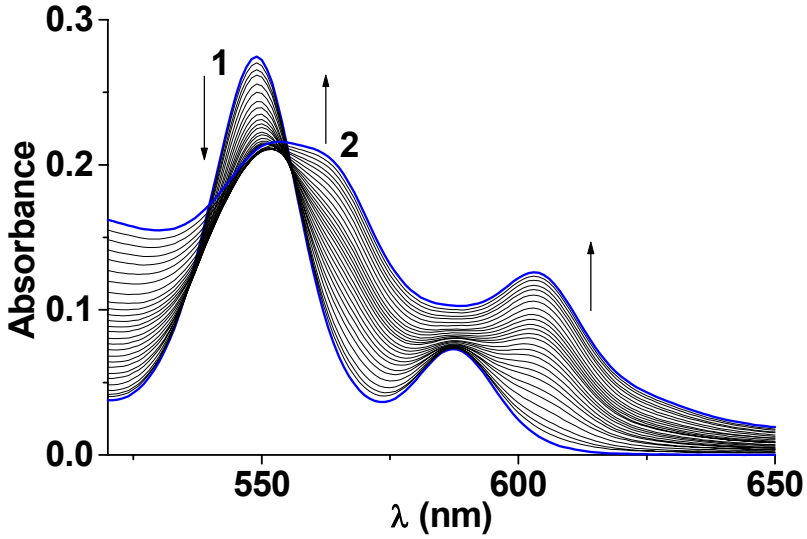
(a)



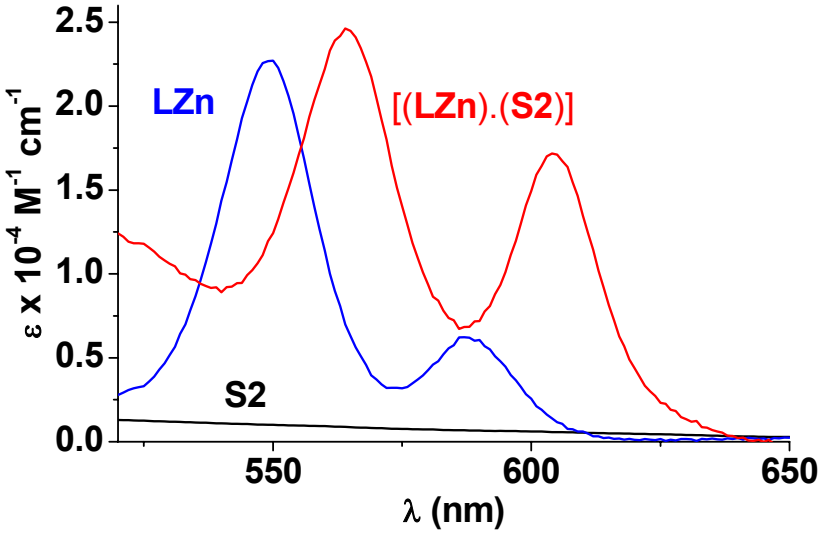
(b)

a) Luminescence spectrophotometric titration of **LZn** with **S1**. λ_{exc} = 559 nm; emission and excitation slit widths 15 nm and 20 nm respectively; 1) $[\mathbf{LZn}]_{tot} = 1.79 \times 10^{-6}$ M; 2) $[\mathbf{S1}]_{tot}/[\mathbf{LZn}]_{tot} = 63$. Solvent: CH_2Cl_2; $T = 25.0(2)$ °C.
b) Variation of F^0/F at 600 nm versus the concentration of **S1**. The trend line is the result of the non linear least-square fit of the experimental data according to $F_0/F = (1 + K_{SV}[\mathbf{S1}])\exp(K_1[\mathbf{S1}])$.

LZn + S2

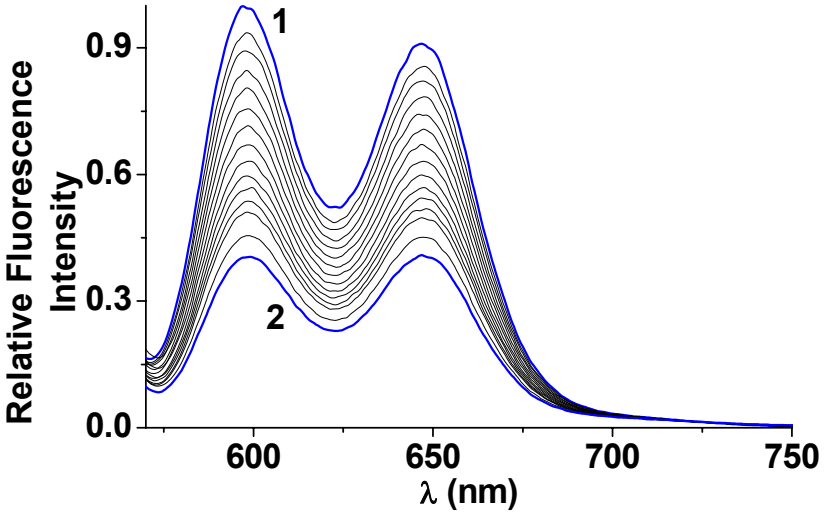


(a)

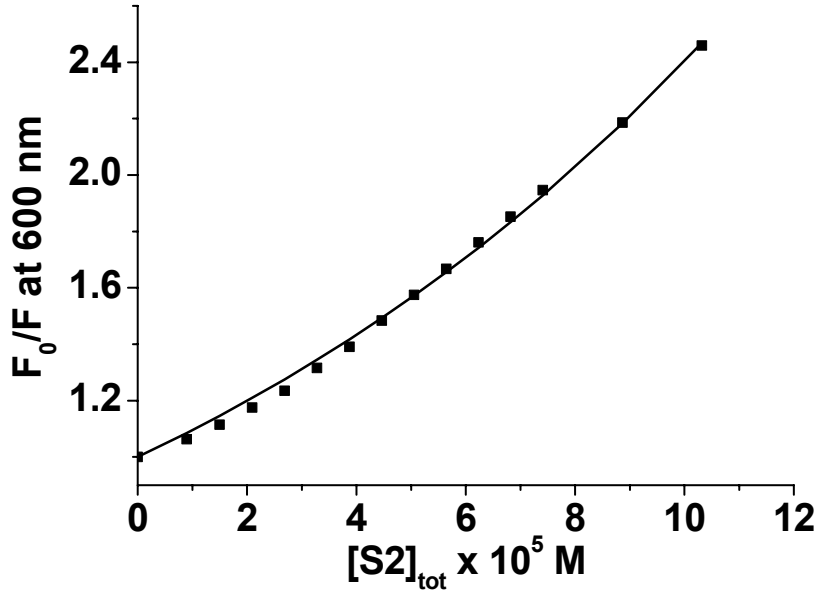


(b)

a) UV-visible absorption spectrophotometric titration of **LZn** with **S2**. l = 0.2 cm; 1) $[\mathbf{LZn}]_{tot}$ = 5.82 × 10^{-5} M; 2) $[\mathbf{S2}]_{tot}/[\mathbf{LZn}]_{tot}$ = 7.4. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Absorption electronic spectra of **S2**, **LZn** and [(**LZn**).(**S2**)]. Solvent: CH_2Cl_2; T = 25.0(2) °C.



