triphos-Metal-Templates, Cobalt, Iron

The triphos ligand CH$_3$C(CH$_2$PPh$_2$)$_3$ reacts with Co(BF$_4$)$_2$ (aq) or Fe(BF$_4$)$_2$ (aq) in the presence of nitriles RCN to produce the pentacoordinate [triphosCo(NCR)$_2$](BF$_4$)$_2$ (1) or the hexacoordinate [triphosFe(NCR)$_3$](BF$_4$)$_2$ (2). With α,ω-dinitriles NC-X-CN dinuclear compounds [triphosFe(NC-X-CN)$_2$Fe(triphos)](BF$_4$)$_4$ (X = (CH$_2$)$_3$ (3a), X = o-C$_6$H$_4$ (3b)) are formed. The compound [triphosFe(((CH$_3$)$_2$C=C(CN)$_2$)$_3$Fe(triphos)](PF$_6$)$_4$ (3c) is obtained from FeCl$_2$ by addition of the triphos ligand, the dinitrile and NaPF$_6$.

All compounds are characterised by the usual analytical techniques including X-ray analyses. It is observed that the quadruply positively charged compounds 3 tend to associate the respective anions in pockets formed by the three segments of the Fe(NC-X-CN)$_3$Fe bridging units.