

## **YOUNG RESEARCHERS' SEMINAR**

**24<sup>th</sup> September**

**S3.2 – Conference Room**

14.30 – 16.30

**Oral Session**

### **GUEST LECTURE**

**Kimura Foundry Co., Ltd. Overview**

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

### **YOUNG RESEARCHERS' SESSION – oral presentations**

***\*45 - A Six Sigma Framework For Eliminating Defects In Sand Casting Foundries***

**C. Sithole, Engineering Metallurgy, University of Johannesburg, South Africa**

***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

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

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

***93 - Comparative study of waste foundry sand reclamation techniques***

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

***360 – The examination of the modification effect of strontium in foundry alloys***

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

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

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

**25<sup>th</sup> September**

**S3.2 – Conference Room**

10.00 – 13.30

**Oral Session**

## **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**

Rafał Dańko - Dean of Faculty of Foundry Engineering, University of Science and Technology, POLAND

## **YOUNG RESEARCHERS' SESSION – oral presentations**

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

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

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

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

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

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

**428 - Effect of predeformation and semisolid isothermal treatment time on the globular grains in MRI230 alloy during SIMA process**

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

**201 - Numerical modelling of SHSB metal matrix composite solidification**

A. Wojtyła, Faculty of Foundry Engineering, AGH University of Science and Technology, Poland

**77 - New possibilities in the thermal analysis of moulding materials**

Judit Svidró, Department of Materials and Manufacturing, Jönköping University School of Engineering, Sweden

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

## **Poster Session**

12.00 – 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. Raehmer, Foundry Institute TU Bergakademie Freiberg, 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. Szczecin, Faculty of Mechanical Engineering and Mechatronics, Poland

**33 – Suppressing the basket deformation process during heat treatment**

A. Bajwoluk, West Pomeranian University of Technology. Szczecin, Faculty of Mechanical Engineering and Mechatronics, Poland

**35 – Modeling of microstructure in hypoeutectic high chromium cast iron**

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

**37 – Possibility on estimation of fatigue limit using x-ray ct apparatus in spheroidal graphite cast iron**

K. Tanaka, Graduate school of Engineering, Tokyo City University, Graduate school of Engineering, Japan

**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.Svidró, Jönköping University School of Engineering, Materials and Manufacturing, Sweden

**56 – Development of casting genome for automotive piston casting: a study**

R. Ozah, Mechanical Engineering, North Eastern Regional Institute of Science and Technology, 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, Institute of Mechanical Process Engineering and Mineral Processing, TU Freiberg, Germany

**130 – Spaghetti filters – a novel approach for steel melt filtration based on alginate gel-casting**

T. Wetzig, Institute of Ceramic, Glass and Construction Materials, 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, Institute of Ceramic, Glass and Construction Materials, TU Bergakademie Freiberg, Germany

**157 – Exchangeable carbon-bonded alumina foam filter systems for the continuous casting of steel – development and testing**

T. Wetzig, Institute of Ceramics, Glass and Construction Materials, TU Bergakademie Freiberg, Germany

**160 – Development of new heat – resistant steel to avoid the detrimental z-phase precipitation at high temperatures**

W. Pasini, Metallurgy Department - School of Engineering, Federal University of Rio Grande do Sul, Brazil

**165 – Adaptative product manufacturing technique for foundry industry using iot technology an industry 4.0 initiative**

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

**169 – Simulation of sand filling process and analysis of flow behavior with different binder ratio**

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

**170 – 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

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

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

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

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

**190 – Suppressing of ultra-high temperature wetting between molten Si and SiC BY using h-BN spray coatings**

W. Polkowski, Foundry Research Institute, Poland

**196 – Indicator of the efficient protection against the humidity WSO, as a new parameter characterising protective coatings**

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

**198 – 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

**200 – Bayesian Inference Based Optimization of Process Parameters for Chemically Bonded Molding System**

H. Khandelwal, MPM Infosoft Pvt Ltd, India

**212 – Coupled methods of thermal analysis in the study of materials used in the foundry industry**

A. Roczniak, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

**215 – Study of damping properties of composite materials on a metallic matrix**

Magdalena Poreba, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

**216 – Tribological properties of composite materials on the metallic matrix**

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

**217 – Gating system design optimization for investment casted part**

M. Bruna, University of Žilina, Department of technological engineering, Slovakia

**219 – 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

**239 – Development of a method for measuring the ejector forces in the die casting process**

S. Krischke, High-Pressure Die Casting, TU Braunschweig, Institute of Joining and Welding, Germany

**250 – Deformations in chemically bonded moulding sands**

A. Grabarczyk, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

**254 – 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

**260 – Teaching-and-playback approach based on pouring flow rate in tilting-ladle-type pouring machine**

Taito Yajima, University of Yamanashi, Department of Mechanical Engineering, Japan

