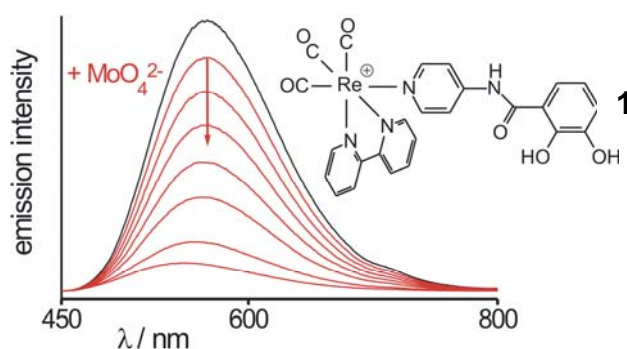


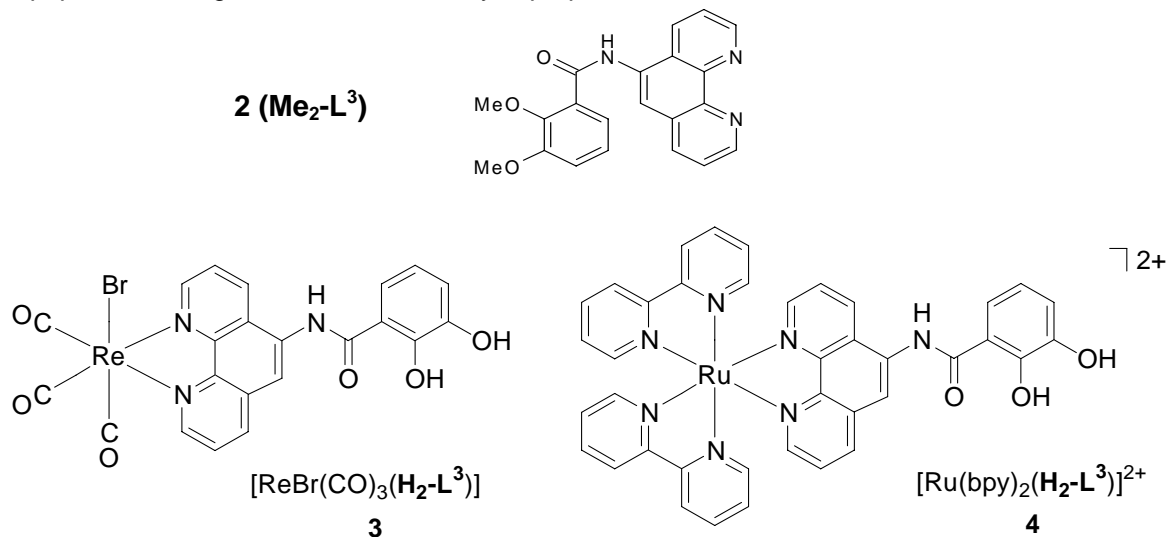
8.5 Anne-K. Duhme-Klair, University of York Luminescent sensors for molybdate

We have developed a range of molecular sensors for the rapid and efficient detection of bioessential oxometalates, in particular molybdate. These sensors have potential applications in environmental analyses, biological research as well as medical diagnostics. Our sensors are highly specific, sensitive, are easy to handle and do not require extensive pre-treatment of the analyte solution.

The sensor molecules consist of two components, a biomimetic binding unit for molybdate and a luminescent signalling unit that reports the binding. This modular approach allows considerable flexibility in the design of the probes and thereby facilitates their optimisation. One of our most promising molecular sensors (**1**) is shown below. The 2,3-dihydroxy benzamide unit is remarkably selective for Mo(VI) and the presence and concentration of molybdate is signalled through efficient quenching of the (Re-bipy)-based emission.¹



Within the last year, we have synthesised a new ligand (**2**), which could be connected to Ru- as well as Re-based lumophores, allowing a direct comparison of the two signalling units in **3** and **4**. High-resolution MS data obtained from the National MS Service allowed us to fully characterise these sensor molecules and a full paper describing the results is currently in preparation.



References: (1) A. F. A. Peacock, H. D. Batey, C. Raendler, A. C. Whitwood, R. N. Perutz, A.-K. Duhme-Klair, *Angew. Chem. Int. Ed.*, 44, 1712 (2005).