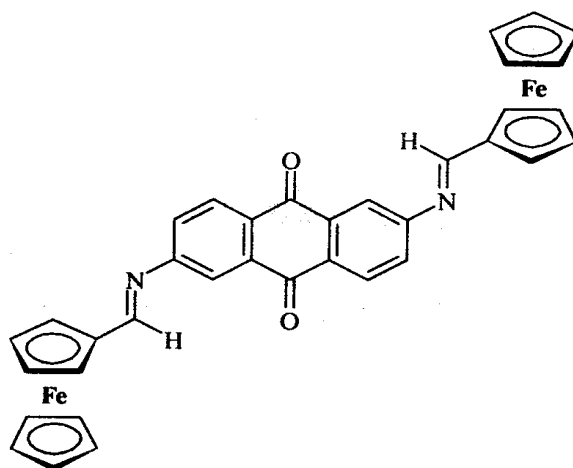


Alternative motifs for nonlinear optics

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The search for new materials with large nonlinear optical properties is of considerable interest. It is well-established that molecules containing electron-donating and electron-withdrawing groups interacting through a conjugated system show large hyperpolarizabilities. The second-order hyperpolarizability of donor-acceptor (D-A) substituted benzene and stilbene derivatives have demonstrated that with increasing donor-acceptor strength and conjugation path length, an enhancement of second-order hyperpolarizability occurs. Other motifs with alternative donor-acceptor-donor (D-A-D) units have been less explored.



Herein we report the synthesis and characterization of Schiff base complexes having an electron-donating ferrocene centre and an electron acceptor like anthraquinone or dicyanoethylene. These complexes have interesting spectroscopic and electrochemical properties. The electrochemical properties of the complexes were investigated by cyclic voltammetry. The *bis*-ferrocene complex linked through an anthraquinone spacer shows electronic communication between the two iron centres. The quadratic hyperpolarizability β in solution was measured by the hyper-Rayleigh scattering technique. The ferrocenyl Schiff base complexes attached to anthraquinone have high hyperpolarizabilities.