

ABSTRACT

Title: Study of C-C coupling of dienes catalyzed by ruthenium (II) complexes.

Author: Bc. Eva Hanikýřová

Department: Department of Organic Chemistry

Supervisor: Mgr. Jana Roithová, Ph.D.

Abstract

Transition metal catalyzed cycloadditions have contributed extensively to organic synthesis. The use of ruthenium complexes in those reactions gain importance due to their demonstrated ability in the catalytic carbon-carbon bond formations via ruthenacycle intermediates.

In our studies, we have concentrated on the interaction between ruthenium (II) and alkenes using mass spectrometry with electrospray ionization. This technique allows to investigate ruthenium complexes in the ionized states, and allows to investigate these structures by using MS/MS analyse. Our experimental research was complemented by quantum chemical calculations using Density functional theory.

The research leads to a more detailed understanding to Ruthenium complexes with unsaturated hydrocarbons reaction mechanism.

Key words

Gas-phase chemistry, Reaction mechanisms, Electrospray Ionization, Catalyst, [CpRu(CH₃CN)₃]PF₆, Mass Spectrometry