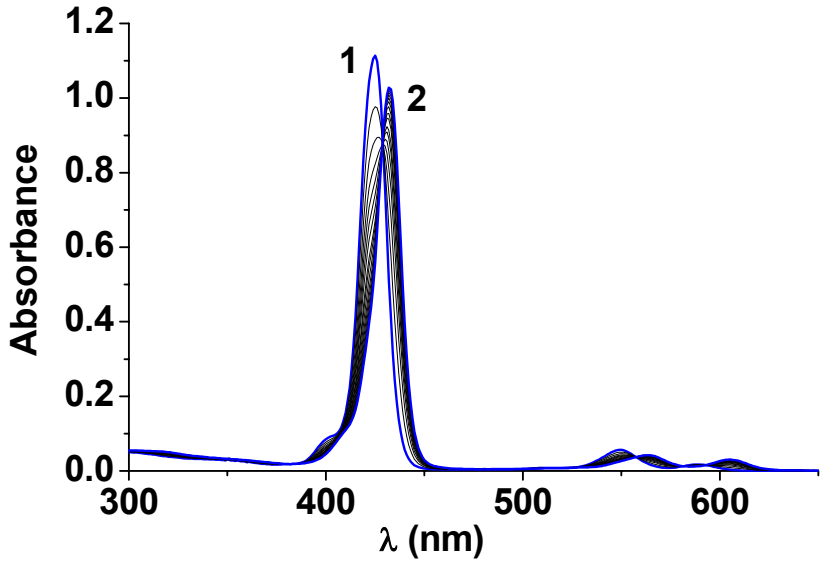
(a)



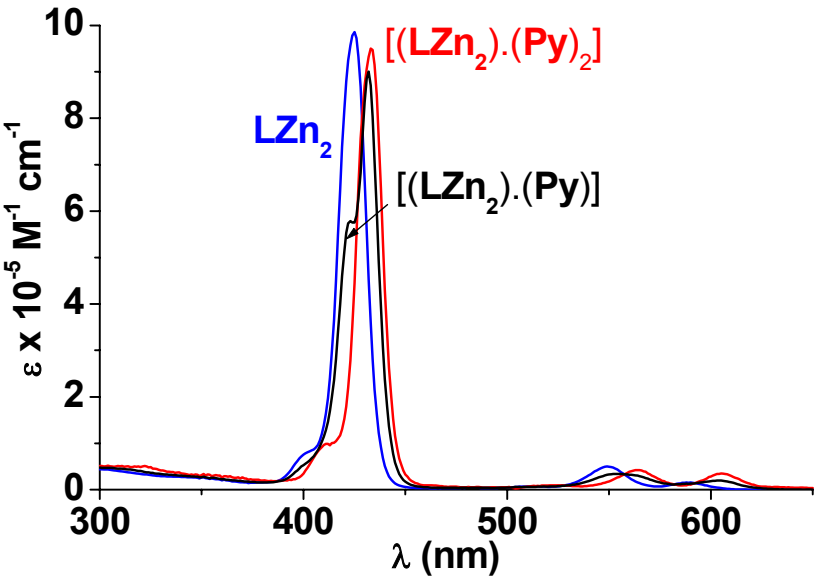
(b)

a) Luminescence spectrophotometric titration of **LZn** with **S2**. λ_{exc} = 557 nm; emission and excitation slit widths 15 nm and 20 nm respectively; 1) $[\mathbf{LZn}]_{tot}$ = 1.90 × 10^{-6} M; 2) $[\mathbf{S2}]_{tot}/[\mathbf{LZn}]_{tot}$ = 48. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Variation of F^0/F at 600 nm versus the concentration of **S2**. The trend line is the result of the non linear least-square fit of the experimental data according to F_0/F = (1 + K_{SV}[**S2**])exp(K_1[**S2**]). Solvent: CH_2Cl_2; T = 25.0(2) °C.

LZn_2 + Py

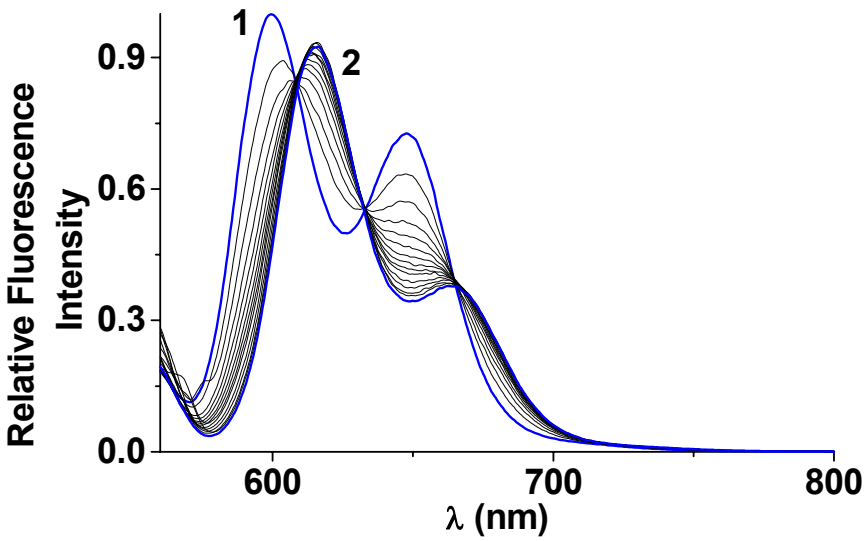


(a)

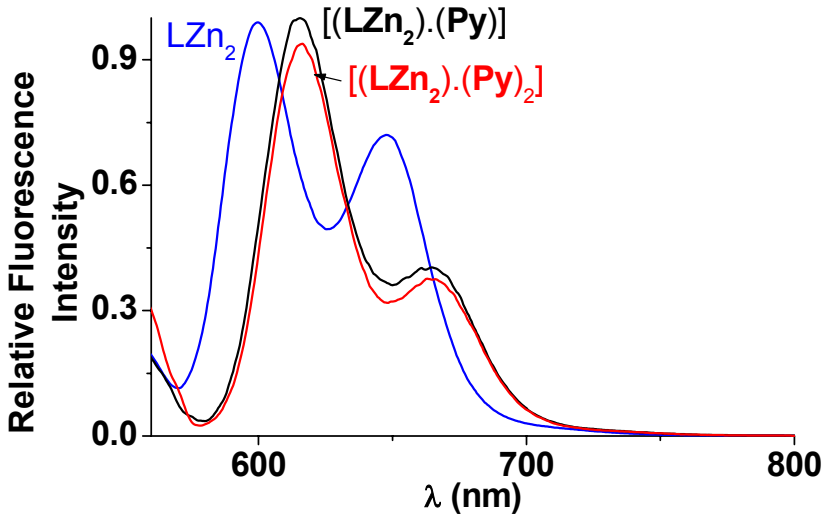


(b)

a) UV-visible absorption spectrophotometric titration of **LZn_2** with **Py**. l = 1 cm; 1) $[\mathbf{LZn_2}]_{tot}$ = 1.13 × 10^{-6} M; 2) $[(\mathbf{Py})]_{tot}/[\mathbf{LZn_2}]_{tot}$ = 863. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Absorption electronic spectra of **LZn_2**, [(**LZn_2**).(**Py**)] and [(**LZn_2**).(**Py**)$_2$]. Solvent: CH_2Cl_2; T = 25.0(2) °C.



