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Journal of
Mining and
Metallurgy

NEW MEMBERS OF THE EDITORIAL BOARD

Fathi Habashi

Professor Emeritus of Extractive Metallurgy
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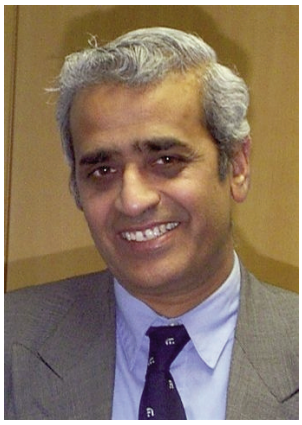
He holds a B.Sc. degree in Chemical Engineering from the University of Cairo (1949), a Dr. techn. degree in Inorganic Chemical Technology from the University of Technology in Vienna (1959), and Dr. Sc. honorus causa from the Saint Petersburg Mining Institute in Russia (1993). He held the Canadian Government Scholarship at the Mines Branch in Ottawa (1960–1962), taught at Montana College of Mineral Science & Technology (1964–1967), then worked at the Extractive Metallurgical Research Department of Anaconda Company in Tucson, Arizona before joining Laval in 1970. His research was mainly directed towards organizing the unit operations in extractive metallurgy and putting them into a historical perspective.

Habashi was guest professor at a number of foreign universities, authored a number of textbooks on extractive metallurgy and its history, and edited Handbook of Extractive Metallurgy in 4 volumes in 1997. Some of his textbooks were translated in many languages. In 1998 he was named a Fellow of the Canadian Institute of Mining, Metallurgy, and Petroleum and in 1999 he received its silver medal. He is an Honorary Professor at the Technical University of Oruro in Bolivia, Honorary Citizen of the city of Oruro, Governor at the Fondation de l'Université Laval, and Member of Le Cercle des Ambassadeurs in Québec City. He is a member of a number of Editorial Boards of extractive metallurgy journals and Chairman of the Historical Metallurgical Committee of the Metallurgical Society of the Canadian Institute of Mining, Metallurgy, and Petroleum.



Seshadri Seetharaman

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Date of Birth: 5th December 1943

Place of Birth: Pudukottai, Tamil Nadu, India.

Citizenship: Swedish (previously Indian)

Swedish National Registration No.: 431205-6551

Address: Vallslingan 14, 183 44 TÄBY

EDUCATIONAL QUALIFICATIONS:

Elementary School: Kulapathi Baliah School, Pudukkottai, Tamil Nadu Province, India, 1948-1953

Secondary School: Board High School, Kulitalai, Tamil Nadu Province, India, 1954-1958

Pre-University: Vivekanada College, Madras, Tamil Nadu Province, India, 1958-1959.

Bachelor of Science from the University of Madras in the year 1962

Master of Science from the University of Madras in the year 1965

Doctor of Philosophy in Metallurgical Engineering from Indian Institute of Science in the year 1971

Doccent in Metallurgy from the Royal Institute of Technology, Stockholm, Sweden in the year 1981

Professor in Metallurgy, Royal Institute of Technology, 1990

POSITIONS HELD::

1964 – 66: Employed as a research assistant in the Electrochemical Research Institute, Karaikudi, India, dealing with problems in electro-deposition.

1966 – 71: Research student in the Department of Metallurgy, Indian Institute of Sciencce, Bangalore, India.

Title of the Ph.D. thesis:
”Thermodynamic properties of some binary Metal-oxide solid Solutions”.

1971 – 73: Employed in the Department of Metallurgy, Indian Institute of Science as a post-doctoral, Research Associate.

1973 – 81: Employed as a Research Associate in the Department of Metallurgy, The Royal Institute of Technology, Stockholm, Sweden

1981 – 89: Employed as a ”Universitetslektor” (corresponds to Associate Professor) a permanent faculty position in the Department of Theoretical Metallurgy at the Royal Institute of

Technology, Stockholm, Sweden

1990 onwards: Professor, Theoretical Metallurgy, KTH

1996: Head of the Department of Metallurgy, Royal Institute of Technology.

2004: Pro Dean in the Faculty of Mechanical and Materials Engineering, Royal Institute of Technology.

