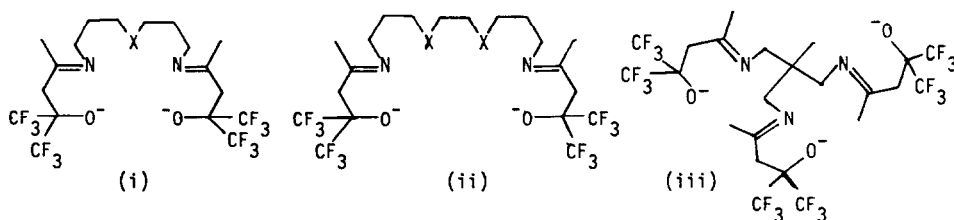


COORDINATION MODES OF SOME FLUORINATED, POTENTIALLY POLYDENTATE, LIGANDS

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Through the use of template condensation reactions, we have developed synthetic routes to a number of fluorinated ligands containing a number of donor atoms in combination with a fluorinated alkoxy group. Typical examples are:



We find all of these to be capable of coordination to transition metals, generally giving stable, neutral, complexes. However, the mode of coordination of (i) and (ii) differs according to the donor atoms present in the chain, with a higher degree of coordination for X = N than for X = O. With ligand (iii), a 'tripod' mode of coordination is favoured, with the six donor sites surrounding a 3+ metal ion such as iron(III), cobalt(III), or a lanthanide(III) species.

TRANSITION METAL CHEMISTRY OF OCTAFLUOROCYCLOOCTATETRAENE

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The organometallic chemistry of cyclooctatetraene (COT) has been particularly rich and varied in terms of the types of structure and dynamic behavior which have been observed. Our studies of the interactions of octafluorocyclooctatetraene (OFCOT) with transition metal centers have yielded novel structural types not encountered in the chemistry of COT. The transition metal oxidative addition chemistry of OFCOT will be described, and new metal-promoted transannular C-C bond forming reactions to yield fluorocarbon skeletons based on the perfluorobicyclo[4.2.0]octatriene and perfluorosemibullvalene valence isomers of OFCOT will be outlined. Notably these structural classes of valence isomer have proven to be resistant to synthesis and isolation from free OFCOT. The x-ray crystal and molecular structures of a number of these complexes will be discussed.