

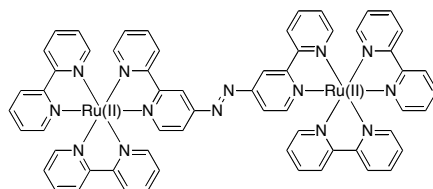
## Colorimetric sensing of duplex and quadruplex DNA by a dinuclear ruthenium(II) complex

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Systems capable of sensing small molecules and biomolecules are the target of much research. In particular, due to possible applications in fields as diverse as forensics, basic medical research, and the identification of genetically based diseases - including cancer, there is a burgeoning interest in methods of sensing nucleic acids. While systems that sense specific sequences have received much attention, the possible role of four-stranded quadruplex structure in a number of biological processes and specific disease states has meant that structurally specific nucleic acid probes are also beginning to be targeted. In many cases, colorimetric-based sensing would be particularly attractive, as this would allow naked eye detection of nucleic acids. In this discussion, we present a dinuclear ruthenium-based complex that functions as a label free colorimetric sensor capable of differentiating between specific duplex sequences; and most notably between G-rich duplex and quadruplex DNA structures [1]. The complex binds to DNA with high-affinity and the observed distinctive colour change is due to changes in the energy of a metal-to-ligand charge-transfer excited state localised on a bridging azo-ligand.



[1] V. G. Gonzalez, T. Wilson, I. Kurihara, A. Imai, J. A. Thomas, J. Otsuki, *Chem. Commun.* **2008**, 1868.