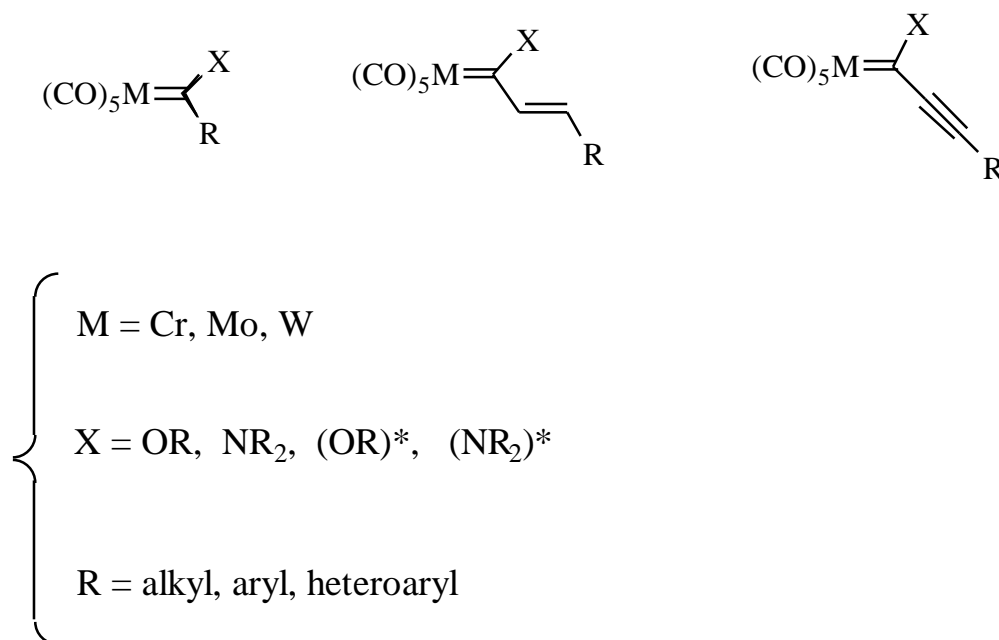


Organometallic Approaches to Basic Skeletons of Active Substances

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This lecture will deal with some recent applications of organometallic reagents in selective synthesis of molecules having potential biological interest. Among these species, group 6 heteroatom stabilized carbene complexes -alkoxy and amino Fischer carbene complexes- have received great attention in the last years. The complexes concerning this talk are represented in the following scheme:



These particular organometallic reagents have demonstrated to be highly useful as intermediates in organic synthesis. For instance, the strong p-acceptor character of the pentacarbonyl fragment makes them appropriate synthons in relevant carbon-carbon bond formation, e.g. aldol reactions, Michael addition, [4+2] and [3+2] cycloaddition reactions, etc. On the other hand, there are a number of reactions that are specifically due to the presence of the metal-carbon double bond functionality; among them it should be mentioned [2+1], [3+2+1] (Dotz benzannulation) and [4+3] carbocyclizations as well as some [4+1], [3+2] and [4+3] heterocyclizations.

It will be presented new examples of the reactivity of these achiral and chiral complexes with a number of nucleophiles and functionalized nucleophiles that result in the formation of different adducts, cycloadducts and heterocycloadducts with high regio/diastereo/face selectivity. In the specific field of cycloaddition reactions of the carbene ligand it will be shown that some annulation reactions can be easily accomplished on substrates as attractive as furan, benzofuran, pyrrol and indol rings.