Research Publications:

ca250 publications that include papers in peer-reviewed journals as well as more than 100 presentations in International Conferences as well as three patents and three book chapers (for one I was editor)..

Research Achievements:

22 students got their Ph.D.s and 12. Tech. Lic. Degrees since I took over the Chair of Theoretical Metallurgy.

Awards:

Awarded the Best Teacher award from the Materials Technology education line for the years 1987, 1991, 1992, 1996/1997, 1998, 2001/2002.

Awarded the KTH award for outstanding contributions in basic education for the year 1994.

"Best Teacher of the Royal Institute of Technology", awarded for the year 2003/2004.

Honorary Professor at the University of Science and Technology Beijing, China.

Visiting Professor at the Northeastern University of Technology, Shenyang China as well as the University of Technology, Ma'an Shaan, China

Visiting Professor at the University of PennState, USA during 1995.

Visiting Professor at Kyushu Institute of Technology, during January –March, 2003.

Special Research Interests:

Experimental measurements and modelling of the thermochemical and thermophysical properties of high temperature systems, investigations of the reaction kinetics of high temperature reactions that include, heat and mass transfer, property-structure relationships, micro phenomena at high temperatures.

Thermophysical properties of interest cover mainly viscosities, thermal diffusivities and surface-and interfacial tensions. The reaction kinetic studies are centered mainly around gas-solid reactions toward the production of functional materials.

Andy Watson

Institute for Materials Research,
School of Process, Environmental and Materials Engineering,
The University of Leeds, UK

Andy Watson has been working in the field of chemical thermodynamics for around 30 years. After graduating in metallurgy from the University of Manchester, he went on to study for an MSc and PhD in experimental and computational thermodynamics. The subject of his thesis was high-temperature direct reaction calorimetric studies of sigma-phase containing systems such as the Ni-V binary system and the Ni-Cr-Si system, leading to thermodynamic modelling of these challenging systems. After a brief spell in the coatings industry he joined the research group of Professor Bernard Argent the University of Sheffield in the Department of Engineering Materials to return to research into chemical thermodynamics. Early work was focussed on modelling binary and ternary III-V and II-VI compound semiconductor systems and he was the first at the University of Sheffield to carry out computerised thermodynamic assessment. This led to the study of the high-Tc oxide superconducting Y-Ba-Cu-O system; a project that involved 5 other laboratories in Europe. In this work, the accent was on experiment; determining enthalpies of formation of metallic and oxide compounds by solution calorimetry.

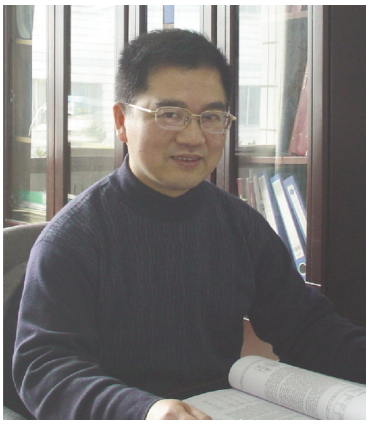
Andy then moved to the University of Leeds in the Institute for Materials Research to work on the recycling of materials, and in particular, of tin-plate scrap. Tin is generally considered to be deleterious to the mechanical properties of steel, being responsible for 'hot-shortness' in many grades, and hence its addition is usually minimised in the scrap charge used in steel making wherever possible. Through thermodynamic analysis and metallographic examination it was found that with appropriate additions, the deleterious effect could be removed and mechanical properties of the final product improved. This work led to a patent for the process.

During his time at Leeds he has been able to procure two high-temperature calorimeters for the study of the thermodynamic properties of materials. They have been used in COST Action 531 on lead-free solders, for which he was vice-chair of the management committee, a position that he also holds for COST Action MP0602 on lead-free solders for high-temperature applications. For both Actions, he has been a

member of the team that is responsible for the thermodynamic databases that are major outcomes of the projects.

For more than 10 years he has been a member of the 'Materials Science International Team' that meets annually for the assessment of ternary alloy systems for both the Ternary Alloys programme that was initiated by the Max Planck Institute and MSI in Stuttgart, and the Landolt-Börnstein Ternary Alloys Systems series.

