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BOOK OF ABSTRACTS

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RESONANCE RAMAN SPECTRA OF SOME RUTHENIUM CLUSTER COMPOUNDS

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A series of ruthenium carbonyl hydrides showing catalytic activity has been recently prepared. Particular attention was paid to some cluster compounds with phosphine substituents which makes differences in the catalytic properties.

Vibrational studies of these complexes were successfully performed using resonance Raman spectroscopy. This technique allows to discriminate the vibrational modes of the cluster framework from the modes due to substituent groups, solvent, possible reactant and product molecules. In particular the Ru-Ru vibrations were localized in the 100-300 cm^{-1} region. The number and the frequencies of the corresponding bands were correlated to the symmetry of the clusters and to the nature of the substituents. Bands due to coupled (-C=O) modes were also observed in the 300-650 cm^{-1} range.

The combined analysis of the Raman spectra, band polarizations and excitation profiles for different compounds allowed us to furnish information on the symmetry of the clusters. Inferences on the origin of the lowest excited electronic states were also obtained.