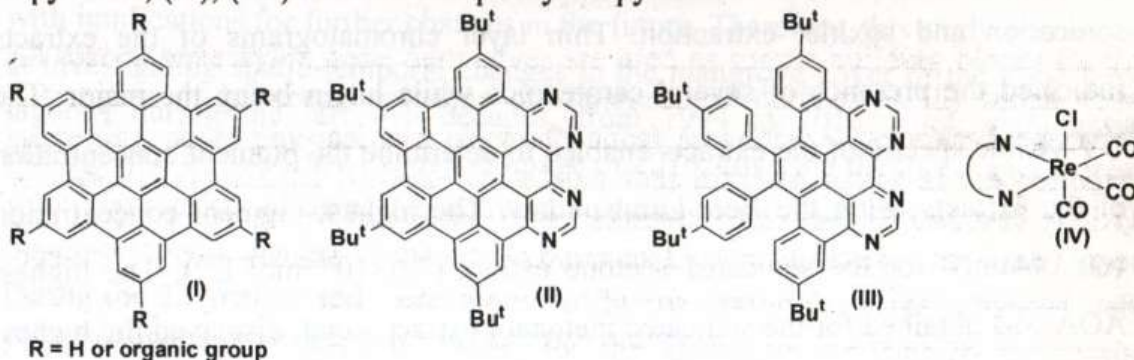


Syntheses of $[\text{Re}(\text{CO})_3(\text{NN})\text{Cl}]$ complexes of bulky N,N-donor ligands

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All carbon hexaarylbenzene derivatives are used as simple building blocks for the preparation of hexabenzocoronene or superbenzene derivatives (**I**) which show interesting photo-physical and electrochemical properties. Cyclodehydrogenation of tetraaryldipyrimidyl benzene containing four nitrogen atoms at the periphery lead to the discovery of fully-cyclized tetraazasuperbenzene (**II**) and half-cyclized tetraaza superbenzene (**III**). Ruthenium(II) complexes of the type $[\text{Ru}(\text{bpy})_2(\text{II})][\text{PF}_6]_2$ and $[\text{Ru}(\text{bpy})_2(\text{III})][\text{PF}_6]_2$ showed unique optical and electrochemical properties. Re(I) carbonyl complexes are found in applications of supramolecular chemistry such as carbon dioxide reduction and sensors. In here, we report the syntheses of some rhenium(I) complexes of the type (**IV**) containing N,N-donor ligands : tetra-substituted-1,12-diazatriphenylene, tetraphenyl-2,2'-bipyridine, (**II**), (**III**) and 4-bromophenyl-terpyridine.



Seven *fac*-chlorotricarbonylrhenium(I) complexes of the type (**IV**) were prepared in hot benzene or chloroform by reacting $[\text{ReCl}(\text{CO})_5]$ with an appropriate N,N-donor ligand and the products were isolated in good yields as coloured solids. Mass spectral data indicated the presence of M^+ , $[\text{M}-\text{Cl}]^+$ or $[\text{M}+\text{Na}]^+$ ion. As expected, IR spectra showed three strong IR bands around 2020, 1900 and 1880 cm^{-1} for carbonyl ligands. IR, ^1H -NMR and ^{13}C -NMR data suggested these complexes to have the *fac*-geometry.

Keywords: *Re(I) complexes, N,N-donor ligands, tetraazasuperbenzene, polyphenylenes*

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