

(NHC)Cu(I) Complexes bearing Dipyridylamine ligands : Synthesis, Structural, Photoluminescent Studies and Applications in LEC

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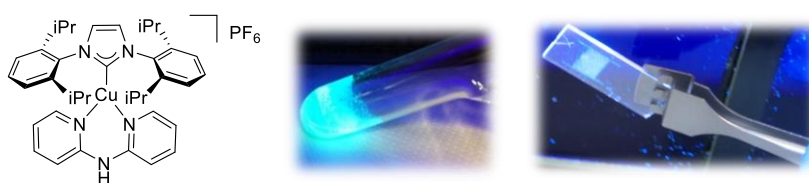
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We present in this communication the synthesis of new cationic tricoordinated copper complexes bearing bidentate dipyridylamine (dpa) ligands and NHC as ancillary ligands [Cu(NHC)(HDPa)][X]. [1],[2] These copper complexes have been fully characterized by NMR, X-ray analysis, electrochemistry, and photophysics. TD-DFT calculations were also undergone to rationalize the assignment of the photophysical properties.

Some of these copper complexes exhibit very bright blue emission with high quantum yield at solid state due to TADF participation in the emission mechanism. A variation of the electronic properties on both NHC and dipyridylamine ligands, has been carried out and permitted to establish some structure – properties relationships, also supported by TD-DFT calculations.

Since emissive cationic organometallic complexes can be good candidates for LEC (Light emitting Electrochemical Cells) applications, a selection of copper complexes was achieved for the preparation of those lighting devices. Here is presented the proof of concept that our copper complexes, of general formula [Cu(NHC)(dpa)][X], can be applied for LEC devices. We are pleased to present here a blue emitting LEC device incorporating cationic copper complexes.



References

- [1] R. Marion, F. Sguerra, E. Sauvageot, J.-F. Lohier, R. Daniellou, J.-L. Renaud, M. Linares, M. Hamel, S. Gaillard, *Inorg. Chem.* **2014**, 53, 9181-9191.
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