He is current chair of the Materials Chemistry Committee of the Institute of Materials Minerals and Mining in the UK, and the UK representative to APDIC (the Alloy Phase Diagrams International Commission). Throughout his career he considers that he has been very fortunate in being able to forge and maintain links with materials scientists all over the world.



Yong Du

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Dr. Yong Du (Male, Birthday: November 27, 1964) is a full Professor of Central South University, China.

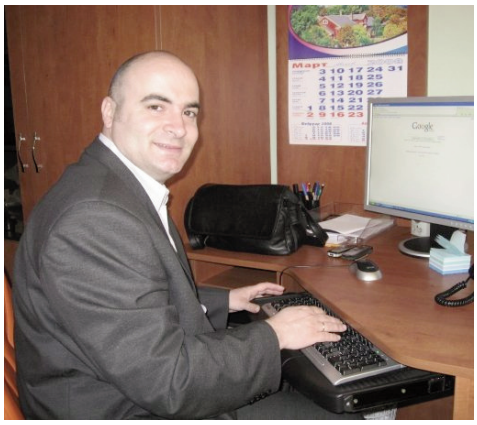
Currently he is the director of Science Center for Phase Diagram & Materials Design and Manufacture, Central South University. His research fields include (1) thermodynamics and phase diagram, (2) diffusion and interfacial reaction, (3) first-principles calculations, (4) microstructure evolution simulation using phase field method and its experimental verification, and (5) science and technology of coating.

From August 1993 to January 2003, Dr. Yong Du worked in Tokyo Institute of Technology, University of Barcelona, University of Clausthal of Germany, University of Vienna, and University of Wisconsin–Madison as an invited researcher, research scientist, postdoctoral, and Alexander von Humboldt research fellow.

He is author or co-authors of 2 books and 178 scientific papers in well-known international journals, such as Acta Mater., J. Am. Ceram. Soc., Metall. Mater. Trans.A, Intermetallics, Scripta Mater., CALPHAD, Surface & Coating Technology, J. Mining and Metallurgy, and Z. Metallkd. Currently he is associate editor of CALPHAD international journal and advisory board member of International Journal of Materials Research (formerly Z. Metallkd.).

Prof. Yong Du is the only young Chinese scientist in the filed of phase diagram and thermodynamics, who is selected to be National Outstanding youth of National Natural Science Foundation of China and Cheung Kong Chair Professorship of Ministry of Education of China.

He is the winner of 2007 APDIC (Alloy Phase Diagram International Commission) best paper.



Ivan Mihajlović

University of Belgrade,
Technical faculty in Bor

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Assistant professor in extractive metallurgy Dr. Ivan Mihajlović - born on March 14., 1973 in Zaječar, Serbia.

Academic degrees:

2006: Doctor of Technical Sciences in Extractive Metallurgy at Belgrade University, Technical faculty in Bor.

2004: Master of Science in Extractive Metallurgy at Technical faculty in Bor.

2001: BSc Engineer diploma in Extractive Metallurgy at Technical faculty in Bor.

Professional career:

Since 2001 employed at Technical faculty in Bor at following courses:

- Nonferrous metallurgy: 2001-2009.
- Heat technique and metallurgical furnaces: 2003-2009
- Basic computer applications: 2003-2005.
- Production management: 2005-2009.
- Project management: 2006 - 2008.
- System theory: 2009.
- Logistics: 2008-2009.

Membership in scientific and industrial organs:

- Member of the Serbian chemical society, since 2001.
- Member of the Serbian association for project management (YUPMA), since 2005.
- Member of the International Project Management Association (IPMA), since 2006.
- Associate of the Micro Enterprise Acceleration Institute (MEA-I), since 2008.

Professional certificates:

- Certified Project Manager - Level D, IPMA certificate, 2006.
- HP GET-IT Master Trainer, MEA-I and HP certificate, 2008 and 2009.

Member of Editorial Boards:

2001-2009: Technical Editor of Journal of Mining and Metallurgy (JMM).

2006-2009: Technical Editor of Serbian Journal of Management (SJM).

