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Transition Metal Alkynyl Complexes as Luminescent Materials

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Introduction of transition metal centre into the π -conjugated oligo-alkynyl system gave rise to interesting properties such as optical nonlinearity, liquid crystallinity and molecular wire-like behaviour, as a result of their linear structure, high stability and π -electron conjugation. Relatively less attention was focused on the exploration and exploitation of their spectroscopic properties, such as their electronic absorption and luminescence behaviours. The introduction of heavy metal atoms into the alkynyl backbone in transition metal-containing oligo- and poly-ynes also provided a versatile method to improve the chances of producing triplet emitters, leading to long-lived phosphorescence, as a result of a larger spin-orbit coupling constant and an enhanced intersystem crossing efficiency. In this presentation, different classes of luminescent transition metal complexes, such as platinum(II) and gold(III), containing alkynyl group will be discussed. Such kind of alkynyl metal complexes was found to exhibit interesting photophysical properties and possess potential applications in material point of view.