YOUNG RESEARCHERS’ SEMINAR

24th September

S3.2 – Conference Room

14.30 – 16.30

Patron of the Young Researchers’ Seminar

Oral Session

14.30

GUEST LECTURE

Kimura Foundry Co., Ltd. Overview

K. Kimura - President of Kimura Foundry CO., Ltd, JAPAN

YOUNG RESEARCHERS’ SESSION – oral presentations

15.00

27 – Oxidation resistant aluminum alloyed simo cast iron for high temperature application

N. Scheidhauer, Technical University Bergakademie Freiberg, Foundry Department, Germany

15.15

278 - Influence of tellurium addition to spheroidal graphite cast iron on the number of graphite particles

R. Saito, Department of Chemistry and Materials Engineering, Graduate School of Kansai University, Japan

15.30

48 - Influence of solution hardening on microstructure and mechanical properties of Al-2.5Mg-0.7Li alloy

F. Kozina, University of Zagreb, Faculty of Metallurgy, Department for Process Metallurgy, Croatia

15.45

93 - Comparative study of waste foundry sand reclamation techniques

M. Khan, Indian Institute of Technology Bombay, Department of Chemical Engineering, India

16.00

360 – The examination of the modification effect of strontium in AlSi8Cu3 foundry alloys
M. Tokár, University of Miskolc, Foundry Institute, Hungary

16.15

325 - Effect of thermal exposure on high temperature mechanical properties of secondary AlSi7Cu3Mg alloys

A. De Mori, University of Padova, Department of Management and Engineering, Italy

25th September

S3.2 – Conference Room

10.00 – 13.30

Oral Session

10.00

GUEST LECTURE

The state of art and foresight of world casting production. The role of the Faculty of Foundry Engineering AGH-UST in educating engineers for casting industry

R. Daňko - Dean of Faculty of Foundry Engineering, University of Science and Technology, POLAND

YOUNG RESEARCHERS’ SESSION – oral presentations

10.30

207 - The influence of remelting on the properties of AlSi9Cu3 alloy with higher iron concent

M. Matejka, University of Žilina, Department of Technological Engineering, Slovakia

10.45

136 - Development of mathematical relationships for calculating of material-dependent-flowability of green moulding sand

D. Abdulamer, IMKF. TU- Bergakademie Freiberg, Germany

11.00

282 - Multi-scale topologically optimized components made by casting and additive manufacturing

K. Jalava, Aalto University, Department of Mechanical Engineering, Finland

11.15

428 - Effect of predeformation and semisolid isothermal treatment time on the globular grains in MRI230 alloy during SIMA process
M. Roberto Bellé, Federal University of Rio Grande do Sul, Metallurgy Department - School of Engineering, Brazil

11.30

201 - Numerical modelling of SHSB metal matrix composite solidification
A. Wojtyla, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

11.45

77 - New possibilities in the thermal analysis of moulding materials
J. Svidró, Jönköping University School of Engineering, Department of Materials and Manufacturing, Sweden

12.00

Award ceremony for the Best Young Researcher Paper and presentation of the winning paper

Poster Session

12.10 – 13.00

15 – Technical capabilities for low-temperature waste heat recovery in foundries
T. Ludwig, Technical University Freiberg, Foundry Department, Germany

24 – Steeldesign and activated infiltration of metal-matrix composites for wearing parts
P. Rähmer, TU Bergakademie Freiberg, Foundry Institute, Germany

27 – Oxidation resistant aluminum alloyed simo cast iron for high temperature application
N. Scheidhauer, Technical University Bergakademie Freiberg, Foundry Department, Germany

32 – Design options to increase the service life of cast accessories for thermal and chemical treatment furnaces
A. Bajwoluk, West Pomeranian University of Technology, Faculty of Mechanical Engineering and Mechatronics, Poland

33 – Suppressing the basket deformation process during heat treatment
A. Bajwoluk, West Pomeranian University of Technology, Faculty of Mechanical Engineering and Mechatronics, Poland

35 – Modeling of microstructure in hypoeutectic high chromium cast iron
D. Siekaniec, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

37 – Possibility on estimation of fatigue limit using X-ray CT apparatus in spheroidal graphite cast iron
K. Tanaka, Tokyo City University, Graduate school of Engineering, Japan

