Hello everyone.

Welcome to this inorganic class

of third year, BSc Semester 6.

Today, we are going to discuss the

Module- definition and nomenclature

of organometallic compounds

of Unit organometallic chemistry.

The outline of this module is

definition and nomenclature

of organometallic compounds.

At the end of this module,

students will be able to define

organometallic compounds and will be

able to write the IUPAC nomenclature

of the organometallic compounds.

Now what are organometallic compounds?

Organometallic compounds are the

compounds which contain one or more

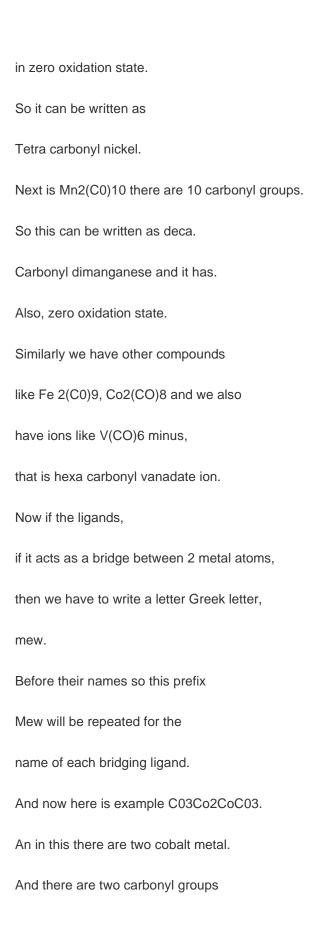
metal carbon linkage, for example.

Tetra ethyl lead, diethyl zinc.

In Tetraethyl lead, lead is directly linked

to carbon from the ethyl group.

Now some compounds like triethoxy aluminium, sodium acetate etc. They are not included in organometallic compounds because in these compounds the metal is not directly linked to carbon. Let us see IUPAC nomenclature. Nomenclature of simple compounds. It can be written as, the simple alkyl group Will be written 1st and the metal will be written after the alkyl or aryl group. For example, CH3Li that is Methyl lithium (C2H5) twice Zinc that is diethyl zinc and so on. Nomenclature of carbonyls. Carbonyls are the compounds which contain CO as ligand and the metal is in zero oxidation state. For example Ni(C0)4. this is there are four CO groups. And metal is nickel which is



which forms a bridge between these two cobalt atoms. So we can write this as di mew carbonyl bis Try carbonyl cobalt. Similarly we have next compound C03FeC03 FeC 03. This can be written as tri Mew carbonyl bis. Tri carbonyl iron. Now, if there are two metal atoms which has metal metal linkage then this can be classified as symmetrical or unsymmetrical. In symmetrical metal carbonyls they are named by the use of multiple prefixes like bis, tris etc. Based on the number of groups. So in this example we have two cobalt linked by a metal metal bond and there are four carbonyl groups. So this can be written as bis Tetra carbonyl. Cobalt.

Then we have unsymmetrical metal carbonyls. In this, one of the central metal atom. Is treated. And other metal atom is treated as a ligand and so here we have two metal atoms, Rhenium and cobalt. So we write this as penta carbonyl, Tetra, carbonyl, cobalto, rhenium. So rhenium is considered as a central metal atom and cobalt with four carbonyl groups is considered as a ligand. The nomenclature of Sigma and Pi bonded ligands. This Sigma and Pi notations. They are used to distinguish between one carbon bonded and multiple carbon bonded ligands. Now we have here example of cyclopentadienyl ligand. So we write Sigma when it is 1 carbon bonded and π is written to indicate

that it is 5 carbon bonded ligands. For unsaturated molecules or groups, the prefix eta or hepto is used. Now Eta one indicate that there is mono hepto that means there is only one carbon which is linked. Eta two is dihapto to eta three is trihapto and so on. Here are some examples to indicate this eta linkage so we have FeC5H5 twice, which can be written as bis eta 5 cyclopentadienyl iron. Similarly, we can write chromium C6H6 twice. Now this is benzene ligand, which has six carbon, so this can be written as Bis Eta 6 benzene chromium. Similarly, we can write other compounds. Nomenclature of other compounds like cobalt,

CO three Pi C3H5, here, C3.

There are three carbons.

We write it as eta three that

is allyl tri carbonyl cobalt.

Similarly C6H6 chromium

C03 there are two groups,

so one can be written as Eta six

that is Benzene and tri carbonyl.

So here are some of the references.

For this module, thank you.