IR STUDY OF METALLOTROPIC REARRANGEMENTS AND ION-PAIR INTERACTIONS IN CHROMIUM TRICARBONYL COMPLEXES WITH POLYCYCLIC AROMATIC LIGANDS

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Metallotropic rearrangements (itramolecular rearrangements involving the displacement of the transition metal atom) in chromium tricarbonyl π-complexes with polycyclic aromatic ligands were studied by FTIR spectroscopy. A novel η^6 η^5 rearrangements have been found and studied for anions η^6-phenalenyl- (I) and η^6-(9- hydroanthracenyl) (II) tricarbonychromium generated by deprotonation of corresponding neutral η^6-complexes with various bases (BuLi, $Ph_3P{=}CH_2$, proton sponges or t-BuOM, where M= K, Cs) at low temperatures. IR spectra in the ν(CO) range of the η^6- and η^5-anions with various counter-ions (Li^+, K^+, and Cs^+) in THF and dimethoxyethane solutions and in the presence of the solvating additive, dibenzo-18-crown-6, in a temperature region between -70 to 20°C showed that anionic complexes exist in solution as tight and solvent separated ion pairs or as their equilibrium mixture. The factors that influence the ion-pair equilibrium (solvent, the excess of the base, temperature, the nature of the counter-ion) have been studied. The results are compared with the NMR data.. The work was supported by the Russian Foundation for Basic Research (grants 96-03-3241a and 96-03-34082a).