45 - A six sigma framework for eliminating defects in sand casting foundries
K. Nyembwe, University of Johannesburg, South Africa

48 - Influence of solution hardening on microstructure and mechanical properties of Al-2.5Mg-0.7Li alloy

F. Kozina, University of Zagreb Faculty of Metallurgy, Department for Process Metallurgy, Croatia

50 – Modification of non-metallic inclusions in steel by application of deoxidizing agents with alkaline metals (calcium and barium)
J. Cerny, COMTES FHT, Czech Republic

53 – A novel measurement method to study the thermal aspects of moulding mixture decomposition
J. T. Svidró, Jönköping University School of Engineering, Department of Materials and Manufacturing, Sweden

56 – Development of casting genome for automotive piston casting: a study
R. Ozah, North Eastern Regional Institute of Science and Technology, Mechanical Engineering, India

63 – Investigation of the impact of roughness on adhesion forces and filtration efficiency in a water-based model system with ceramic foam filters
D. Hoppach, TU Freiberg, Insitute of Mechanical Process Engineering and Mineral Processing, Germany

77 – New possibilities in the thermal analysis of moulding materials
J. Svidró, Jönköping University School of Engineering, Department of Materials and Manufacturing, Sweden

93 – Comparative study of waste foundry sand reclamation techniques
M. Khan, Indian Institute of Technology Bombay, Chemical Engineering, India

130 – Spaghetti filters – a novel approach for steel melt filtration based on alginate gel-casting
T. Wetzig, TU Bergakademie Freiberg, Institute of Ceramic, Glass and Construction Materials, Germany

136 – Development of mathematical relationships for calculating of material-dependent-flowability of green moulding sand
D. Abdulamer, IMKF. TU- Bergakademie Freiberg, Germany

145 – Thermal reclamation of foundry sands using repurposed sand dryer equipment
T. Sappinen, Aalto University, School of Engineering, Finland

147 – Spinel forming systems (Mg-/Fe-/Mn-Al-O) as functional coating materials on carbon-bonded filters for steel melt filtration
B. Bock, TU Bergakademie Freiberg, Institute of Ceramic, Glass and Construction Materials, Germany

157 – Exchangeable carbon-bonded alumina foam filter systems for the continuous casting of steel – development and testing
T. Wetzig, TU Bergakademie Freiberg, Institute of Ceramics, Glass and Construction Materials, Germany

160 – Development of new heat-resistant steel to avoid the detrimental Z-phase precipitation at high temperatures
Adaptive product manufacturing technique for foundry industry using IoT technology and industry 4.0 initiative

Y. Pandya, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Optimal gating system design of steel casting by fruit fly optimization algorithm based on casting simulation technology

W. Tong, Huazhong University of Science and Technology, State Key Laboratory of Materials Processing and Die & Mould Technology, China

The deviation from eutectic composition in boundary layer for eutectic growth: a phase-field study

Z. Tu, Huazhong University of Science and Technology, State Key Laboratory of Materials Processing and Die & Mould Technology, China

Effect of cooling rate on constituent particle formation in high-speed twin-roll cast Al-Mn based alloy strips

R. Song, Tokyo Institute of Technology, Department of Metallurgy and Ceramics Science, Japan

Optimal gating system design of steel casting by fruit fly optimization algorithm based on casting simulation technology

T. Wang, Huazhong University of Science and Technology, State Key Laboratory of Materials Processing and Die & Mould Technology, China

Casting EMPS (ERP\MES\PDM\SCADA) integrated system architecture and its application in aeronautic titanium alloy foundry enterprise

J. Zhou, Huazhong University of Science & Technology, State Key Laboratory of Materials Processing and Die & Mould Technology, China

Suppressing of ultra-high temperature wetting between molten Si and SiC by using h-BN spray coatings

W. Polkowski, Foundry Research Institute, Poland

Indicator of the efficient protection against the humidity $W_{SO_x}$ as a new parameter characterising protective coatings

N. Kaźnica, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Application of 3D printing to produce an investment casting model of hip-joint endoprosthesis

M. Skorupska, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Bayesian inference based optimization of process parameters for chemically bonded molding system