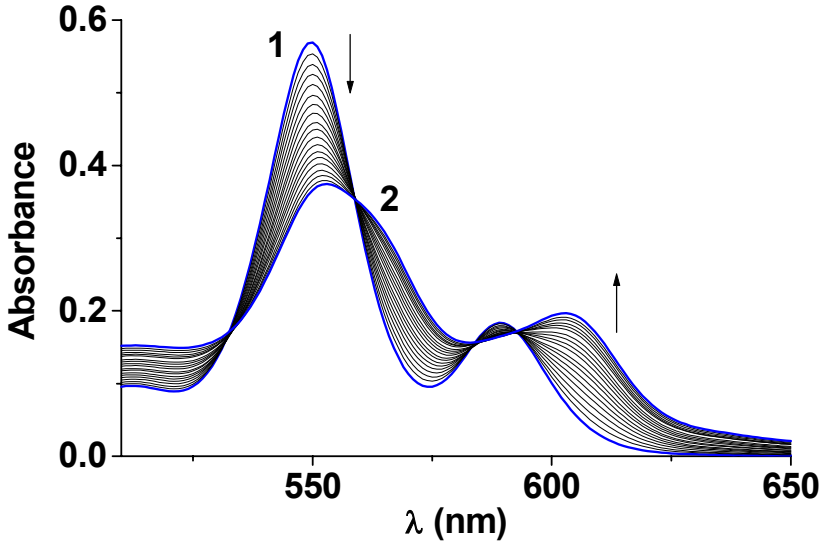
(a)



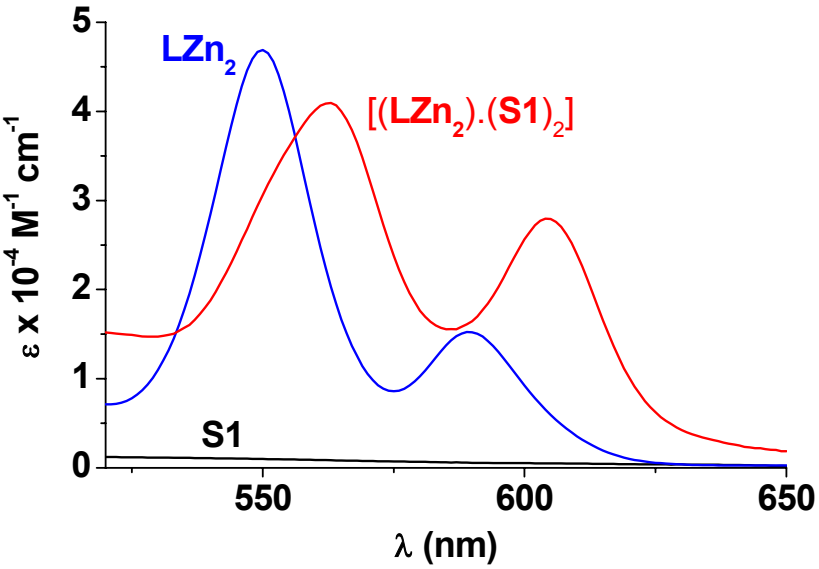
(b)

a) Luminescence spectrophotometric titration of **LZn_2** with **Py**. λ_{exc} = 557 nm; emission and excitation slit widths 15 nm and 20 nm respectively; 1) $[\mathbf{LZn_2}]_{tot}$ = 1.13 × 10^{-6} M; 2) $[(\mathbf{Py})]_{tot}/[\mathbf{LZn_2}]_{tot}$ = 531. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Relative recalculated fluorescence spectra of **LZn_2**, [(**LZn_2**).(**Py**)] and [(**LZn_2**).(**Py**)$_2$]. Solvent: CH_2Cl_2; T = 25.0(2) °C.

LZn_2 + S1

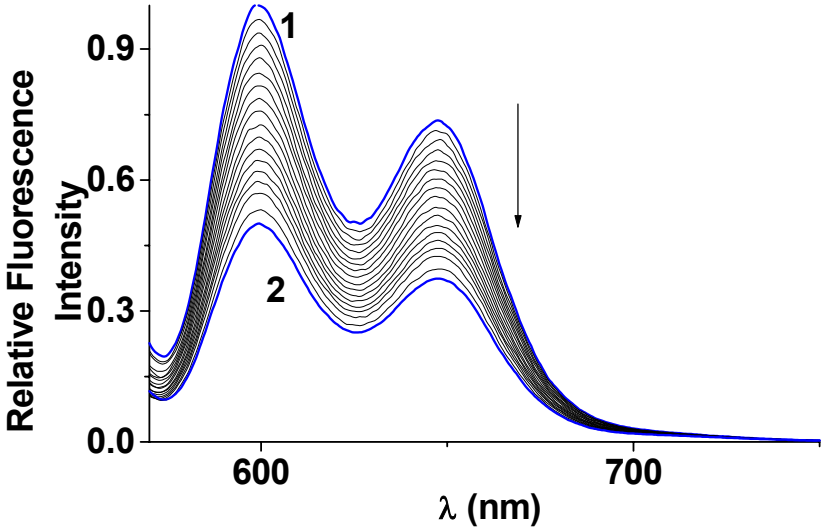


(a)

