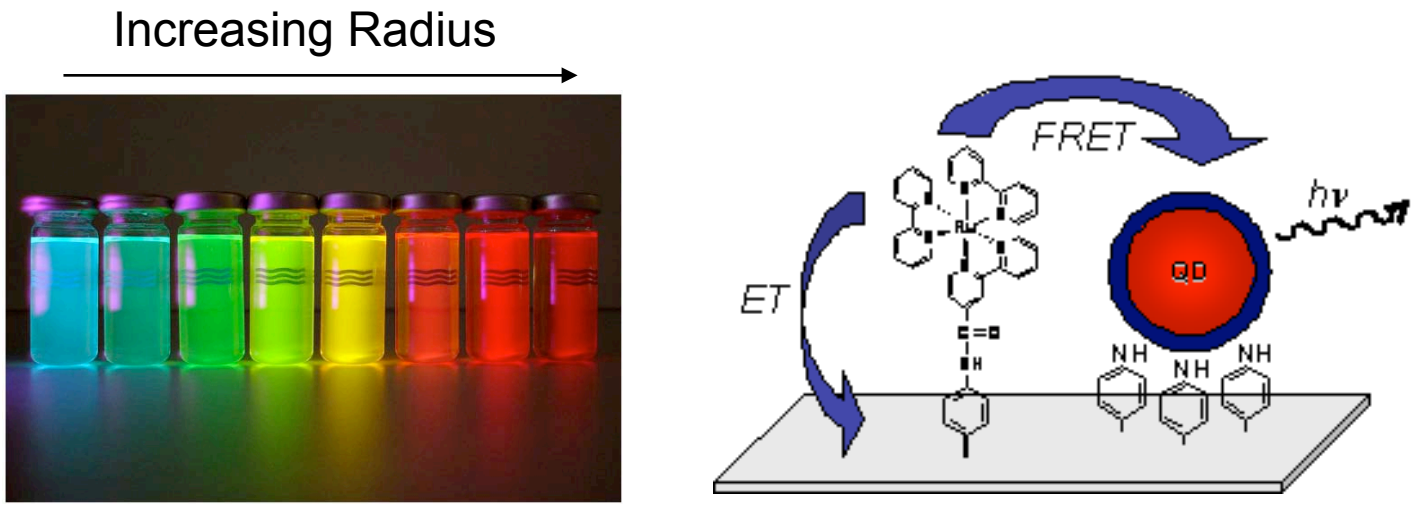

Electrochemically modulated FRET from assemblies of Quantum dots and transition metal complexes. *(with Jacek Jasieniak - CSIRO Division of Molecular and Health Technologies)*

Semiconductor quantum dots (QDs) are nanometre sized crystals which possess size tuneable fluorescence and absorption properties. The possibility of controlling QD emission through electrochemical means has enormous implications for sensor and light emitting device technologies. In this project, diazonium chemistry will be used to form an amine modified electrode surface – an ideally stable platform on which to co-immobilise highly luminescent ruthenium complexes, and QDs.

Our previous work has shown that the electrochemical excitation of the ruthenium species on such surfaces can act as a very sensitive detection system to different species within a solution. Here, we aim to extend this approach by generating the excited state within the ruthenium species, initiating the transfer of this excited state via a Förster resonance energy transfer (FRET) mechanism to QDs co-adsorbed on the amine surfaces. In this manner the wavelength of the light emitted will be dictated largely by the QD size and its composition!