

# Hydrogen in Intermetallic Compounds I

Electronic, Thermodynamic,  
and Crystallographic Properties, Preparation

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## Preface

Phenomena related to the topic "Hydrogen in Metals" and the physics behind them as they were known at the end of the seventies are reviewed in the books *Hydrogen in Metals*, Vols. I and II, edited by G. Alefeld and J. Völkl (Vols. 28 and 29 of this series). These books, which treat mostly hydrogen in elemental metals, are still very valuable and will continue to be important in the coming years.

Since their publication, a lot of new results have been obtained, which have improved both our knowledge and understanding considerably. The work was stimulated by the extraordinary properties of hydrogen-storing intermetallic compounds and by the energy crisis. The recent progress, which has more often concerned *intermetallic compounds* and alloys than elemental metals, has been reviewed in many good articles either at a technical, purely scientific, or at a more popular level. Until now, however, the details of this important field have never been drawn together and presented in the form of a book.

Thus, the aim of the publication of the two volumes "Hydrogen in Intermetallic Compounds" is to give a thorough description of the various aspects of the topic in a series of chapters written by specialists in the field and to review major progress on hydrogen in and on elemental metals. This volume begins with a description of the preparation of intermetallics and their hydrides. It contains further chapters on crystallographic, thermodynamic, electronic and magnetic properties and on heat of formation models. Volume II will be devoted to aspects of the kinetics and dynamics of hydrogen, to surface phenomena and to applications and experimental techniques.

As the interaction of hydrogen with metals and alloys is, and will be, of significant importance for basic research as well as for hydrogen energy technology, fusion, catalysis, getters, electrochemical cells and for many more applications, I hope that these two volumes will help many scientists to find the information they are looking for, to spread the fascination which we the authors already share, and to stimulate further work.

I should like to express my thanks to all the authors for their individual contributions and for their willing and fruitful cooperation and to Angela Lahee and to my wife Christine for careful reading of the manuscripts and proofs.

Zurich, January 1988

*Louis Schlapbach*

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