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# 二羰基水杨醛肟铑配合物催化的苯乙烯常压氢甲酰化反应

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摘要 用Rh~2(CO)~4Cl~2与水杨醛肟的钠盐反应合成了二羰基水杨醛肟铑配合物Rh(sox)(CO~2)(1)。在常压下研究了该配合物与膦或亚磷酸酯组成的体系对苯乙烯氢甲酰化反应的催化性能,此体系对烯烃没有催化加氢作用,产物醛的化学选择性均为100%。考察了膦的结构与用量对催化活性和选择性的影响,双膦作配体时活性和选择性都高于单膦,其中Rh(sox)(CO)~2-Ph~2P(CH~2)~3PPh~2体系的最高初活性(TON)可达1.60min^-^1,2-苯基丙醛的选择性在90%以上。对反应的活性物种作了初步讨论。

关键词 催化剂 加氢 苯乙烯 膦 铑络合物 甲酰化 催化活性 水杨醛肟 P 亚磷酸酯

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## Hydroformylation of styrene catalyzed by dicarbonyl salicylaldoximate rhodium complex under atmospheric pressure

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**Abstract** The title complex (I) was prepared from [Rh(CO)2Cl]2 and the sodium salt of salicylaldoximine. In the presence of phosphines I was an active catalyst precursor for the hydroformylation of styrene at 60?0.1 MPa. The activity and selectivity increased as the phosphine ligands were changed from mono- to diphosphines. In the presence of 1,3-bis(diphenylphosphino)propane, an optimum catalyst activity of 1.6 min-1 was achieved, and the regioselectivity to 2-phenylpropanal was up to 90%. The sequence of phosphines for the regioselectivity to 2-phenylpropanal is in good accord with their s-electron donating abilities, i.e., Ph2P(CH2)3PPh2 u Ph2P(CH2)2PPh2 > PPh3 > P(OPh)3. An increase in the P/Rh ratio, except for PPh3 as ligand, led to a decrease in catalyst activity, but a small excess of phosphines favored the stability of the catalyst and the P/Rh ratio did not affect the regioselectivity remarkably. No side reactions such as hydrogenation were found; the chemoselectivity to aldehyde is 100%.

**Key words** CATALYST HYDROGENATION STYRENE PHOSPHINE RHODIUM COMPLEX FORMYLATION CATALYTIC ACTIVITY SALICYL ALDOXIME P PHOSPHORUS ACID ESTERS

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