

New ruthenium complexes for two-photon absorption

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Ruthenium (II) polypyridyl complexes are known to offer rich photophysical, photochemical and redox properties as large Stokes shift and high solubility in water compared with the other photosensitizers (porphyrins or phthalocyanines). Recent studies confirm their ability to photocleave DNA¹, thus exposing their photodynamic therapy (PDT) application potential based on two-photon absorption method.²

In this study, we report the synthesis, characterization and photophysical properties of a series of bipyridine-based ligands incorporated N-substituted amines as terminal donor groups (Figure 1). These ruthenium (II) heteroleptic and homoleptic complexes differ by the nature and length of the conjugated bridge. The effect of substituting fluorenyl moiety by a carbazole was also investigated.

A part of this project is to compare the two-photon properties of the three series of ruthenium complexes and afterwards compare these properties inside the selected series in order to use the best heteroleptic ruthenium (II) complexes for the development of new complexes for PDT.

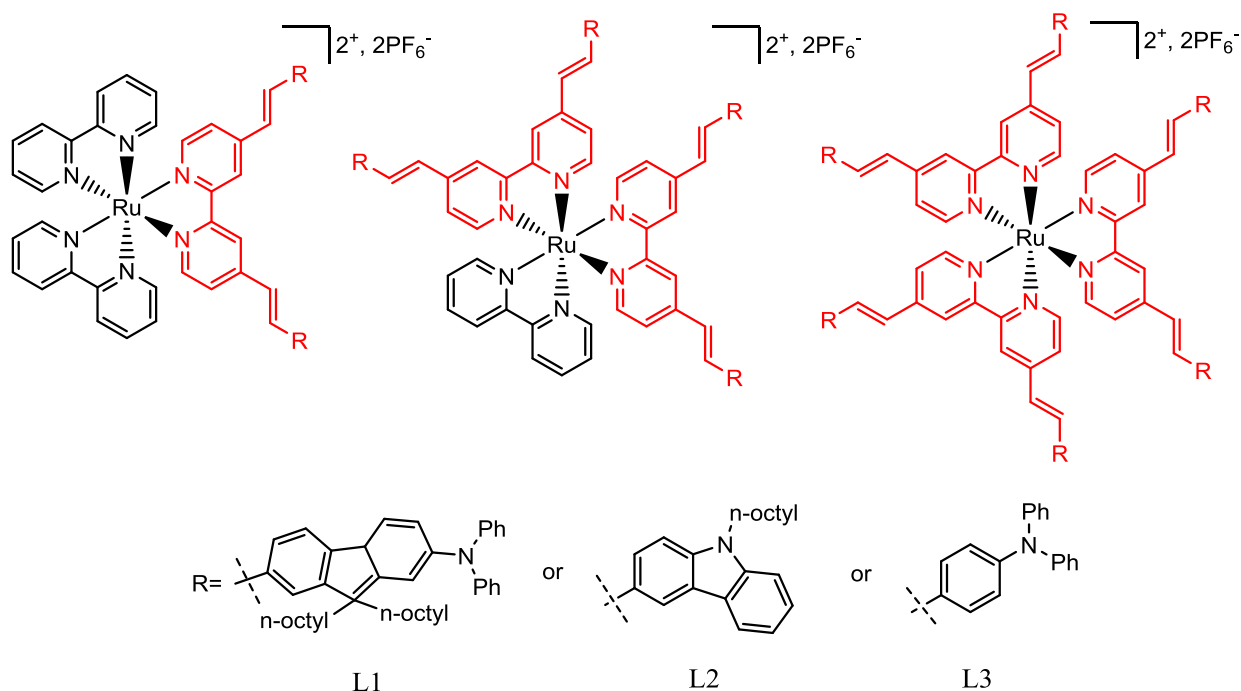


Figure 1: Studies of a series of ruthenium (II) complexes.

1. C. Mari, V. Pierroz, R. Rubbiani, M. Patra, J. Hess, *et al.*, Chem. Eur. J., **2014**, 20, 14421-14436.
2. M. J. Clarke, Coord. Chem. Rev., **2002**, 232, 69-93.