**266 – Optimization of the runner shape considering of the molten metal flow of product in die casting**

T. Okuno, Mie University, Department of Mechanical Engineering, Faculty of Engineering, Japan

**267 – Influence of AIP in solidification sequence of Al-10%Si-0.3%Mg**

Y. Zhao, University of Toyama, Graduate School of Science and Engineering for Education, Japan

**268 – Effect of AIP in Solidification sequence of Al-6%Mg-3%Si**

A. Osugi, University of Toyama, Graduate School of Science and Engineering for Research, Japan

**269 – 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

**286 – 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

**294 - Product design and manufacturing in foundry industry using augmented virtual reality technology**

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

**298 – Corrosion resistance of Ti30Nb alloy in hanks solution**

J. Ryba, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

**299 – Magnesium alloys for biomedical applications of implants**

A. Fijołek, AGH University of Science and Technology, Faculty of Foundry Engineering, Poland

**300 – Modeling of the kinetics of carbonitrides precipitation process in hsla steels using cellular automata method**

P. Marynowski, AGH University of Science and Technology in Krakow , Poland

**301 – Grain refinement of Al-2%Cu alloy using by vibrating mold**

Y. Yoshitake, Support Center of Education and Research, National Institute of Technology, Kurume College, Japan

**317 - Hot tearing tendency and tensile property change of Ni and Cu added A356 casting alloys**

K. Yildirim, Giesserei Institut RWTH Aachen, Germany

**320 – 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

**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, High Pressure Die Casting, Institute of Joining and Welding, TU Braunschweig, 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

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

**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 Univeristy of Technology, Production Engineering, Poland

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

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

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

T. Uemura, Kindai University, Science and Engineering, Japan

**395 – Analysis of the temperature distribution in the sample during the hot distortion parameter testing**

E. Wildhirt, AGH University of Science and Technology, Department of Moulding Materials, Mould Technology and Cast Non-Ferrous Metals, Poland

**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 of Science and Technology, Faculty of Management, Poland

**419 – Influence of modifications and casting parameters in centrifugal casting on mechanical properties of silicon bronzes**

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

**424 – Vision of the digitalized foundry -with cyber-physical systems to fully automatic cutting process for casting**

M. Fueglistler, Institute of Automation, University of Applied Science and Arts Northwestern, School of Engineering, Institute of Automation, Switzerland

**443 – Wettability, reactivity and interfaces in Gd/Y<sub>2</sub>O<sub>3</sub> system**

P. Turalska, Foundry Research Institute, Poland

**446 – High-temperature interaction of molten high chromium cast iron with zro<sub>2</sub>- al<sub>2</sub>o<sub>3</sub> ceramic**

Kolev M., 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 of 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 of Science and Technology, 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

**\*185 - Casting EMPS (ERP\|MES\|PDM\|SCADA) integrated system architecture and its application in aeronautic titanium alloy foundry enterprise**

X. Ji, School of Materials Science and Engineering, Huazhong University of Science & Technology, China

**\*248 - Application of six sigma technique as a tool for operations management in SA foundries**

C. Sithole, Engineering Metallurgy, University of Johannesburg, South Africa

**\*290 – Rate of metal additive for filler of the liquid ceramic mold in the manufacturing of single crystal nickel-based superalloys**

K. Gancarczyk, Rzeszow University of Technology, Department of Materials Science, Poland

**\*293 – a extensive study of consumable electrode rotation influence on AISI 420 steels in electroslag remelting process**

D. Sergeev, South Ural State University, 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

**\*310 – Settling effect of Ti on melt quality and mechanical properties in 356 cast alloy**

O. Gursoy, Istanbul University, Metallurgical and Materials Engineering, Turkey

**\*312– Production of Modifier for Al-Si Alloys**

I.Hizli , Istanbul University, Metallurgy And Material Engineering, Turkey

**\*319 – Efficiency of Ti addition in a356 alloy under different holding time**

M. Gurtaran, Bursa Technical University, Material Science And Engineering, Turkey

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

M. Gurtaran, Bursa Technical University, Material Science And Engineering, Turkey

**\* POSTERS MARKED IN YELLOW HAVE TO BE STILL CONFIRMED**