Polymerization of Phenylacetylenes Catalyzed by Hydridotris(pyrazolyl)borate]-rhodium(I) Complexes

April 13, 2012

G. Perez

Rh(I) tris(3,5-dimethylpyrazolyl)borate Tp*Rh(cod), along with other tris(pyrazole)borate complex derivatives of the type [$Tp^{R2}RhL_2$), serve as efficient catalysts for the polymerization of phenylacetylene. This scorpionate-Rh(I) complexes coordinated in a saturated tridentate $\bullet^3$ and unsaturated bidentate $\bullet^2$ form in solution. The catalysis is known to be dependent on the formation of the $\bullet^2$ isomer. Temperature-dependent ^1H NMR spectra showed that the catalytic activity was strongly hindered by the substitution of benzotriazole for one of the identical 3,5-dimethylpyrazole rings in the heteroscorpionate-Rh(I) bis(3,5-dimethylpyrazolyl)(1,2,3-benzotriazolyl)borate TP'Rh(cod) complex. Results thus indicate the heterocycle stinger affects the favorable $\bullet^2$ binding of the pincer pyrazoles in heteroscorpionate-Rh(I) complexes.