

New iron-triazole complexes – environmentally friendly catalysts of carbon-carbon bond formation

Research into N-heterocyclic carbene (NHC) complexes with transition metals has been one of the most widely studied field of organometallic chemistry for 20 years. Special emphasis is laid on application of this class of compounds as catalysts of reactions of organic compounds. As one of element of the class N-heterocyclic carbene (NHC) complexes of iron can be distinguished. They poses one currently priced trait, that is low toxicity, which suggests applying them as catalysts in syntheses of drugs and other biologically active compounds.



Scheme 1. Exemplary complexes of this project.

N-heterocyclic carbene precursors will be obtained in reactions of alkyl halogens with corresponding triazoles. Iron-NHC complexes (**Scheme 1**) will be synthesized in reactions of iron salts and free carbenes formed in previous reactions or *in situ*. Cyclopentadienyl ligands will be attached in the last step of synthesis. Test catalytic reactions will be carried out according to previously described procedures for similar compounds.

Most published research papers on this subject deals with N-heterocyclic complexes of iron containing imidazole moiety. Complexes of carbenes and iron containing triazole moiety have not been intensively studied yet. Their different electronic properties may be interesting supplement to current state of knowledge on the subject of reactivity and catalytic activity of carbene complexes of iron.