

## Heteroleptic phosphine-diimine Cu(I) and Ag(I) complexes: synthesis and photophysical properties

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Today growing interest toward heteroleptic phosphine-diimine Cu(I) complexes is observed due to their ability to demonstrate thermally activated delayed fluorescence (TADF) and thus potential usage as light-emitting materials for OLEDs.<sup>1</sup>

It is known that bulkiness of ligands plays the key role in photophysical properties of such complexes. Bulky surroundings can partly block excited-state flattening reorganizations and, thus, reduce emission quenching.

We synthesized a range of copper(I) complexes with bulky substituted 2,2'-bipyridines as diimine ligands and a set of various phosphines. It was found that an excessive bulkiness of symmetrical 2,2'-bipyridines prevents formation of heteroleptic complexes. By contrast, reaction with asymmetrical diimine ligand resulted in target compounds with high yields.

Although silver is nearest group analogue of copper and can form isostructural coordination compounds, Ag(I) complexes have different photophysical properties. However, recently heteroleptic Ag(I) complexes demonstrating TADF have been described.<sup>2</sup> Herein we report the silver(I) complexes, which are isostructural to copper(I) complexes described above.

The complexes obtained were characterized by polynuclear NMR spectroscopy, ESI mass spectrometry, and single X-ray analysis. Optical and photophysical properties of Cu(I) and Ag(I) complexes were investigated.

### Acknowledgements

The authors greatly appreciate financial support from Russian Science Foundation (grant 19-73-20055). The work was carried out using equipment of Centres for Magnetic Resonance, for Optical and Laser Materials Research, for Chemical Analysis and Materials Research, and X-ray Diffraction Centres (Research Park of St. Petersburg State University).

### References

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