
Editorial

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This special issue titled 'Engineering Materials and Manufacturing' includes some selected papers presented during the 13th International Metallurgy and Materials Congress (IMMC'06). This international congress was organised by the Chamber of Metallurgical Engineers of Turkey in Istanbul (09–12 November 2006).

The Chamber of Metallurgical Engineers (CME) was established in 1970. It is one of the 23 members of Union of Chambers of Turkish Engineers and Architects (UCTEA) and has about 3,200 members.

The first congress was organised in 1975, and now, IMMC is the largest and most important event together with the trade fairs in this field in Turkey. During IMMC 2006, 196 papers from 20 countries covering all aspects of metallurgy, materials science and engineering (ferrous and non-ferrous metallurgy, ceramics-glasses-refractory materials, casting, powder metallurgy, surface processes, coating, heat treatment, wear, corrosion, composites, polymers, bio- and nano-materials, welding, materials design) have been presented.

Some keynote papers were presented by Prof. Dr. D. Eliezer (Ben Gurion University of the Negev), Prof. Dr. D. Embury (McMaster University), Dr. O.L. Eryilmaz (Argonne National Laboratory), Prof. Dr. W.D. Griffiths (University of Birmingham), Prof. Dr. B.H. Günther (Fraunhofer Institute for Manufacturing and Advanced Materials), Prof. Dr. H. Mughrabi (Universität Erlangen-Nürnberg), Prof. Dr. M. Stelter (Institute for Nonferrous Metallurgy and Purest Materials), and Prof. Dr. R.Z. Valiev (Ufa State Aviation Technical University).

In parallel to the congress, with participation of 619 companies from 35 countries ANKIROS 2006 (8th International Iron-Steel and Foundry Technology, Machinery and Products Trade Fair), ANNOFER 2006 (7th International Non-Ferrous Metals Technology, Machinery and Products Trade Fair), and TURKCAST 2006 (2nd Foundry Products Trade Fair) were organised by Hannover-Messe Ankiros Fair Organization, and

3rd International Ankiros Foundry Congress was organised by Foundrymen's Association.

The following selected papers from this congress are included in this issue of IJMMP:

- Comparison of different methods used to establish recrystallisation conditions of gold alloys (D. Maggian): This paper gives a comparison of hardness measurement, metallographic investigation and differential thermal analysis to determine the recrystallisation characteristics of gold alloys for optimising the industrial processes.
- Production and characterisation of strontium and magnesium doped lanthanum-gallium oxide ceramics (H.E. Çamurlu, F. Maglia and G. Chiodelli): This paper focuses on production and investigation of strontium and magnesium doped La-Ga oxide ceramics, where the samples were produced by sintering of powders prepared from metal-nitrate starting materials via a Pechini type sol-gel process.
- Formation of Zr(C,N)-ZrB₂ composite powders by self-propagating high-temperature synthesis (SHS) (H.E. Çamurlu and F. Maglia): In this study, Zr carbonitride- Zr diboride powders produced by self-propagating high temperature synthesis from Zr, hexagonal boron nitride, carbon and boron powders were investigated for high temperature utilisation requiring also resistance to wear, oxidation and corrosion.
- Maximum entropy method for the study of materials (B.Z. Belashev): This paper presents the application of the maximum entropy method to determine the crystalline lattice parameters and the composition of mixtures to identify the close order type of amorphous conjugations, and to follow the details of transformations.
- Tribological and adhesion behaviour of hard alloy powder NiCrBCSi(Fe) coatings thermally sprayed on 60CrMn4 steel (S. Abdi, S. Lebaili and B. Malki): In this study, the tribological and adhesion behaviours of coatings, produced by oxy-fuel thermal spraying of Ni-based powder containing Cr, B, C, Si, and variable amount of Fe, were investigated.
- Correlation of microstructure and hardness of two-pass submerged arc welds of line pipe steel X65 (R. Maksuti, H. Mehmeti and S. Imeri): This paper presents the investigation of the microstructures of two-pass submerged arc welds of X65 steel by metallography and hardness measurements for establishing a correlation between them.
- Simulation of equal channel angular pressing applied to produce structures with nano-size grains (P. Karpuz, C. Şimşir and C.H.Gür): In this study, severe plastic deformation behaviour of materials subjected to equal channel angular pressing at different die angles, friction conditions, and die design was analysed by modelling the deformation process using MsC.Marc finite element software.
- Application of cooling curve analysis as a process control tool to produce compacted graphite cast iron (O. Elmabrouk, A. Çetin, A. Kalkanlı and E. Selçuk): This study aims to investigate the relations between the thermal analysis parameters and graphite morphologies of cast irons that were produced over a suitable range of Mg/S ratios and to present a methodology that can supply information during production.

- Investigation of microporosity formation mechanisms in A356 aluminium alloy castings (A. Çetin and A. Kalkanlı): This study concentrates on investigation of the mechanisms of micro-porosity formation in A356 Al-alloy castings, and proposes solutions in order to overcome this problem.