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Iridium PCP Pincer Complexes Catalyzed Alkane Dehydrogenations Using Microwave Irradiation

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The Development of a transition metal complex catalyst for the selective transformation of alkanes to functionalized organic compounds is one of the "Holy Grails." Last a decade the Iridium PCP pincer complexes have been found to be highly efficient and robust catalysts for the transfer dehydrogenation of aliphatic and cyclic alkanes. The treatment of dehydrogenation reactions which are catalyzed by $\text{IrH}_2\{\text{C}_6\text{H}_3\text{-2,6-(CH}_2\text{PR}_2)_2\}$ (R = cyclopentyl, cyclohexyl) with *tert*-butylethylene (tbe) was carried out in order to investigate its mechanistic role in the dehydrogenation reactions which are catalyzed by $\text{IrH}_2\{\text{C}_6\text{H}_3\text{-2,6-(CH}_2\text{PR}_2)_2\}$. These complexes were isolated and characterized by ^1H , ^{13}C , ^{31}P NMR, IR spectroscopy

Alkanes are very poor electron donors and acceptors and activation of alkane carbon-hydrogen bonds is very difficult. Therefore, it is required of the vigorous reaction condition in order to get the proper turnover rates. Recently the efficiency of microwave flash heating in accelerating organic reactions has been proven in several different fields of organic chemistry. In this presentation the iridium PCP pincer complexes, $\text{IrH}_2\{\text{C}_6\text{H}_3\text{-2,6-(CH}_2\text{PR}_2)_2\}$ (R = *tert*-butyl, phenyl, cyclopentyl, cyclohexyl) catalyzed alkane dehydrogenations using microwave irradiation.