# 14-Electron Metal Complexes Stabilized by $M\cdots\eta^3$-$H_2C$ Agostic Interactions

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The coordination of inert C-H bonds to a transition metal center is of fundamental interest for stoichiometric and catalytic reactions, with particular regard to the problem of alkane functionalization via C-H bond activation. Unfortunately, information on the nature of the primary adduct is still very scarce, since saturated hydrocarbons are notoriously very poor ligands.

By use of the phosphine $PR_2(2,6\text{-}Me_2C_6H_3)$ (R = Ph, Cy), bearing two methyl groups in the *ortho* position, rare examples of 14-electron Ru(II) and Pt(II) complexes have been isolated [1]. Solid state studies, using both X-ray and neutron diffraction techniques, reveal that non-classical $M\cdots\eta^3$-$H_2C$ agostic interactions take place and this result is in agreement with a structural survey on Cambridge databank, data in solution and a computational analysis. The reactivity of these complexes is reported, as well as the use of the Ru system as precursor for the preparation of highly active transfer hydrogenation catalysts.

[1] a) Baratta W., Mealli C., Herdtweck E., Ienco A., Mason S. A., Rigo P., *J. Am. Chem. Soc.,* 2004, **126**, 5549; b) Baratta W., Herdtweck E., Rigo P., *Angew. Chem. Int. Ed.,* 1999, **38**, 1629; c) Baratta W., Stoccoro S., Doppiu A., Herdtweck E., Zucca A., Rigo P., *Angew. Chem. Int. Ed.*, 2003, **42**, 105.

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