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Introduction to the Symposium

The eleven articles in this issue are based on lectures given at the Symposium "Metal–Metal Bonding in Solid State Clusters and Extended Arrays" that was held in St. Louis, Missouri, April 9–10, 1984, as part of the 187th National Meeting of the American Chemical Society. The Symposium was sponsored by the Society's Division of Inorganic Chemistry; support for the foreign speakers was provided by the Division and by an Educational Grant from the Donors of the Petroleum Research Fund.

Two decades ago, knowledge of metal–metal bonding was essentially limited to a few simple and often high symmetry phases such as TiO, VO_2, and the tungsten bronzes together with compounds containing discrete clusters of the transition group V and VI elements, e.g., $Nb_6X_{12}^{2,3,4+}$, $Mo_6X_8^{4+}$, and $Mo_3O_8^{4-}$. The last twelve to fifteen years have been characterized by a remarkable expansion of the range and variety of metal–metal bonding possible, often in totally new and unprecedented types of compounds that lie on the interface between metals and more conventional compounds. The impact that this new chemistry may have is well illustrated by that of the so-called Chevrel phases and their derivatives.

The following articles represent the considerable diversity of metal–metal bonding studies: the synthesis and characterization of new materials containing metal clusters and various extended and infinite metal–metal bonded arrays, interstitial derivatives, factors associated with the formation of metal clusters in solids, clustering in polar intermetallics, and two interface-type studies of photochemistry in and organometallic analogs of conventional clusters. The articles illustrate well the growth of and opportunities for the study of metal–metal bonding in the solid state.

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