New quinono diaza crown ethers

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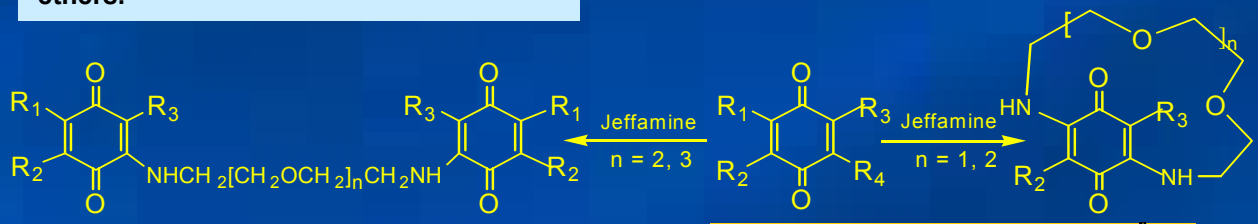
Many biological chain reactions, such as photosynthesis, oxidative phosphorylation and blood coagulation, use quinones to transfer one or two electrons. Synthetic quinone containing crown ethers represent a coupled system (hydroquinonic and quinonic form) and the mutual influence of the crown ether and the quinone system on one another may add to our understanding of analogous biological active compounds.

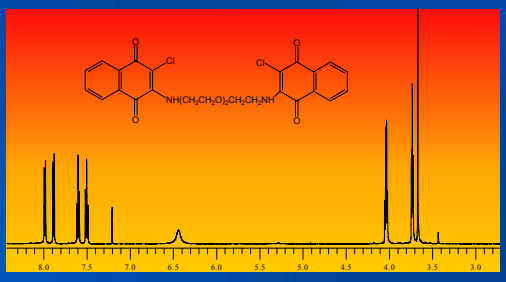
Synthesis:

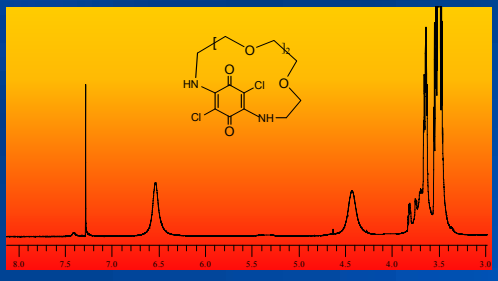
The reaction of polyoxyalkylene diamines with naphthoquinone yields the N,N'-bis (quinonyl)amine, while the same reaction with various benzoquinones, produces quinoid crown ethers.

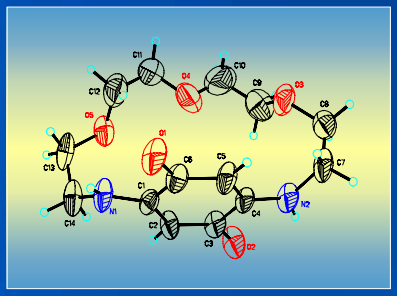
Characterization:

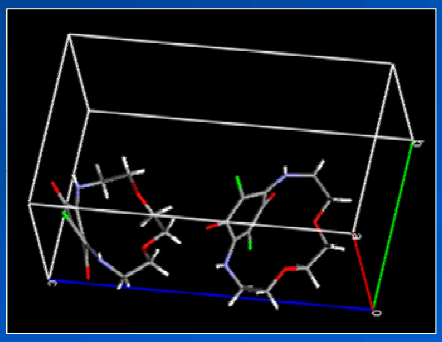
All these compounds were characterized using IR, NMR and HR-MS spectroscopy as well as X-ray crystallography.











Such a system suggests:

- Physical proximity of an electroactive quinone to an ion binding crown moiety
- Host-guest complex formation with a reduced or neutral quinone
- Development of chromogenic and electrochemical methods for detection and separation of cations
- Better understanding of the activity of biologically active quinones bearing a macrocycle