Organocuprates Encyclopedia Article

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Organocuprates

Organocuprates are organic compounds comprised of metallic **copper** directly attached to a **carbon atom**. In these compounds, one or more **hydrogen** atoms in the parent organic **molecule** have been replaced by copper, usually with the establishment of a **valence** bond between the copper atom and the carbon atom. Organocuprate (organocopper) reagents are any one of several organic reagents containing copper and often other **metals**; they are important in conjugate-addition reactions and in the displacement of leaving groups.

Many organocuprates exist as metallobiomolecules, i.e., biomolecules that contain one or more metallic elements. Metallobiomolecules are complex coordination compounds whose metal-containing sites are frequently involved in **electron** transfer, the binding of exogenous molecules, and catalysis. Many metallobiomolecules, including the organocuprates tyrosinase, superoxide dimutase, and cytochrome oxidase, are present as enzymes in the human body; the **enzyme** cytochrome oxidase, for example, catalyzes a reaction in the electron transport system. Other metallobiomolecules, such as the organocuprate ceruloplasmin, are present as carrier **proteins**.

Some organocuprates have commercial importance. Copper pththalocyanine or $C_{32}H_{16}N_8Cu$ (also known as Pigment Blue 15), is used in paints, alkyd resin enamels, printing **inks**, lacquers, rubber, resins, papers, tinplate printing, and colored chalks. And the **chemical compound** Maculure is used to control flies in poultry and cattle operations.