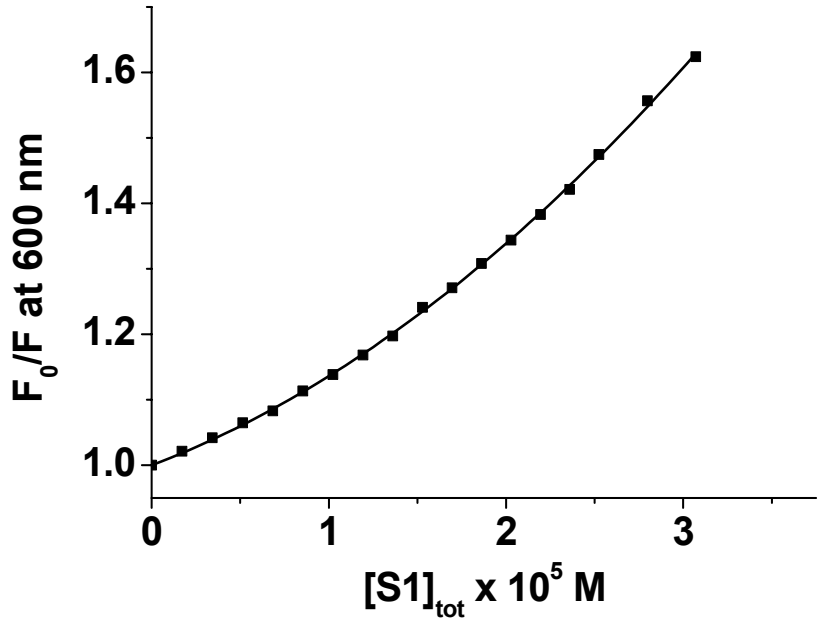


(b)

a) UV-visible absorption spectrophotometric titration of **LZn_2** with **S1**. l = 0.2 cm; 1) $[\mathbf{LZn_2}]_{tot} = 5.65 \times 10^{-5}$ M; 2) $[\mathbf{S1}]_{tot}/[\mathbf{LZn_2}]_{tot} = 5$. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Absorption electronic spectra of **S1**, **LZn_2** and $[(\mathbf{LZn_2}).(\mathbf{S1})_2]$. Solvent: CH_2Cl_2; T = 25.0(2) °C.



(a)

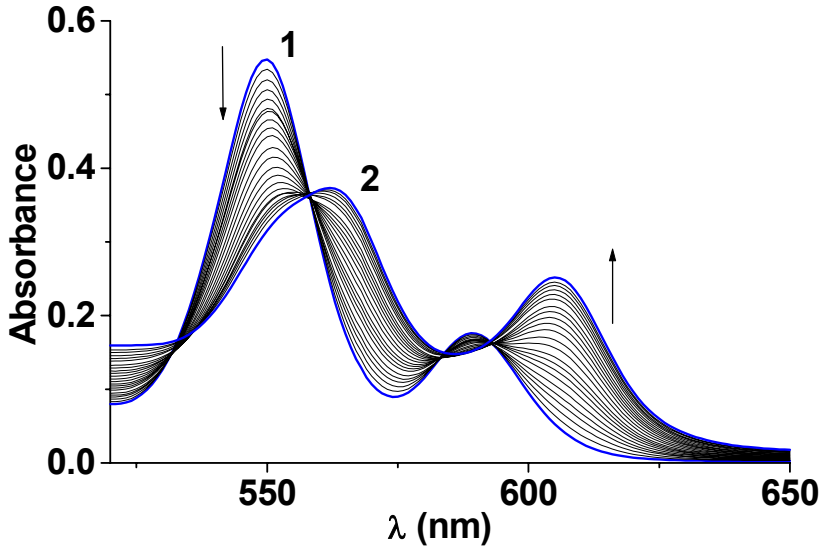


(b)

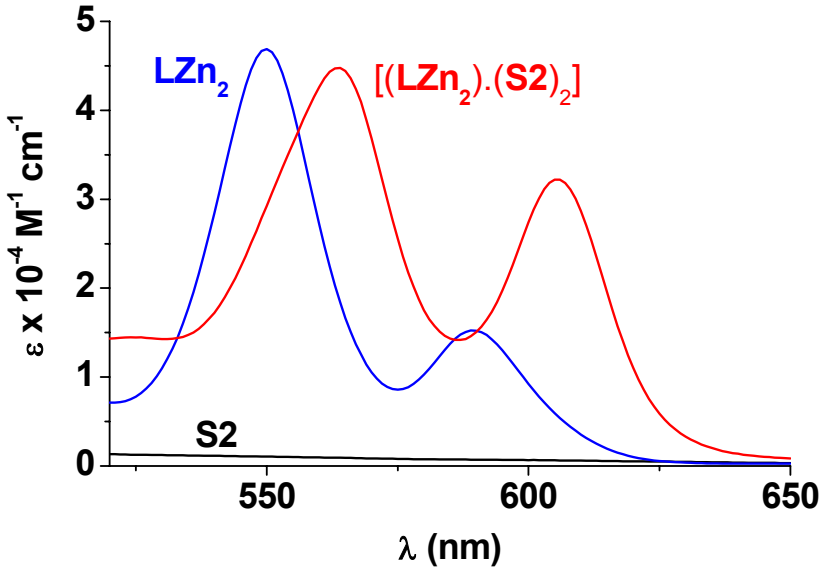
a) Luminescence spectrophotometric titration of **LZn$_2$** with **S1**. λ_{exc} = 559 nm; emission and excitation slit widths 15 nm and 20 nm respectively; 1) $[\mathbf{LZn_2}]_{tot}$ = 1.13 × 10^{-6} M; 2) $[\mathbf{S1}]_{tot}/[\mathbf{LZn^2}]_{tot}$ = 27.2. Solvent: CH_2Cl_2; T = 25.0(2) °C.

b) Variation of F^0/F at 600 nm versus the concentration of **S1**. The trend line is the result of the non linear least-square fit of the experimental data according to $(F_0/F) / (1 + K_{SV}[\mathbf{S1}]) = (1 + K_1[\mathbf{S1}] + K_1K_2[\mathbf{S1}]^2)$. The absorption spectra of fullerene have been subtracted. Solvent: CH_2Cl_2; T = 25.0(2) °C.

LZn_2 + S2

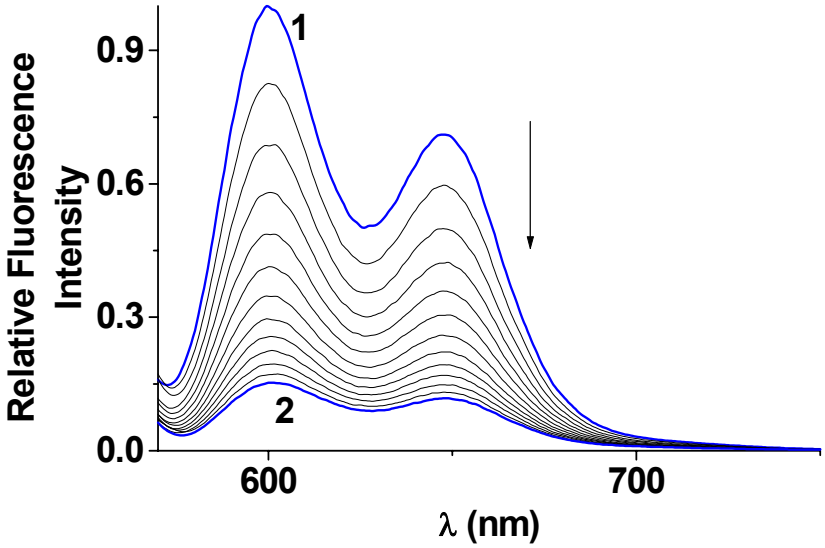


(a)

