AN IR STUDY OF THE ZIEGLER SYSTEM Co(acac)$_3$/Mg(n-butyl)$_2$ IN THF

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Applying IR spectroscopy for studying the Ziegler system Co(acac)$_3$/Mg(Bu)$_2$ (Bu=n-butyl) in tetrahydrofuran, it could be shown that the following reactions take place: reduction of cobalt(III), exchange of the acetylacetonate groups and their interaction with Mg(Bu)$_2$.

Исследуя систему Циглера Co(acac)$_3$/Mg(Bu)$_2$ (Bu = n-бутил) в тетрагидрофуране с помощью ИК-спектроскопии было показано, что происходит восстановление кобальта(III), смещение ацетилацетонатных групп и их взаимодействие с Mg(Bu)$_2$.

INTRODUCTION

Ziegler catalysts are rather complex systems, the chemical nature of which depends on the kind of components and their ratio. Up to now, only a few works have been done to investigate such systems by means of spectroscopic methods. In the case of the system Co(acac)$_3$/AlR$_3$ only the exchange of acetylacetonate groups and the formation of Co(acac)$_2$ as an intermediate was established [1, 2]. In the present paper we studied...
the system Co(acac)$_3$/Mg(Bu)$_2$ (Bu=n-butyl), which was found to be very active in the hydrogenation of olefins and condensed aromatic hydrocarbons [3, 4]. The activity very strongly depends on the Mg/Co ratio, being optimal at a value of 4 (optimal ratio). So, it should be appropriate to investigate this system at different Mg/Co ratios.

RESULTS AND DISCUSSION

First the spectra of the starting materials (Co(acac)$_3$, Mg(Bu)$_2$ and possible intermediates (Co(acac)$_2$, Mg(acac)$_2$, as well as of the reaction products of Mg(acac)$_2$ and Mg(Bu)$_2$ in THF as a solvent were recorded (Fig. 1). As has been shown in