



## Editorial

## E-MRS2010 Fall Meeting Symposium F: “10th International Symposium on Electrochemical/Chemical Reactivity of Metastable Materials” 13–17 September 2010, Warsaw (Poland)

With the developments in the field of metastable metals and alloys since the middle of the 1970s, there was a growing need to hold meetings that would bring together the community of researchers interested in the chemistry of amorphous metals. It was believed that such meetings would well serve the specific interests of participants active in related areas.

The idea of organizing periodic 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 “Chemical Properties” section 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 Professor Maria Janik-Czachor in Warsaw in 1994. It was sponsored by the Institute of Physical Chemistry of the Polish Academy of Sciences. Professor Janik-Czachor also organized the third, seventh and ninth Symposia in Warsaw (1996, 2003 and 2007). Professor Arpad Molnar organized the second and the eighth Symposia in Szeged (1995 and 2005), and Professor Ludwig Schultz organized the fourth Symposium in Dresden in 1997, where the reactivity of nanocrystalline materials was also included on the program, and the results of both fundamental and applied research were discussed. New participants from Asia and North America attended that meeting. Two Symposia were held on other continents: Professor Koji Hashimoto organized the fifth Symposium in Sendai, Japan (1998) [1], and Dr Robert Schulz the sixth in Mt. Tremblant, Canada (2001) [2].

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

The research of Professor Koji Hashimoto has had an impact on reducing reactivity to produce extremely corrosion-resistant materials, on enhancing the activity of catalyst/electrocatalyst materials, and on the use of amorphous alloys as means towards solving certain ecological problems of our civilization, including global CO<sub>2</sub> recycling and the 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 CO<sub>2</sub> methanation, was demonstrated.

In order to extend further the valuable cooperation of chemists and physicists with materials scientists, the International Scientific Committee of these periodic Symposia decided to hold the ninth and tenth Symposia as part of the Fall Meetings of the European Materials Research Society (E-MRS).

The subject of the 10th Symposium on the Chemical/Electrochemical Reactivity of Metastable Materials was “Chemistry for Materials Science”. The conference was aimed at promoting various opportunities for interdisciplinary collaboration among scientists from around the world, as well as at presenting new results, ideas and technologies in the field of the 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. Chemical and electrochemical surface modification methods were also discussed. The Symposium consisted of one plenary lecture, fifteen invited lectures, twenty oral contributions, and nine posters from Austria, France, Germany, Hungary, Italy, Japan, Korea, Poland, Romania and Switzerland. Many recent results concerning new materials and processes were presented, and fruitful discussions continued during the Symposium sessions.

Professor Paweł Kulesza, Dean of Chemistry at the University of Warsaw, who had already participated in the ninth Symposium, brought together a number of eminent scientists from the European Union, and broadened the scope of the Symposia considerably, as can be seen from the previous proceedings [3] as well as from this issue.

The Organizers are most grateful to the members of International Scientific Committee for their advice and support in gathering eminent individuals from all over the world at the scientific sessions. Special thanks are due to those scientists who, by their participation and scientific activities, helped to continue the tradition of our periodic Symposia, and also contributed to this issue: Professor Koji Hashimoto, a pioneer in the field, Professor Arpad Molnar, Professor Stanisław Filipek, and Dr Gabriele Mulas.

This issue contains 23 papers presented at the 10th Symposium. Sincere thanks are due to all those who presented papers, to all the authors of this issue, and to all those who attended the symposium and helped enormously to make it a success.

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### References

- [1] Materials Science and Engineering A 267 (2) (1999) 171.
- [2] Materials Science Forum 377 (2001) 1.
- [3] Journal of Solid State Electrochemistry 13 (2009) 183.

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