**Professor Vivian W.W. Yam’s major research areas**

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Professor Vivian W.W. Yam’s major research contributions are in the areas of synthetic and physical inorganic/organometallic chemistry, especially in the employment of innovative molecular design and synthetic strategies to create novel classes of luminescent metal complexes and to understand their fundamental spectroscopic properties and origin. Such fundamental understanding has allowed a systematic, desirable and controlled tuning and perturbation of their spectroscopic and functional properties. Specifically, the rational design and synthesis of platinum(II) and gold(I) complexes with propensities to form metal-metal interactions has been achieved. Her seminal works on the utilization of these non-covalent metal-metal interactions as spectroscopic probes in molecular recognition and in the reporting of microenvironment changes have opened up new research dimensions in the field. Innovative exploitation of the unique absorption and emission colour changes associated with non-covalent metal-metal interactions has been demonstrated as label-free molecular probes for various analytes such as metal ions like potassium ions and aluminum ions, DNA, G-quadruplex formation, aptamers, glucose, enzymes and proteins like nuclease, glucosidase, kinase, phosphatase, lysozyme, and thrombin for luminescence chemosensing and bioassays. This has opened up new opportunities for the innovative design of new strategies involving the utilization of non-covalent metal-metal interactions as spectroscopic reporters for host-guest interactions and microenvironment changes, and for chemosensing and label-free biological assays.