H. Khandelwal, MPM Infosoft Pvt. Ltd., India

Numerical modelling of SHSB metal matrix composite solidification

A. Wojtyla, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland
The influence of remelting on the properties of AlSi9Cu3 alloy with higher iron content
M. Matejka, University of Žilina, Department of Technological Engineering, Slovakia

Coupled methods of thermal analysis in the study of materials used in the foundry industry
A. Roczniaik, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Study of damping properties of composite materials on a metallic matrix
M. Poreba, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Tribological properties of composite materials on the metallic matrix
B. Gospodarczyk, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Gating system design optimization for investment casted part
M. Bruna, University of Žilina, Department of Technological Engineering, Slovakia

Dynamic measurement and FEM analysis of restraint force from mold on gray cast iron castings and contraction of castings during cooling in green sand mold
M. Kaneko, Waseda University, Modern mechanical engineering, Japan

Development of a method for measuring the ejector forces in the die casting process
S. Krischke, TU Braunschweig, Institute of Joining and Welding, High-Pressure Die Casting, Germany

Deformations in chemically bonded moulding sands
A. Grabarczyk, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Austempering in Zamak bath: influence of austempering time on the properties of ductile cast iron
W. M. Pasini, Federal University of Rio Grande do Sul, Metallurgy Department - School of Engineering, Brazil

Teaching-and-playback approach based on pouring flow rate in tilting-ladle-type pouring machine
T. Yajima, University of Yamanashi, Department of Mechanical Engineering, Japan

Optimization of the runner shape considering the molten metal flow of product in die casting
T. Okuno, Mie University, Faculty of Engineering, Department of Mechanical Engineering, Japan

Influence of AlP in solidification sequence of Al-10%Si-0.3%Mg
Y. Zhao, University of Toyama, Graduate School of Science and Engineering for Education, Japan

Effect of AlP in solidification sequence of Al-6%Mg-3%Si
A. Osugi, University of Toyama, Graduate School of Science and Engineering for Research, Japan

Influence of P content in eutectic crystallization of Al-10%Si-0.8%Mg
H. Kazuta, University of Toyama, Graduate School of Science and Engineering for Education, Japan
Influence of tellurium addition to spheroidal graphite cast iron on the number of graphite particles
R. Saito, Graduate School of Kansai University, Department of Chemistry and Materials Engineering, Japan

Multi-scale topologically optimized components made by casting and additive manufacturing
K. Jalava, Aalto University, Department of Mechanical Engineering, Finland

Influence of Ti and RE on primary crystallization and wear resistance of chromium cast iron
M. Dojka, Silesian University of Technology, Department of Foundry Engineering, Poland

Product design and manufacturing in foundry industry using augmented virtual reality technology
Y. Pandya, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Study of viscosity of water- and alcohol-based protective coatings
E. Wildhirt, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Corrosion resistance of Ti30Nb alloy in Hank’s solution
J. Ryba, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Magnesium alloys for biomedical applications of implants
A. Fijołek, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Modeling of the kinetics of carbonitrides precipitation process in HSLA steels using cellular automata method
P. Marynowski, AGH University of Science and Technology, Poland

Grain refinement of Al-2%Cu alloy using by vibrating mold
Y. Yoshitake, National Institute of Technology, Support Center of Education and Research, Kurume College, Japan

Settling effect of Ti on melt quality and mechanical properties in 356 cast alloy
Ö. Gürsöy, Istanbul University, Faculty of Engineering, Turkey

Hot tearing tendency and tensile property change of Ni and Cu added A356 casting alloys
K. Yildirim, Giesserei Institut RWTH, Germany

Efficiency of Ti addition in A356 alloy under different holding time
M. Gurtaran, Bursa Technical University, Material Science And Engineering, Turkey

Influence of manufacturing process parameters on the stability of layers printed from ceramic powders using additive technology
A. Kania, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

Effect of thermal exposure on high temperature mechanical properties of secondary AlSi7Cu3Mg alloys
A. De Mori, University of Padova, Department of Management and Engineering, Italy

330 – Increasing the lifetime of die casting molds made of the hot work tool steel H13 by means of a local surface heat treatment with the electron-beam

