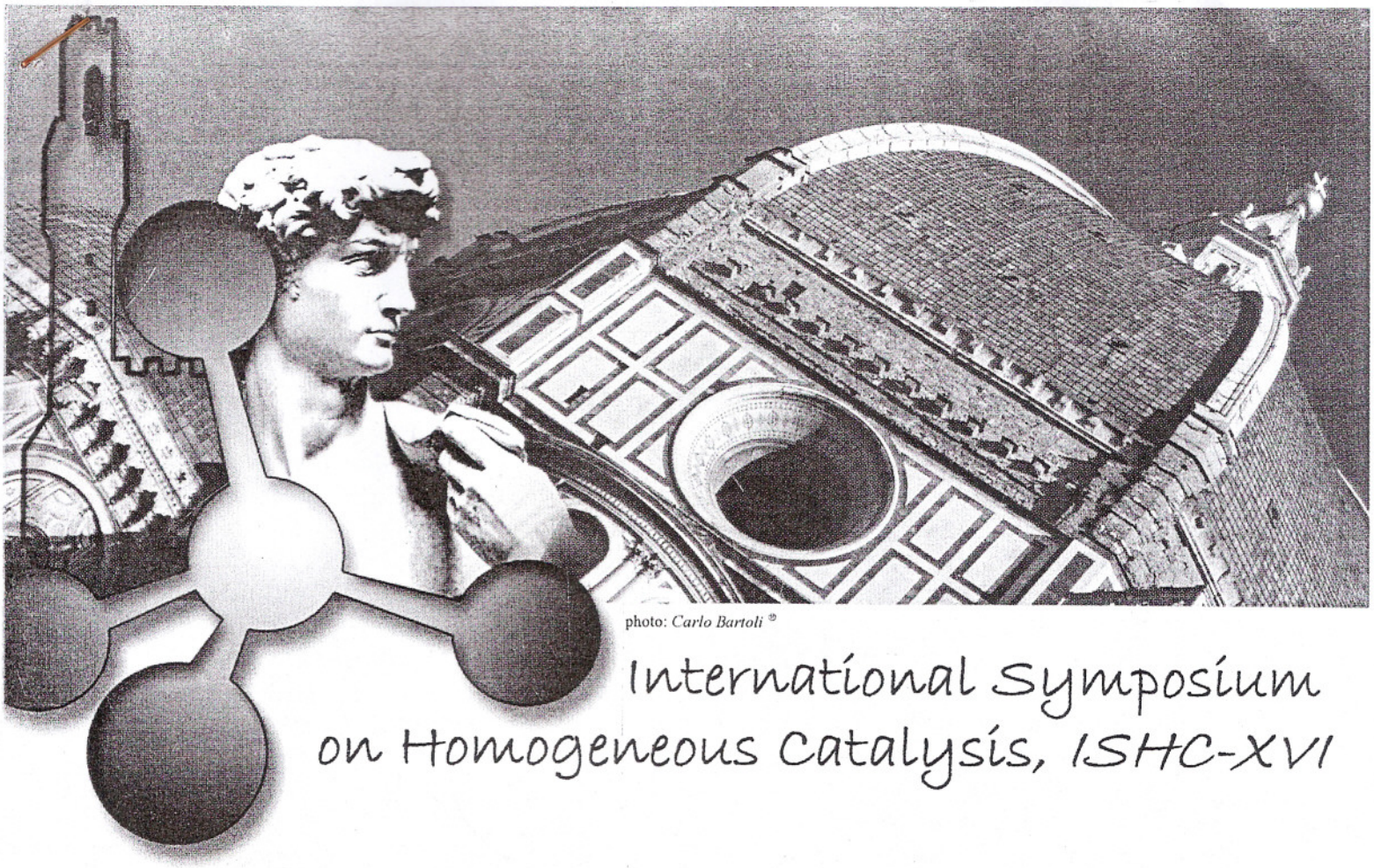

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Book of ABSTRACTS

New fluorinated rhodium-phosphine complexes for hydrogenation of sytrene in supercritical carbon dioxide

