

Fray International Symposium

Seldom does a conference cover such a wide range of materials subjects as the recent symposium organised in honour of Prof Derek Fray, Professor of Metallurgy at the University of Cambridge UK. Neither are so many companies and organisations prepared to associate their name with the event by sponsorship. 184 professional bodies, academic institutes and publications – including Steel Times International, supported the event. **A report by Fathi Habashi***

THE Fray International Symposium was held at Fiesta Americana Hotel, Cancun, Mexico from November 27 - December 1, 2011. The event was in honour of Dr Derek Fray, Professor of Metallurgy at the University of Cambridge UK. According to the official programme, Professor Fray has almost 400 scientific papers and is inventor of approximately 179 patents arising from 62 families of patents. He is Fellow of some of the most prestigious professional societies around the world.

Throughout his career his activity has impacted various fields such as non-ferrous, ferrous and nano-scale materials processing; many processing routes including pyrometallurgy, hydrometallurgy, chemical vapour synthesis and processing, recycling; and several investigation techniques such as experimental measurements and physical modelling and simulation.

The Organising Committee was composed of 116 members from all continents and received 480 abstracts from 60 countries.

The symposium was sponsored by 227 organisations from worldwide.

It was organised by Flogen Technologies Inc in Montreal whose Chief Executive Officer is Dr Florian Kongoli who acted as Symposium Chairman.

The first day of the symposium was devoted to a number of short courses which was concluded by a reception for all delegates. The symposium and poster sessions then took place over the next four days.

There were two Plenary Gala Lectures. One was entitled, 'Sustainability, Scientists, and Engineers' and the other, 'Mining, Metallurgy, and Society'. The sessions were organised along the following topics:

- International Symposium on Advanced Sustainable Iron and Steel Making [39 papers]
- International Symposium on Molten Salts and Ionic Liquids 2011 [44 papers]
- International Symposium on Sustainable Non-ferrous Smelting in 21st Century [47 papers]
- Environmental/Health, Energy and Policy Issues Related to Metals, Materials and Mineral Processing [23 papers]
- Aqueous and Low Temperature Processing of Minerals, Metals and Materials [24 papers]
- Boron and Borates: Extraction, processing and applications [4 papers]
- Composites, Ceramics and Nano-materials Processing Symposium [28 papers]
- Electrochemical Processing of Minerals, Metals and Materials [15 papers]
- Legal, Management, Economical and Social Issues Related to Metals, Materials and Minerals Processing [9 papers]
- Materials Recycling Processes and Products [26 papers]
- Silicon Production, Refining & Recycling for Photovoltaic Cells [8 papers]

- Titanium: Extraction, Processing and properties for wide applications [12 papers].

There were numerous posters in each of the above sessions. For readers of this journal the sessions on Iron and Steelmaking contained the following papers:

- Recent Developments in Carbon-free Ironmaking by High-temperature Electrolysis;
- Effect of Chlorides into the Raw Materials on PPCD/F Polychlorinated Dibenzodioxins Emissions of Large Sintering Machine, with Process Gas Recovery;
- Mathematical Modelling of Forecasting the Iron Ore Materials and Coke Quality Indicators;
- Delay-dependent H Infinity Control for Steering of Lateral Moving Strip in a Hot Rolling Mill;
- Analysis of Lateral Movement System in Rolling Process with Actuator Saturation and L2-disturbances;
- Role of Nanocrystalline Structure in Oxidation Resistance;
- Role of Micro-/Nanocrystalline Structure in Oxidation;
- Charcoal Ironmaking: A Contribution for CO₂ Mitigation;
- A Mini Blast Furnace Based on Charcoal and Hydrogen Reduction;
- Effects of Calcium Ferrite Mineralogy in Sinter Ore on the Reduction and Melting Behaviour;
- Use of Flux Materials in Hot Metal Desulphurization Process and its Influence in the Process;
- Phase Regions with Two Allotropies of Iron;
- MgO Solubility in Metallurgical Slags Containing Iron Oxide;
- Microstructure of Solidified Mould Slags and Comparison with Laboratory Specimens;
- Current State and Prospects of Mathematical Modelling of Blast Furnace Smelting;
- Metallographic Analysis on the Evolution of Structures Welding in the Structures of Marine Resources;
- Mathematical Modelling and Tasks Practical Solution of Blast Furnace Smelting;
- Reduction Kinetics of Stainless Steel Plant Dust by Graphite in a Microwave Field;
- Degradation Behaviour of Stainless Steel in PbO-CaO-SiO₂ Based Slags;
- Production of Pellet Feed Fines From Iron Ores Beneficiation Tailings and Slimes;
- Recovery of Manganese from Steelmaking Slag;
- An Analysis of Nitrogen Pick-up Between Tapping from an Oxygen Converter and Secondary Refining;
- Influence of Casting Speed Variation During Continuous Casting on Non-metallic Inclusions in IF Steel Slabs;
- Hydrogen Diffusion, Migration of Dislocations and the Mechanism of Flakes Formation in Metallic Materials;
- Effect of Deoxidizer on Inclusion Distributions of Continuously Cast Slabs of 304 Stainless;
- Steels Analysed by Statistics of Extreme Values;
- Sulphide Capacity of Mn-containing Slags Measured by Gas-Slag Equilibration Method at 1873K;
- Control of Inclusions in Speciality Steels;
- Strategy to Recover Valuable Elements from Steel Scrap and Steelmaking Slag;
- Surface Analysis of Electric Arc Furnace Dust from Stainless Steel Plant Using X-ray Photoelectron Spectroscopy;
- Mathematical Modelling of the Melting Rate of Metallic Particles in the Electric Arc Furnace under Multiphase Flow;
- Simulation of Reaction Kinetics at Metal-Slag Interface in Steel Refining Process;
- Sustainability in Ironmaking Processes;
- The Sticking Behaviour Caused by Sintering in Gas Fluidisation Reduction of Hematite;
- Innovation and Opportunities for Change in Iron-units Supply Chain through New Technology;
- Process Control in BOF Steelmaking;
- Production of Intermetallic Compound Powders Through Sodium and Hydrogen Reduction of Chlorides;
- Effect of Iron Precipitation on Sticking Time in Fluidised Reduction of Fe₂O₃ Particles;
- Alternative Solution to Use Secondary Powder Materials for Steelmaking in EAF.



Fiesta Americana Hotel, Cancun

- Unfortunately, not all the papers were presented because of absence of some speakers. A proceedings volume CD is promised to be sent to participating delegates. The complete programme is available at www.flogen.com/FraySymposium. A book of abstracts was available.

The conference was well organised but poorly attended despite the venue, the Fiesta Americana Hotel, which provided a pleasant atmosphere, while the conference social events included spectacular Mexican folk dances. ■

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