

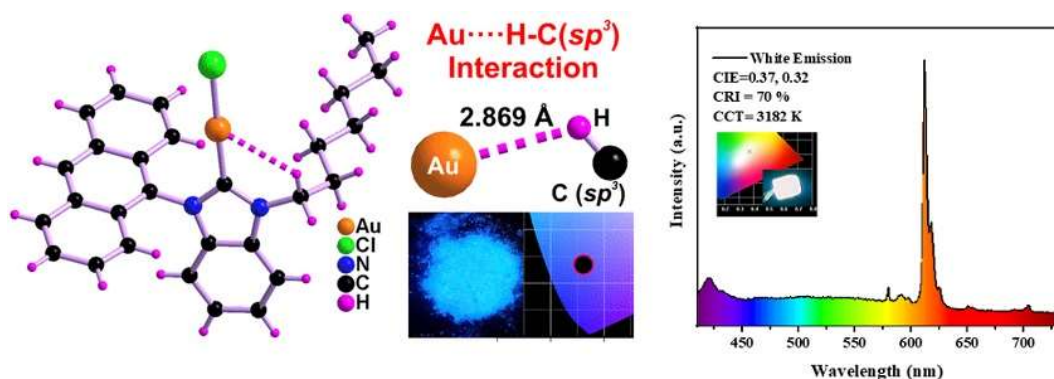
## Light Emitting Gold(I) and Copper(I) N-Heterocyclic Carbene Molecules

Ganesan Prabusankar

Department of Chemistry, Indian Institute of Technology Hyderabad

India-502 285 E-Mail: prabu@chy.iith.ac.in

N-heterocyclic carbene (NHC) gold(I) or copper(I) linear complexes have a wide range of applications in materials and medicinal chemistry. Over the past three decades, several NHC complexes of gold(I) and copper(I) have been demonstrated for their robust photophysical properties. The solid-state structural studies of NHC-Au(I) and NHC-Cu(I) complexes unveiled that the structural features are directly related to the unusual photoluminescence property of NHC-Au(I) and NHC-Cu(I) complexes. Some of the influencing factors are the coordination number of metals, metal-metal interaction,  $\pi$ - $\pi$  interactions, and metal hydrogen bonding. Besides, the molecular aggregations (aggregation-induced emission) can also play a crucial role in the crystalline state of molecules. However, despite the exponential development of the wide range of systems, the rational design of mononuclear gold(I) or copper(I) NHC with tunable emission properties with high quantum yield through the suitable N-substituent is challenging. Indeed, the dearth of reports dealing with the suitable N-substituent of NHC-Au(I) or NHC-Cu(I), urged us to investigate this class of compounds. The relationship between the N-substituent with intramolecular metal hydrogen bonding as well as the luminescence properties in the crystalline state will be addressed.<sup>1-4</sup>



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- 2) M. Vaddamanu, A. Sathyanarayana, Y. Masaya, S. Sugiyama, O. Kazuhisa, K. Velappan, M. Nandeshwar, K. Hisano, O. Tsutsumi, G. Prabusankar, *Chem. Asian J.*, **2021**, 16(5), 521.
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