MOLTEN 2009

MOLTEN2009

PROCEEDINGS OF THE VIII INTERNATIONAL CONFERENCE ON MOLTEN SLAGS, FLUXES AND SALTS

18-21 January 2009, Santiago, Chile

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CHAIRMAN'S ADDRESS

The proceedings of the VIII International Conference on Molten Slags, Fluxes and Salts -MOLTEN 2009 are now in your hands. This information comes from several countries interested in high-temperature processes, fundamental research, and its applications. You will also find important information that, we expect, will be a useful reference in your studies, research and industrial work.

Molten, is a conference that has been held around the world for more than twenty five years, from Halifax, Canada (1980), to Lake Tahoe, USA (1984), Strathclyde, United Kingdom (1988), Sendai, Japan (1992), Sydney, Australia (1997), Stockholm/Helsinki, Sweden/Finland (2000), Cape Town, South Africa (2004). This is the very first time in South America, so the Organizing Committee feels very proud of hosting this event in Santiago, Chile.

South America and particularly Chile, is amazingly rich in mineral resources and for this reason, local economies are highly dependent on mining production. Hence, the topics in these proceeding are also very useful for our development and a great reason to meet here.

When organizing meetings of this nature, organizers always wonder whether the quality and number of presentations will be enough to meet the expectations of the attendees. We expect these proceedings to be also an important document for industry professionals, universities, and research centres. Despite the unintended potential mistakes, we expect this information will serve the purpose of a wide range of people.

The turbulent economic times currently affecting the world in general and our metallurgical industry in particular should not be overlooked, especially after the dramatic metal price increases during the last few years that made most mining economist feel at ease. Now, most of them are unable to ascertain how long this negative scenario will really be. Yet, this situation should be seen as a good opportunity to thoroughly revisit the way of doing business in the economic world and therefore, to find new and improved ways to contribute to our main goal, that is, our development as human beings. Thus, undoubtedly this is our opportunity to innovate.

Now, please, take a look at the map and see where we are. We are located in the southern most part of the world, in a new

continent with a short history, unlike other countries around the world where you came from. Latin America as a continent has experienced a fast growth rate in the last few years, and our people and institutions are striving to further develop the economy and improve the social aspects of our community. Chile in particular, is an important mining country, which due to its shape and location in the world map, faces unique challenges that has successfully faced in this area. Ferrous and non ferrous metals are quite important for our future and you will see how relevant minerals are for our development.

This is a good opportunity to share scientific and technical results and discuss ideas as to how to improve methods, techniques, and treatments related to high-temperature processes. It is time to grow together. Let us fully leverage this opportunity.

Mario Sánchez
Chairman
VIII International Conference on
Molten Slags, Fluxes and Salts - MOLTEN 2009

PREFACE

Following the tradition of preceding MOLTEN conferences, the MOLTEN 2009 call for papers received a great response from the international academic and industrial communities. This proves that high temperature materials processing continues being fertile ground for scientific advances and for technology development and improvement.

In the MOLTEN 2009 proceedings, the reader will find submissions from authors from 32 different countries from nearly all continents. The 139 papers presented in have been grouped into the following sections:

- Slags (61)
- Other Melts and Liquids (6)
- Interfacial and Transport Phenomena (13)
- Industrial Processes (53)
- Molten Salts (6)

This is, obviously, not a strict classification.

The papers on slags account for about one third of the total. In this case, the editors thought that arranging these papers in subgroups, as shown in the proceedings table of contents, would facilitate the location of specific topics.

In an industrial perspective, most of the MOLTEN 2009 papers discuss either basic or technical aspects relating to the production of iron, steel or ferroalloys; a clear indication of the importance of these materials to sustain the accelerated economic development that countries in several regions of the world, in particular Asia, have been experiencing in recent years.

Modeling work in support of both fundamental research and technology development and improvement shows that researchers are using a two-pronged approach to the investigation of specific topics. This is a field of work that will probably further expand in the immediate future. The judicious use of mathematical modeling to study complex systems and to improve industrial processes, with continuous validation and revision of model predictions against actual physical data, is a most promising tool in high temperature work.

A concern for the environment and the need to achieve industrial sustainability is openly discussed in a few of the MOLTEN 2009

papers. In an attempt to highlight the importance of this matter, the organizers of MOLTEN 2009 selected two of these papers for plenary session presentations.

The editors are confident that the MOLTEN 2009 proceedings will prove a valuable addition to the bookshelves of academic and practicing high temperature researchers alike around the world.

THE EDITORS
January, 2009

ACKNOWLEDGEMENTS

We were proud to host the VIII International Conference on Molten Slags, Fluxes and Salts – MOLTEN 2009 in Chile, bringing it to South America for the first time in its 28 year history, and welcome over 250 delegates to Santiago. Producing such a complex event has been a rather challenging task which has required a lot of disciplined effort from all of us.

Produce such an event as MOLTEN 2009 has required a lot of effort, commitment and hard work from many people from different countries. This Conference would not have been possible without all those people who have put in long hours of hard work, dedication, energy and talent. We thank them most sincerely for their contributions of time and expertise to this project. We are extremely grateful to all those involved in the Conference organisation and particularly to:

- The authors for their invaluable contributions, monumental efforts of meeting deadlines, and willingness to travel across the world in order to share their knowledge and experience. With their exceptional articles we were able to bring the best of their knowledge to Chile. All papers in these proceedings were peer reviewed and we thank the authors for the willingness to invest their personal time and correct the articles, providing insightful comments thus ensuring the quality of this publication.
- Technical reviewers for reviewing the papers and for their contribution to the high technical level of the Conference.
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