2009: Co-Editor of Serbian Journal of Management (SJM).

2007-2009: Member of Editorial Board of Research Journal of Applied Sciences.

Research projects participated by I. Mihajlovic:

National projects:

2003-2007: Developing a technology for nonferrous and noble metals extraction from domestic nonmetallic ores.

2007-2009: Development of lead free soldering materials.

2007-2009: Developing a technology for processing of low quality copper concentrates with high concentration of toxic impurities.

International projects:

2007: Project of Reconstruction and Modernization of Cast house and Slag Granulation at Blast Furnace No.4 at Mittal Steel, Zenica – Review of Cast house Iron Trough and Iron & Slag Runner Arrangement and Design.

2008-2009: Project of Reconstruction and Modernization of Cast house and Slag Granulation at Blast Furnace No.4 at Mittal Steel, Zenica – Cast house reconstruction.

Consulting and evaluation of international projects:

2009: Development of pressure leaching methods for treating copper concentrates with high arsenic content, Code Act102. Project in the frame of Associative Research Program (ARP) - Chilean National Commission for Science and Technology Research (CONICYT).

Publications:

I. Mihajlović have authored or coauthored 4 books, 18 papers published in leading international journals (from which 15 in the journals from ISI list), 31 papers published in national journals, 34 papers presented at international symposiums, 48 papers presented at national meetings and symposiums. Four of his papers were cited 11 times.

Karl-Heinz Spitzer

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Prof. Dr.-Ing. habil. Karl-Heinz Spitzer was born in 1956 in Germany. After study of mathematics at Bielefeld University he received his diploma degree in 1980. He joined the Technical University Clausthal in 1980 as a researcher and then in 1982 he became a senior researcher at the Institute of Metallurgy at the Technical University Clausthal. In 1984, he received his doctoral degree. Subject of his doctor thesis was the modeling of the fluid flow during electromagnetic stirring in continuous casting. In 2001, he received his habilitation (postdoctoral lecture qualification) in metallurgy. The habilitation thesis was on mathematical modeling for development and optimization of metallurgical processes. In 2002, he became full professor for Metallurgical Process Technology at the Clausthal University of Technology.

Research areas:

Metallurgical Process Technology

The working group on metallurgical process technology at the Institute of Metallurgy has an emphasis on the development and the optimization of metallurgical processes.

Additionally, it offers classes for students in the field of metallurgy, especially in the branches of process metallurgy and recycling of metals.

The research areas can be divided into the following groups:

- ***Process development:*** development and optimization of metallurgical processes
  - o with respect to energy and resource efficiency
  - o with respect to material and product properties obtained
- ***Transport phenomena in metallurgical processes:*** transport of momentum, heat and matter in single and multiphase flows; emulsification, precipitation, agglomeration; magneto hydrodynamics; heat transfer; solidification, diffusion and transformation.
- ***Modeling:*** of transport processes in metallurgical processes; of solidification, phase transformation and segregation; of microstructure formation; of mechanical properties, development of online models for process and quality control.

Some ongoing research projects are:

• ***Direct strip casting (DSC), process development:***

The DSC process has been developed in the last ten years. In this process liquid steel is cast on a moving conveyer belt made from steel, which is intensely water cooled from below. The resulting strip is rolled directly in-line after solidification. In cooperation with industry partners, a pilot plant was constructed at the Clausthal University of Technology in order to develop the DSC process. The further optimisation of this process is subject of current research activities.

• ***Production of TRIP/TWIP steels:***

TRIP (TRansformation Induced Plasticity) and TWIP (TWinning Induced Plasticity) steels containing high amounts of manganese, silicon and aluminium are characterized by an outstanding strength/ductility ratio. Based on their properties these materials represent a new class of steel.

However, processes nowadays common in steel production, especially continuous casting, cannot be directly applied for the production of such materials. Suitable new production concepts covering all aspects from melt preparation and metallurgical treatment to casting, forming, and subsequent processing are developed in cooperation with industry partners. A central aspect is the application of the DSC process for the casting of these steels. With the DSC pilot plant it was possible to produce these new materials successfully on a scale of 1 ton. Further optimization of the casting process and the development of suitable processes for the production of such steels are the subject of current projects.

