

Strong Fluorescence Enhancement Of Cyclometalated Ir(III) Complexes In Cucurbit[10]uril

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Fluorescent cyclometalated iridium(III) complexes are attracting widespread interest due to their unique photophysical properties and promising fluorescence applications, especially as labeling reagents for biomolecules¹. The fluorescence properties of these Ir(III) complexes are very sensitive to their local environment². With respect to this point, we have examined the fluorescence sensitivity of some Ir(III) polypyridine complexes by encapsulation within the large macrocycle cucurbit[10]uril (Q[10]). In this work we present for the first time the full encapsulation of Ir(III) polypyridine complexes in Q[10], which resulted in a strong fluorescence enhancement by a factor of ~40 and a blue shift of 34 nm. Binding constants were determined and the effect of pH was investigated. Preliminary electrochemical measurements were also carried out to complement the fluorescence work. We propose to take advantage of this fluorescence enhancement to improve fingerprint detection in terms of visualization.

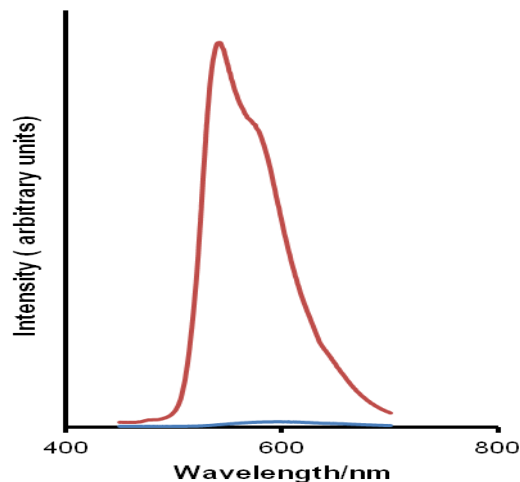


Figure 1. Fluorescence spectra of the free Ir(III) complex (blue) and the Q[10] encapsulated complex (red).

References

- 1) Kyle, R., et al. *Inorg. Chem.*, **2012**, 51, 5082-5094.
- 2) Lo, K.K.W., et al. *Inorg. Chem.*, **2003**, 47, 6886-6897.