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Surface Chemistry—Advances and Technological Impact 1996

The field of surface chemistry extends back to the early work of catalytic chemists such as Sabatier, Haber, Langmuir, Taylor, and many others, who, through the improvement of catalytic reactivity and selectivity, strove to impact the important chemical technologies of their day. Their research, using relatively simple tools, led to the development of many fundamental surface chemical principles which form the basis for current understanding. A goal of current research using modern instruments and advanced theoretical methods is to understand surface behavior at the ultimate limit of atomic detail. In pursuit of this goal, the last 30 years has witnessed an enormous impact on the field of traditional surface chemistry by many physical methods undreamed of by the fathers of surface chemistry. (See C. B. Duke, Editor, "Surface Science—The First Thirty Years"; *Surface Science*, 1994, Vol. 299/300.)

This issue of *Chemical Reviews* has been designed to survey selected recent advances in surface chemistry and to highlight some connections between fundamental research and some important technologies. At the beginning we have an introductory view of the status of the field written by Professor Gabor Somorjai and entitled "Concepts and Technological Impact of Surface Chemistry". The body of the

following review material is divided into four categories of inquiry: "Structure at Surfaces", "Dynamics and Kinetics at Surfaces", "Reactivity at Surfaces", and "Connections to Technologies". Current research at both solid surfaces and at liquid surfaces is featured. All classes of solid surfaces from metals to semiconductors to insulators are discussed. The topics are arranged in a natural progression from physical to chemical topics, although the line dividing surface physics from surface chemistry is blurred. This blurred boundary illustrates the natural interdisciplinary character and strength of the field of surface science today.

I thank all of the authors for their careful surveys of sections of the field. The standards of scholarly inquiry, informed selectivity, and exciting writing are very evident, and this issue of *Chemical Reviews* will serve many, including younger scholars who will move into the 21st century well served by this nicely balanced review of the field as it stands in 1996.

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