• ***Casting of steel with increased levels of tramp elements:***

According to existing prognoses the enrichment of tramp elements in steel like copper and tin introduced by the scrap recycling can potentially become a serious problem in the next decades. A key effect is the surface enrichment of accompanying elements by selective oxidation at high temperatures. This problem can be avoided or diminished by casting in an inert gas atmossphere or short dwell times in critical temperature ranges. Such favorable conditions exist in strip casting processes like the DSC or the twin roll process. A current project studies these issues in detail.

• ***Experimental and theoretical investigation of pulverized coal injection into the blast furnace:***

Pulverized coal injection in to the blast furnace is a widely used technology to save more expensive coke. For the optimal performance of this technology stable and uniform feeding conditions are of great importance. In a project reasons for non suitable pulsing flow conditions and measures to avoid them are investigated experimentally and theoretically.

• ***Initial solidifying in the continuous casting mould:***

The heat transfer between solidifying steel and the mould is experimentally studied in a project. One special aspect considered is the influence of the properties of the casting oil on the heat transfer in billet casting.

• ***Influence of scale formation for heat transfer:***

Scale formation is of great significance for the quality of steel products. On the one hand this is because of the direct influence on surface quality, on the other hand because of the interaction with heat transfer like in cooling processes and the corresponding

influence on microstructure formation. The study of such correlations is subject of an ongoing project.

- ***Modeling of solidification, transformation, microstructure formation and mechanical properties of TRIP/TWIP and high Al-steels:***

These studies are in a preliminary phase. The emphasis lies on the investigation of TRIP/TWIP steels with high contents of manganese, aluminium and silicon.

- ***Phase transformation and diffusion in the System Fe-Al-Cr :***

In cooperation with partners from TU Clausthal and Forschungszentrum Jülich, the thermodynamics of the system Fe-Al-Cr and the fundamentals of diffusion processes in such material are investigated. Alloys based on this system are of great importance in high temperature applications.

Raj P. Chhabra

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Raj Chhabra (born in 1953) obtained his B.E. in Chemical Engineering from the University of Roorkee (now Indian Institute of Technology Roorkee) in 1974.

After obtaining his M.E. in Chemical Engineering in 1976 from the Indian Institute of Science, Bangalore, he earned his Ph.D. degree in 1980 from Monash University, Melbourne (Australia) in the field of non-Newtonian fluid mechanics.

Subsequently, he did his post-doc at the University of Wales, Swansea (UK) with the legendary Professor J.F. Richardson of Coulson-Richardson fame and continued at the same University as a Lecturer for a short period. He joined the Department of Chemical Engineering at the Indian Institute of Technology Kanpur in 1984 as an assistant Professor. He has been a Professor since 1991 at IIT Kanpur.

The primary focus of his research has been in the field of non-Newtonian fluid mechanics including multi-phase flows in pipes, particulate flows and bluff-body flows. Such model flows have often been used not only to gain fundamental insights and to further our understanding of the underlying physical processes, but these flows also denote idealisation of many industrially important processes encountered in chemical, food, pharmaceutical, polymer and mineral process engineering applications. In particular, the current research focuses on the prediction of vortex-shedding and the associated wake phenomena in bluff-body flows, and the hydrodynamic forces acting on submerged objects in non-Newtonian fluids. This work has appeared in several undergraduate text books on fluid mechanics and chemical engineering. In addition, he also has an interest in the prediction of transport properties of molten metals, molten salts and their mixtures. This work has been based on the application of the corresponding law of states and free volume theories. This work has led to the development of very successful predictive schemes for the prediction of viscosities of mixtures of hydrocarbons and alloys, molecular diffusivities in molten metals.

Professor Chhabra has 260 original research papers in international journals and 40 conference papers to his credit. Besides, he has authored/co-authored four and co-edited three books. He was elected a Fellow

of the Indian National Academy of Engineering in 2001 and serves on the Editorial Advisory board of the Journal Non-Newtonian Fluid Mechanics & Indian Journal of Chemical Technology. He has been a visiting professor at several universities in Australia, Japan, USA, Canada, France and South Africa.