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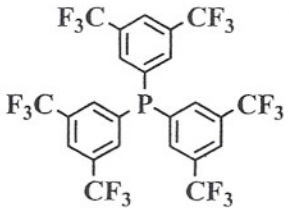
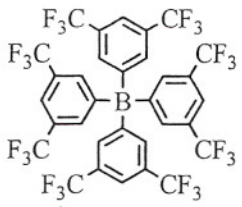
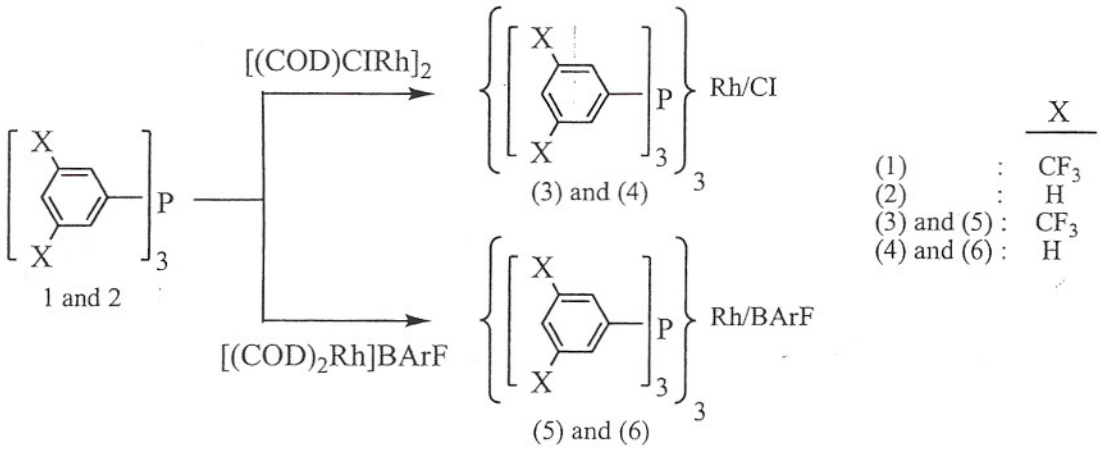
Chiral rhodium phosphine complexes have found important applications as catalysts in hydrogenation reactions. These complexes have been synthesized to be used as ligands for transition-metal-catalysed homogeneous asymmetric synthesis[1]. In past decades, there has been increasing interest in using supercritical carbon dioxide ($scCO_2$) as the reaction medium for organic synthesis [2,3]. Most homogeneous catalysts, however, are not soluble in $scCO_2$ without modification. It is well known that fluorine groups attached to ligands increase their solubility in $scCO_2$[4,5]. In this study, we used the sodium salt of tetrakis-[(3,5-bistrifluoromethyl)phenyl]borate (NaBArF) and the CF_3-substituted fluorinated tris-phenylphosphine ligand. We synthesized the new fluorinated analogues of the well-known Wilkinson catalysts as $[P(Ph(CF_3)_2)_3]_3RhBArF$ *"BArF=tetrakis-[(3,5-bistrifluoromethyl) phenyl]borate"*, $[P(Ph)_3]_3RhBArF$, $[P(Ph(CF_{3)2})_3]_3RhCl$ and $[P(Ph)_3]_3RhCl$ Structure of the synthesized catalysts were determined by using analytical and spectroscopic methods such as ^1H NMR, ^{31}P NMR, ^{19}F NMR and ^{13}C NMR. The synthesized catalysts give effective results with hydrogenation of styrene. Hydrogenation reactions in $scCO_2$ were performed at the conditions of 343,15 °K, 1800 psi pressure, substrate/catalyst molar ratio = 500. Conversion percentages of styrene-ethylbenzene were determined by Gas Chromatography.



CF_3-Substituted Fluorinated Phosphine Ligand



BArF



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