Division of the History of Chemistry
American Chemical Society

Citation for Chemical Breakthrough

For the Development of Homogeneous Catalysis

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J. Chem. Soc. (A) **1966**, 1711-1732.

The Preparation and Properties of Tris(triphenylphosphine)halogeno-rhodium(I) and Some Reactions thereof including Catalytic Homogeneous Hydrogenation of Olefins and Acetylenes and their Derivatives

Our first studies were made using a rhodium(III) complex stabilised by triphenylphosphine. During the preparation of this phosphine complex we found that when an excess of triphenylphosphine was used, a rhodium(I) complex, $RhCl(PPh_3)_3$, results. This rhodium(I) complex, and the corresponding bromide and iodide, have proved to be the most effective catalysts yet recognised for the homogeneous hydrogenation at normal temperatures and pressures of a variety of unsaturated compounds containing both double and triple bonds.[9]

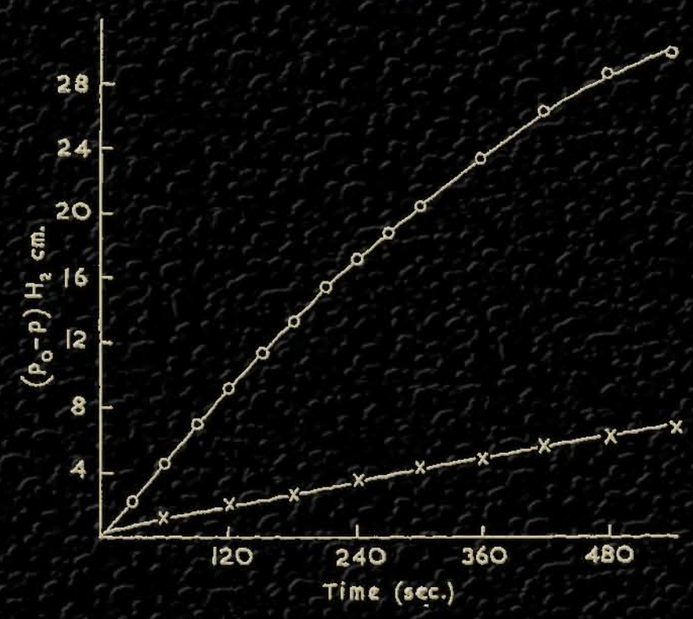

FIGURE 2 Qualitative comparison of the rates of homogeneous and heterogeneous catalysis, (○) 10^{-4} moles of $RhBr(PPh_3)_3$ in 1 : 1 benzene–ethanol, (×) 10^{-4} moles of Adams' catalyst in glacial acetic acid.

Presented to Imperial College London
2008