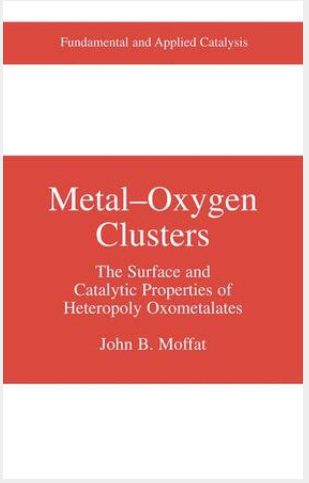
Moffat

Metal-Oxygen Clusters

The Surface and Catalytic Properties of Heteropoly Oxometalates



Metal-Oxygen Clusters is the first book, providing an overview of the surface chemistry and catalytic properties of heteropoly oxometalates. After a brief look at the early knowledge of heteropoly oxometalates, the book discusses the synthesis, characterization, structure, bulk properties and stability of these materials. The remainder and the largest portion of the book explores the properties of these solids as catalysts in acid-catalyzed and oxidation processes in supported or unsupported forms. The book provides an up-to-date review of the methods for synthesizing heteropoly oxometalates of Keggin structure, techniques from spectroscopic through electrochemical to elemental analysis for their characterization and the current information on their structure, bulk properties and their stabilities at high temperatures and under acid and alkaline conditions. The book discusses the materials employed as supports for the title solid and the results of the examination of the supported materials. Methods for the identification of the nature and source of the two catalytic functions, the acidic and oxidative properties, of the heteropoly oxometalates are reviewed and discussed. The use of both the supported and unsupported heteropoly oxometalates as catalysts in acidity-requisite processes ranging from methanol conversion to hydrocarbons to ring-expansion and contraction processes and in oxidation processes from methane cyclohexane are described and related to the aforementioned properties.

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