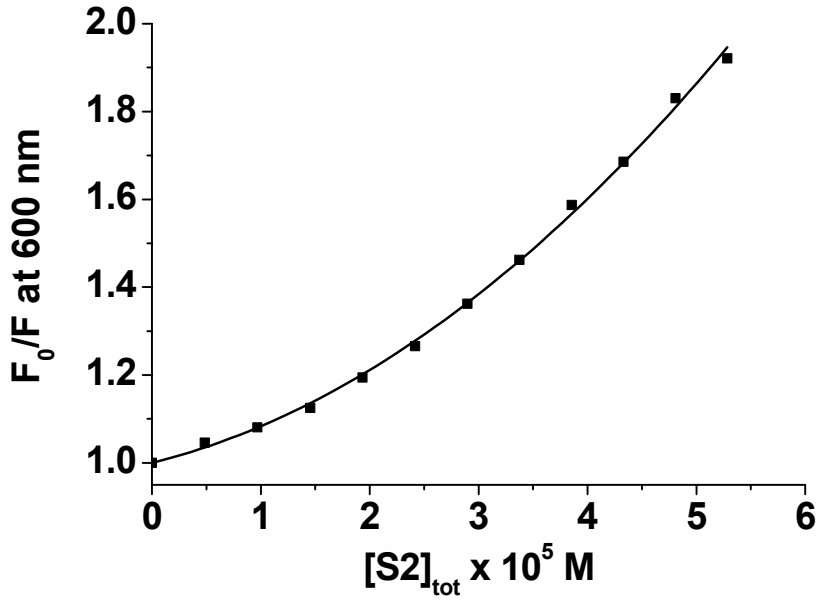


(b)

a) UV-visible absorption spectrophotometric titration of **LZn_2** with **S2**. l = 0.2 cm; 1) $[\mathbf{LZn_2}]_{tot} = 5.65 \times 10^{-5}$ M; 2) $[\mathbf{S2}]_{tot}/[\mathbf{LZn_2}]_{tot} = 5.5$. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Absorption electronic spectra of **LZn_2** and [(**LZn_2**).(**S2**)$_2$]. Solvent: CH_2Cl_2; T = 25.0(2) °C.



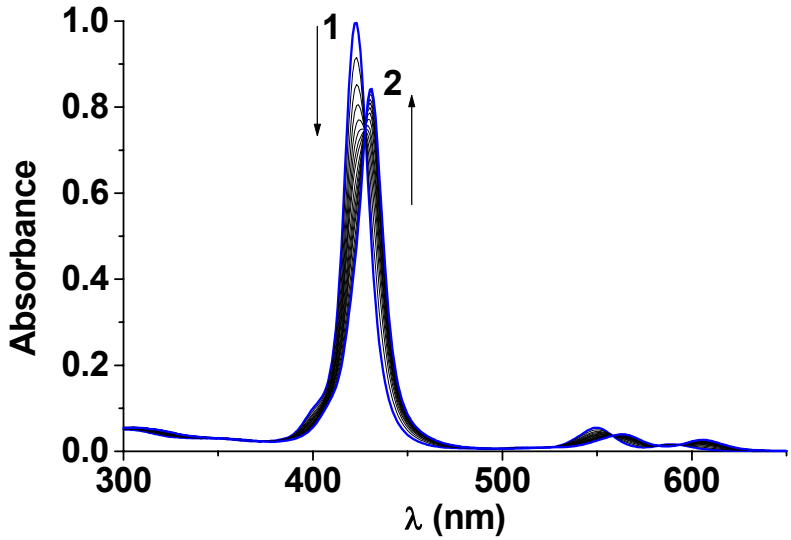
(a)



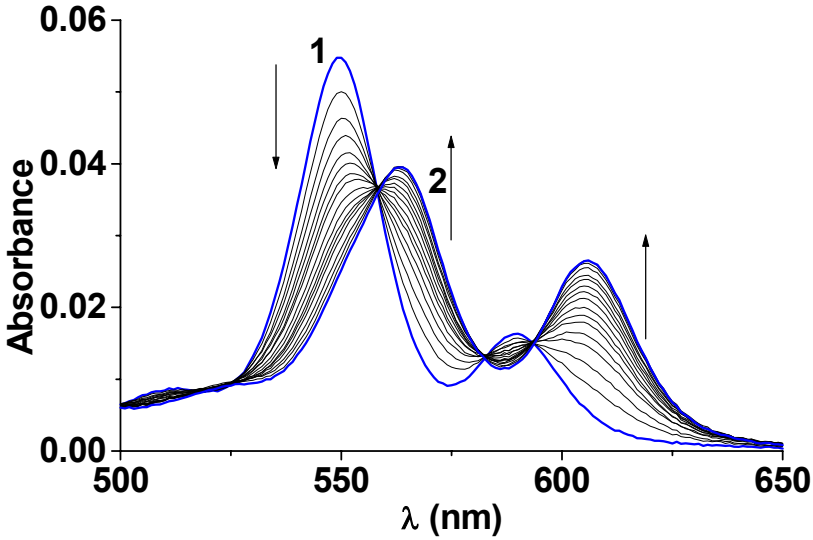
(b)

a) Luminescence spectrophotometric titration of **LZn$_2$** with **S2**. λ_{exc} = 557 nm; emission and excitation slit widths 15 nm and 20 nm respectively; 1) $[\mathbf{LZn_2}]_{tot}$ = 1.16 × 10^{-6} M; 2) $[\mathbf{S2}]_{tot}/[\mathbf{LZn_2}]_{tot}$ = 46.8. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Variation of F^0/F at 600 nm versus the concentration of **S2**. The trend line is the result of the non linear least-square fit of the experimental data according to $(F_0/F) / (1 + K_{SV}[\mathbf{S2}]) = (1 + K_1[\mathbf{S2}] + K_1K_2[\mathbf{S2}]^2)$. The absorption spectra of fullerene have been subtracted. Solvent: CH_2Cl_2; T = 25.0(2) °C.

