DESCRIPTION

This two-volume book provides an overview of physical techniques used to characterize the structure of solid materials, on the one hand, and to investigate the reactivity of their surface, on the other. Therefore this book is a must-have for anyone working in fields related to surface reactivity. Among the latter, and because of its most important industrial impact, catalysis has been used as the directing thread of the book.

After the preface and a general introduction to physical techniques by M. Che and J.C. Védrine, two overviews on physical techniques are presented by G. Ertl and Sir J.M. Thomas for investigating model catalysts and porous catalysts, respectively.

The book is organized into four parts: Molecular/Local Spectroscopies, Macroscopic Techniques, Characterization of the Fluid Phase (Gas and/or Liquid), and Advanced Characterization. Each chapter focuses upon the following important themes: overview of the technique, most important parameters to interpret the experimental data, practical details, applications of the technique, particularly during chemical processes, with its advantages and disadvantages, conclusions.
ABOUT THE AUTHOR

Michel Che studied chemistry and, after recruitment by CNRS, obtained his Doctorat ès Sciences (University of Lyon, F) in 1968. He worked as post-doc at Princeton University (USA) (1969-1971) and then as frequent visiting scientist at the Atomic Energy Research Establishment, Harwell (UK) (1972-1982). He became Professor at the University Pierre & Marie Curie, Paris in 1975 and Boris Imelik Chair Professor of Institut Universitaire de France in 1995. His research concerns spectroscopy, surface reactivity and heterogeneous catalysis. He was President-Founder of the European Federation of Catalysis Societies (starting the biennial Europacat congresses) and later of the International Association of Catalysis Societies. His scientific and educational work earned him several international awards, lectureships and honorary doctorates.

Jacques C. Védrine studied chemistry and, after recruitment by CNRS, obtained his Doctorat ès Sciences (University of Lyon, F) in 1968. He worked as post-doc in USA at Varian Associates, Palo-Alto (1969-70) and at Princeton University (1970-71). He was deputy director of the Institut de Recherches sur la Catalyse, CNRS in Lyon (1988-1998) and Chair Professor at Liverpool University, UK (1998-2003). He is one of the Editors of Appl. Catal. A: General. His research field covers physical techniques of catalyst characterization and heterogeneous catalysis for acid- and selective oxidation-type reactions on zeolites and mixed metal oxides. He was President of the European Federation of Catalysis Societies and of the Acid-Base World Organization. His scientific and educational work earned him several awards, and an honorary doctorate.

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