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Immobilization of Rhodium Complex to Polymer Support and Its Catalytic Reaction

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The concept to immobilize homogeneous catalyst such as rhodium complex to solid support has received considerable attention, as it simplifies the separation of catalyst from product and also it solves the loss of expensive metal complex in separation area. Since rhodium carbonyl iodide complex, as a typical homogeneous catalyst, is an anion, ionic bond immobilization of the rhodium complex anion to pyridinium cation polymer resin support was studied. The catalytic behavior for methanol carbonylation is mainly studied with comparison to that for methyl acetate carbonylation and methyl formate isomerization. A batch autoclave was used as the reactor. The reaction rate was measured from the rate of carbon monoxide consumption or analysis of liquid compositions. As the ion exchange equilibrium extremely favors the cation polymer resin, virtually all rhodium was immobilized, however, the immobilization characteristic was affected by the liquid compositions. The heterogeneous catalyst exhibited equivalent or higher activity compared to the homogeneous catalyst without further additives like water or lithium iodide.

Keywords: [Rhodium complex catalyst](#), [Immobilization](#), [Polymer support](#), [Methanol carbonylation](#), [Methyl acetate carbonylation](#), [Methyl formate isomerization](#)



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