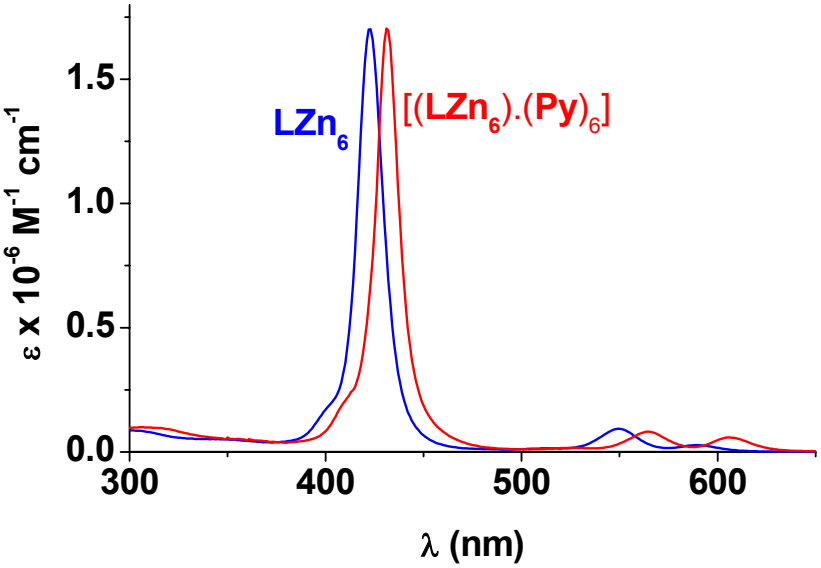
LZn_6 + Py



(a)

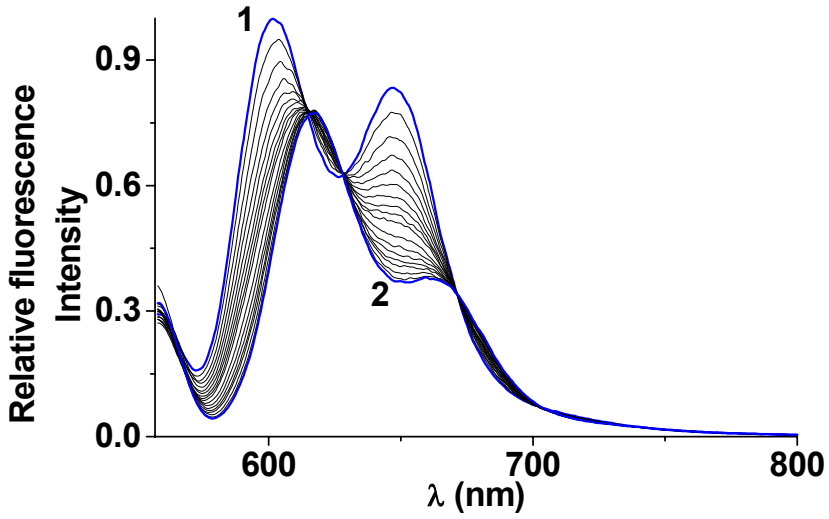


(b)



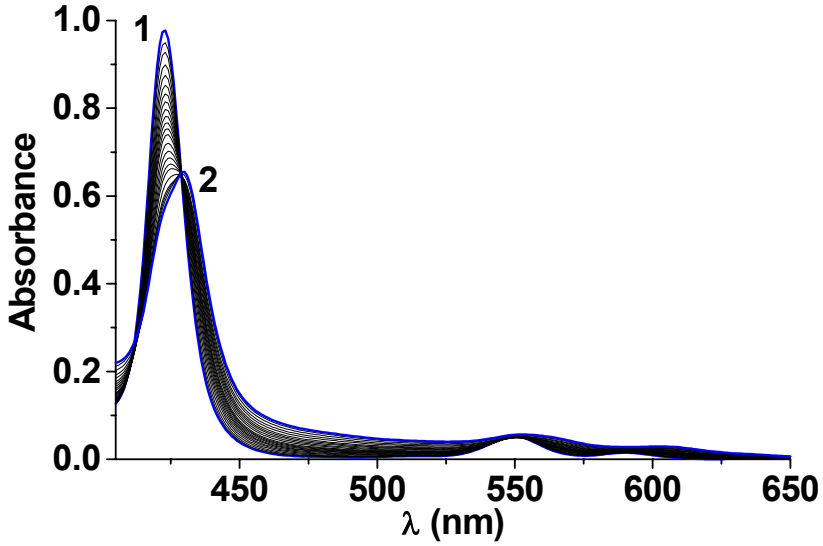
(c)

a,b) UV-visible absorption spectrophotometric titration of **LZn$_6$** with **Py**. l = 0.5 cm; 1) [**LZn$_6$**]$_{tot}$ = 1.17 × 10^{-6} M; 2) [**Py**]$_{tot}$/[**LZn$_6$**]$_{tot}$ = 735. Solvent: CH_2Cl_2; T = 25.0(2) °C.
c) Absorption electronic spectra of **LZn$_6$** and [(**LZn$_6$**).(**Py**)$_6$]. Solvent: CH_2Cl_2; T = 25.0(2) °C.

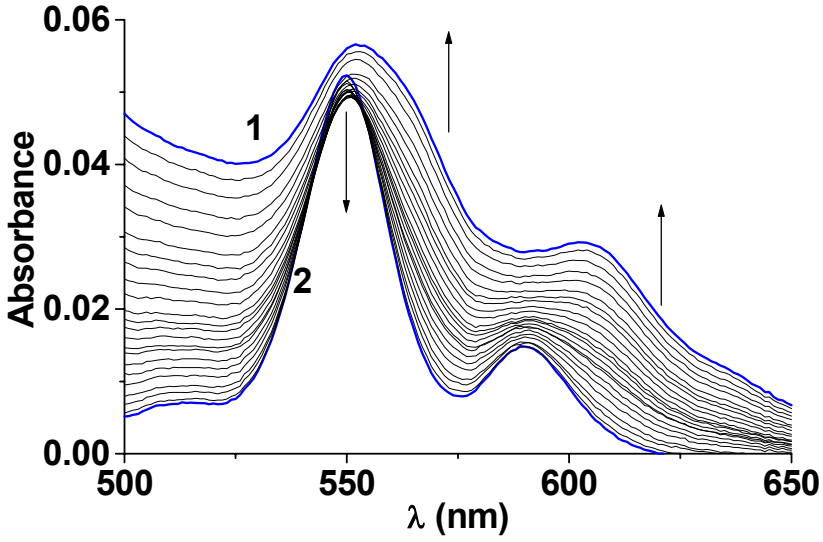


Luminescence titration of **LZn$_6$** with **Py**. λ_{ex} = 558 nm; emission and excitation slit widths 15 and 20 nm respectively; 1) [**LZn$_6$**]$_{tot}$ = 1.17 × 10^{-6} M ; 2) [**Py**]/[**LZn$_6$**]$_{tot}$ = 312. Solvent: CH_2Cl_2; T = 25.0(2) °C.

