

Book Review

Progress in Inorganic Chemistry, Volume 40

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Volume 40 of this comprehensive series is divided into seven subjects of utmost interest. A monograph by A. Mayr and C. M. Bastos provides a review on coupling reactions between two carbonyls, two isocyanides, two alkylidynes and crossed coupling reactions between these ligands. Theoretical studies concerning coupling reactions and a full range of spectroscopic and structural properties for coupled products are mentioned. A monograph by G. D. Stucky covers the interface of nanoscale inclusion chemistry pointing to the growing importance of the solid state chemistry and optical application of new materials. Nanocomposite synthesis and properties (e.g. on non-linear optics) as well as host composition, topography and the host-guest relationship are reviewed and discussed. For those interested in polydentate phosphines the review by F. A. Cotton and B. Hong has a variety of well organized information. References for 112 bidentate phosphines are given and synthetic methods for the preparation of tri-, tetra-, penta- and hexadentate phosphines are referred to, as well as some of their physical properties. Structural aspects of transition metal complexes with polydentate phosphines as ligands and some selected applications to homogeneous catalysis are given. The activation through coordination of hydrogen peroxide and dioxygen by

iron and cobalt systems is reviewed by D. T. Sawyer, A. Sobkowiak and H. Tung. Reaction pathway and oxygenation products from a lot of different substrates are referred to and related to biological oxidative metabolic processes. M. Witt and H. W. Roesky list a full range of bulky fluorinated molecules and mention some of their derived complexes. The synthesis of several transition metal fluoride compounds is also reported. Although references are given no spectroscopic and structural properties are mentioned. Sulfur ligands (disulfidothionitrate, sulfur monoxide, disulfur monoxide) and sulfur containing ligands (thionitrosyl and thiazate), properties and bonding modes are discussed by K. K. Pandey. The coordination ability of those ligands to transition metals is outlined. Structural and spectroscopic (mainly IR) properties of most of the complexes are clearly reported. Energetic considerations, enthalpy and free energy values for a variety of reactions and metal-ligand bond strengths are provided in a concise review by C. D. Hoff. The barrier for thermodynamic or kinetic control in a chemical process is discussed.

Volume 40 of *Progress in Inorganic Chemistry* is an useful pool of information for further studies in the subjects outlined.

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