

Preface

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With the development in the field of metastable metals and alloys since the middle of the 1970s, a demand was emerging to have meetings that would bring together the community of researchers interested in the chemistry and chemical reactivity of amorphous metals. It was believed that such separate meetings would serve well the specific interest of the participants active in related areas.

The idea of organizing cyclic *international symposia on the Electrochemical and Chemical Reactivity of Amorphous Alloys* was finally born in Sendai in 1993, during the 8th International Conference on Rapidly Quenched and Metastable Materials. The European scientists participating in the section “Chemical Properties”, decided to organize symposia on this topic in Europe to provide a forum for more frequent discussion and cooperation.

The first Symposium was organized by Maria Janik-Czachor in Warsaw in 1994 and it was sponsored by the Institute of Physical Chemistry of the Polish Academy of Sciences. She also organized the third and seventh Symposia in Warsaw (1996 and 2003). Then, Professor Arpad Molnar organized the second and the eighth Symposia in Szeged (1995 and 2005).

Professor Ludwig Schultz organized the fourth Symposium in Dresden in 1997. Reactivity of nanocrystalline materials was also included into the program, and the results of both fundamental and applied research were discussed. Several new participants—scientists from Asia and North America—attended that meeting.

Two Symposia emerged at other continents: Koji Hashimoto organized the fifth Symposium in Sendai, Japan (1998) [1] and Dr. Robert Schulz, the sixth one in Mt. Tremblant, Canada (2001) [2].

The Symposia focused on chemical properties of nonequilibrium materials of disordered or nanocrystalline structure. Both fundamental and applied aspects of research were discussed. It has been emphasized, that to meet extreme demands of the modern technology fabrication of optimally functionalized materials of enhanced specific properties, high-resolution methods capable of identifying factors responsible for their unique properties are required. Moreover, non-equilibrium processing techniques should provide new potential for producing compositionally and structurally graded materials with optimized properties.

The research of Koji Hashimoto has had impact on reducing reactivity to produce corrosion-resistant materials, on enhancing activity of catalyst/electrocatalyst materials, and on the use of amorphous alloys as means of solving some ecological problems of our civilization, including global CO₂ recycling and supply of renewable energy. An innovative use of new materials with superior electrocatalytic properties for hydrogen production and oxygen evolution in seawater electrolysis, and for the CO₂ methanation were demonstrated. Koji Hashimoto was invited to present his findings and prospects as a plenary lecture at EMRS 2007 in Warsaw (Energy & Environmental Science (the Royal Soc. Chem.), submitted).

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In order to extend the necessary collaboration of chemists and physicists with materials scientists, the International Scientific Committee of these cyclic Symposia has decided to join the annual European Materials Research Society Fall Meetings (EMRS) and to organize the ninth Symposium as a part of this Meeting.

The scope of the *9th Symposium on Chemical/Electrochemical Reactivity of Metastable Materials* belongs to the general topics of “Chemistry for Materials Science”. It is aimed at promoting various opportunities for interdisciplinary collaboration of scientists from around the world, in addition to presentation of new results, ideas and technologies in the field of chemical properties of novel materials including (but not limited to) amorphous and nanocrystalline alloys obtained by rapid quenching, sputter deposition, mechanical alloying, heavy deformation, electrodeposition and other chemical, physical and mechanical methods. Surface chemical modification methods were also dis-

cussed. Paweł Kulesza, who joined the ninth Symposium, brought a number of eminent scientists—participants from the European Union and USA, and broadened the scope of the Symposium considerably, as can be seen from this issue.

The issue contains selected electrochemistry-related papers presented at the ninth Symposium.

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References

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