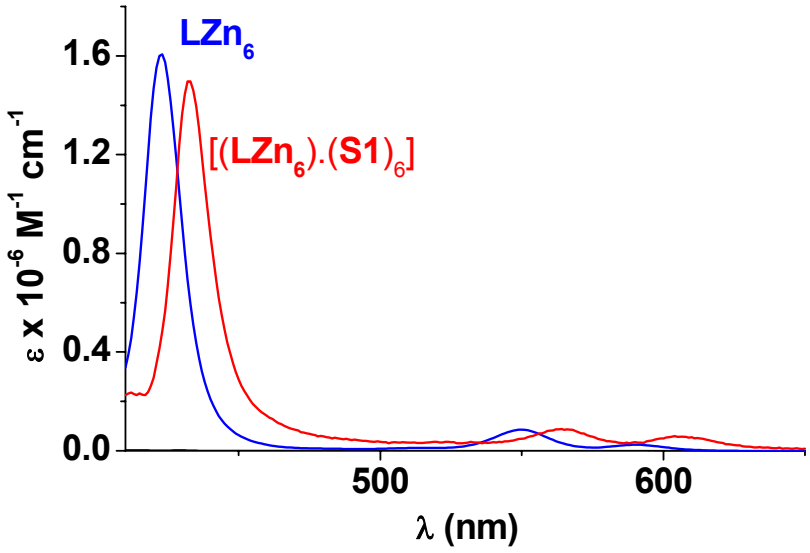
LZn_6 + S1



(a)

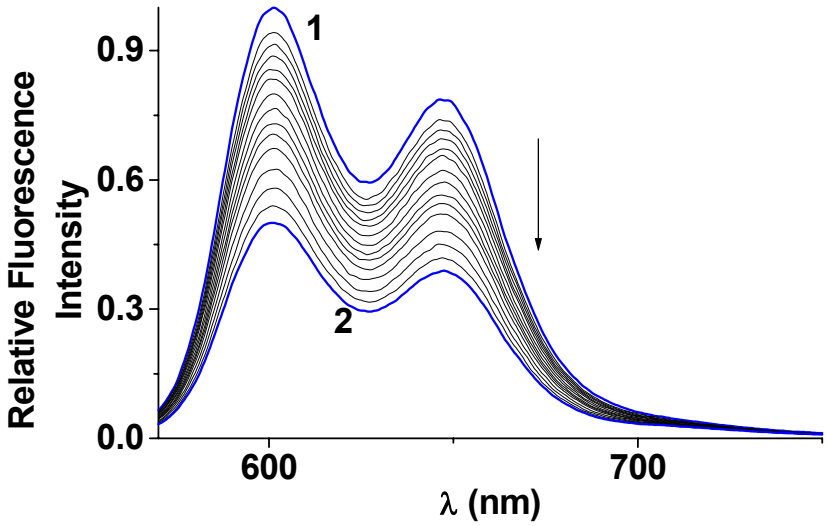


(b)

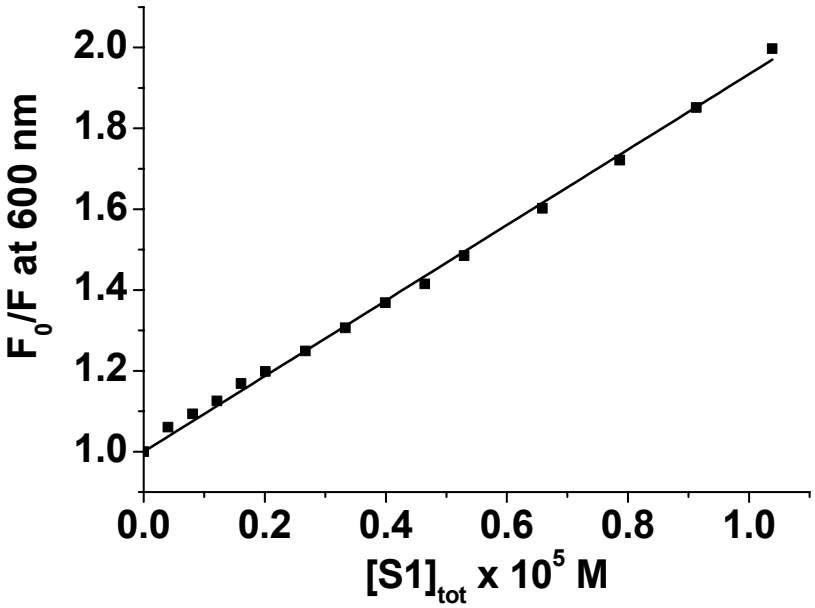


(c)

a,b) UV-visible absorption spectrophotometric titration of **LZn$_6$** with **S1**. l = 0.2 cm; 1) [**LZn$_6$**]$_{tot}$ = 2.93 × 10^{-6} M; 2) [**S1**]$_{tot}$/[**LZn$_6$**]$_{tot}$ = 108. Solvent: CH_2Cl_2; T = 25.0(2) °C.
c) Absorption electronic spectra of **LZn$_6$** and [(**LZn$_6$**).(**S1**)$_6$]. Solvent: CH_2Cl_2; T = 25.0(2) °C.



(a)

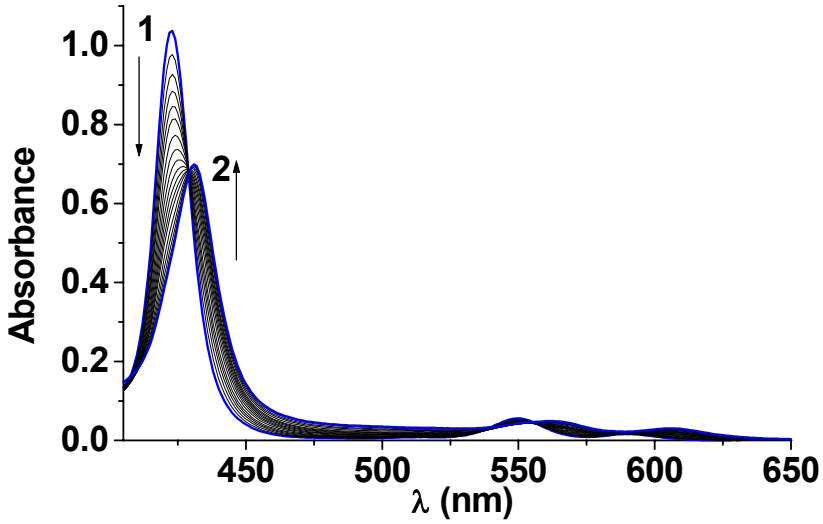


(b)

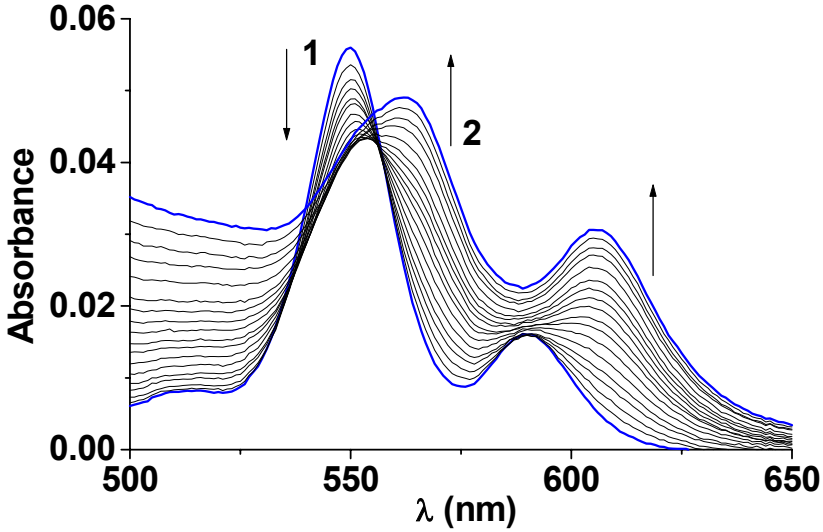
a) Luminescence titration of **LZn$_6$** with **S1**. λ_{ex} = 428 nm; emission and excitation slit widths 15 and 20 nm respectively; 1) [**LZn$_6$**]$_{tot}$ = 4.91 × 10^{-8} M ; 2) [**S1**]/[**LZn$_6$**]$_{tot}$ = 220. Solvent: CH_2Cl_2; T = 25.0(2) °C.

b) Variation of F^0/F at 600 nm versus the concentration of **S1**. The trend line is the result of the linear least-square fit of the experimental data according to $F_0/F = 1 + K$*[**S1**]. Solvent: CH_2Cl_2; T = 25.0(2) °C.