T. Schuchardt, TU Braunschweig, Institute of Joining and Welding, Germany

332 – Implementation of 3D printing in dentistry to improve the production of dental prosthetics restoration

D. Dulian, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

335 – Numerical simulation of the impact of casting wall thickness and initial mould temperature on the ductile cast iron microstructure

G. Witek, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

336 – Effect of quenching mediums on mechanical properties of Al-Cu alloy

M. Gurtaran, Bursa Technical University, Metallurgical and Materials Engineering, Turkey

337 – Foundry engineering and art. Casting of the bronze statuette inspired by Salvador Dali

B. Chachurska, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

343 – The use of experimental and computer aided methods in reconstruction of casting process of metal artifacts from the bronze age

D. Gruszka, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

360 – The examination of the modification effect of strontium in AlSi8Cu3 foundry alloy

M. Tokár, University of Miskolc, Foundry Institute, Hungary

362 – Manganese in Compacted Graphite Iron

B. Kurowska, Łódź University of Technology, Department of Materials Engineering and Production Systems, Poland

381 – Influence of evaluated temperature of intercritical treatment on mechanical properties of austempered ductile iron

P. Nawrocki, Warsaw University of Technology, Faculty of Production Engineering, Poland

383 - Microstructural and mechanical characterization of high-aluminium zinc alloy modified with 2.0% TiB₂

M. Roberto Bellé, Federal University of Rio Grande do Sul, Metallurgy Department, School of Engineering, Brazil

390 - Effect of Al, Cr and Mo addition on mechanical properties of Nb-Si based alloys

T. Uemura, Kindai University, Faculty of Mechanical Engineering, Japan

406 – Quality index - a way of illustrating diversified properties of a heat-treated Al-Zn-Mg-Cu aluminum alloys depending on homogenization parameters

Z. Kwak, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland
409 – *Non-destructive testing methods in the analysis of metal artefacts*
A. Sosnowska, AGH University od Science and Technology, Faculty of Management, Poland

419 – *Influence of alloy additives and casting parameters on microstructure and mechanical properties of silicon bronzes*
D. Witiasiak, AGH University od Science and Technology, Faculty of Foundry Engineering, Poland

424 – *Vision of the digitalized foundry -with cyper-physical systems to fully automatic cutting process for casting*
M. Füglister, University of Applied Science and Arts Northwestern, Institute of Automation, School of Engineering, Switzerland

428 - *Effect of predeformation and semisolid isothermal treatment time on the globular grains in MRI230 alloy during SIMA process*
M. Roberto Bellé, Federal University of Rio Grande do Sul, Metallurgy Department - School of Engineering, Brazil

443 – *Wettability, reactivity and interfaces in Gd/Y2O3 system*
P. Turalska, Foundry Research Institute, Poland

446 – *High-temperature interaction of molten high chromium cast iron with ZrO2- Al2O3 ceramic*
M. Kolev, Institute of Metal Science, Equipment and Technologies with Hydroaerodynamics Centre, Bulgaria

447 – *Analysis and evaluation of the effect of manganese content on the properties of aluminum alloy EN AC 46000*
M. Pasternak, AGH University od Science and Technology, Faculty of Foundry Engineering, Poland

449 – *Analysis of the influence of the degree of wear of the pressing piston in cold chamber pressure machines on the quality of aluminium castings*
G. Piwowarczyk, AGH University od Science and Technology, Faculty of Foundry Engineering, Poland

458 - *The effect of boron content on wetting kinetics in Si-B alloy/h-BN system*
W. Polkowski, Foundry Research Institute, Poland

*132 – *Microsegregation in low – alloy cast steels: characterization and homogenization*
A. Yaktiti, LaBoMaP, France

*293 – A extensive study of consumble electrode rotation influence on AISI 420 steels in electroslag remelting process*
D. Sergeev, South Ural State University, Department of Equipment And Technologies of Production of Materials, Russian Federation

*302 – Effect of predeformation and semisolid isothermal treatment time on the globular grains in MRI230 alloy during SIMA process*
C. Fraga, Federal University of Rio Grande do Sul, Metallurgical Department, Brazil

*312–Production of modifier for Al-Si alloys

I. Hizli, Istanbul University, Faculty of Engineering, Metallurgy and Material Engineering, Turkey