

COORDINATION AND STRUCTURE OF LATE TRANSITION METAL CATION (Co, Rh, Pt) ACETYLENE COMPLEXES STUDIED WITH INFRARED PHOTODISSOCIATION SPECTROSCOPY

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Late transition metals are studied as model systems for single atom catalysis in the gas phase with infrared photodissociation spectroscopy. Clusters of $M^+(\text{acetylene})_n$ ($n = 1-8$) are produced via laser vaporization of either cobalt, rhodium, or platinum rods in a supersonic expansion of argon containing acetylene. Infrared photodissociation spectroscopy of smaller clusters is accomplished with the aid of argon tagging. Larger clusters are studied through the elimination of one or more acetylene ligands. These spectra are assigned with the aid of B3LYP/Def2TZVP computations. The structure and size of the inner coordination sphere is discussed.