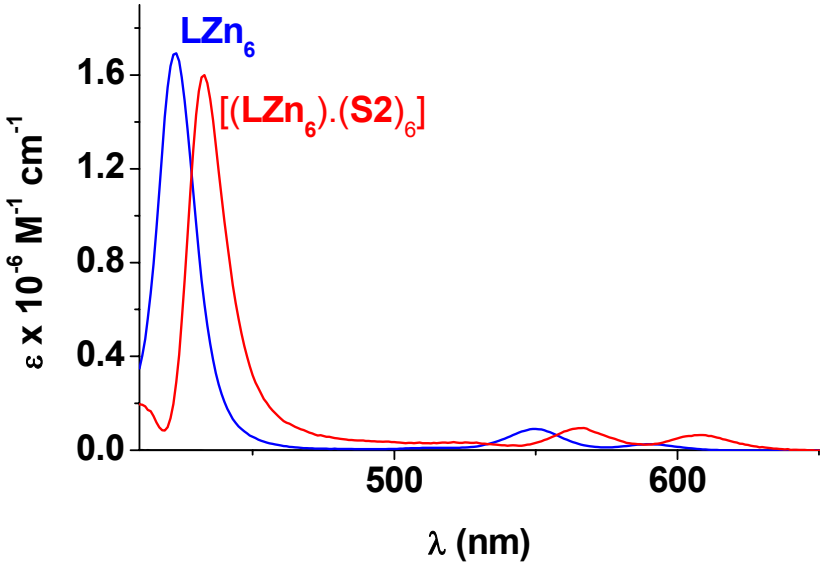
LZn_6 + S2



(a)

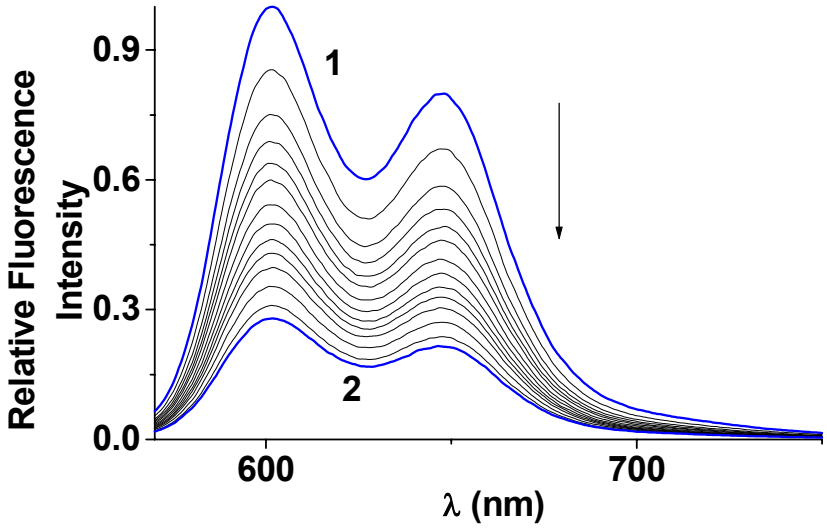


(b)

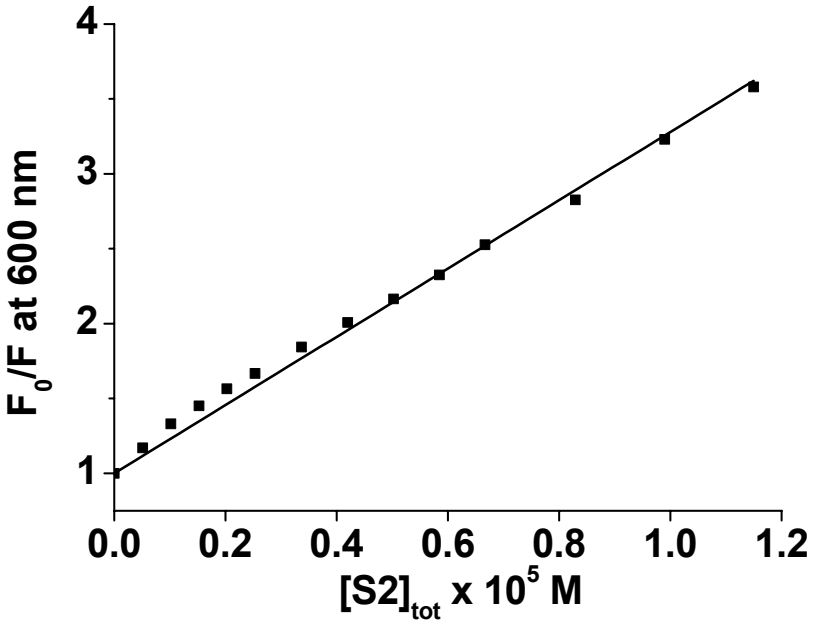


(c)

a,b) UV-visible absorption spectrophotometric titration of **LZn$_6$** with **S2**. l = 0.2 cm; 1) [**LZn$_6$**]$_{tot}$ = 3.04 × 10^{-6} M; 2) [**S2**]$_{tot}$/[**LZn$_6$**]$_{tot}$ = 24.5. Solvent: CH_2Cl_2; T = 25.0(2) °C.
c) Absorption electronic spectra of **LZn$_6$** and [(**LZn$_6$**).(**S2**)$_6$]. Solvent: CH_2Cl_2; T = 25.0(2) °C.



(a)



(b)

a) Luminescence titration of **LZn$_6$** with **S2**. λ_{ex} = 428 nm; emission and excitation slit widths 15 and 20 nm respectively; 1) [**LZn$_6$**]$_{tot}$ = 4.91 × 10^{-8} M ; 2) [**S2**]/[**LZn$_6$**]$_{tot}$ = 277. Solvent: CH_2Cl_2; T = 25.0(2) °C.
b) Variation of F^0/F at 600 nm versus the concentration of **S2**. The trend line is the result of the linear least-square fit of the experimental data according to $F_0/F = 1 + K^*$[**S2**]. Solvent: CH_2Cl_2; T = 25.0(2) °C.