

SPCI - XI PROGRAMME

SUNDAY 3RD OF SEPTEMBER	
12:00 - 20:00	Registration
17:00 - 20:00	Welcome reception
MONDAY 4TH OF SEPTEMBER	
07:00 - 17:00	Registration
08:20 - 08:50	Welcome and introduction
08:50 - 09:20	"Cast iron - a predictable material" 25 years of modeling the manufacture, structures and properties of Cast Iron <u>Jörg C. Sturm</u> (MAGMA Gießereitechnologie GmbH, Aachen, Germany)
09:20 - 10:00	Coffee break
	ROOM A
	ROOM B
	1 A - Austenite nucleation and growth Chairman: Dr. Steve Dawson
	1 B - Mould filling and simulation Chairman: Professor John Campbell
10:00 - 10:20	Influence of the magnesium treatment in a Georg Fischer converter <u>Mathias Lueben</u> (Georg Fischer Automobilguss GmbH, Germany)
	Visual Nonlinear Feedback Control of Liquid Level in Mold Sprue Cup by Cascade System with Flow Rate Control for Tilting-type Automatic Pouring System <u>Atsushi Ito</u> (Toyohashi University of Technology, Japan)
10:20 - 10:40	A study of the measured versus calculated oxygen activities in Mg-treated cast irons during fading of magnesium <u>Johan Ekengård</u> (Sandvik SRP AB, Svedala, Sweden)
	Modelling Approach and Challenges in Simulating Dross Formation in Ductile Iron Castings <u>Mathias Bodenbug</u> (MAGMA Gießereitechnologie GmbH, Aachen, Germany)
10:40 - 11:00	The Morphological Evolution of Primary Austenite in Compacted Graphite Iron During Isothermal Coarsening <u>Juan Carlos Hernando</u> (Jönköping University, School of Engineering, Sweden)
	Influence of local Microstructure on Stresses, Durability and Fracture Mechanics of Cast Iron Components <u>Corinna Thomser</u> (MAGMA Gießereitechnologie GmbH, Aachen, Germany)
11:00 - 11:20	Nucleation and Growth of Graphite Eutectic in Cast Iron, a recent approach <u>Attila Diószegi</u> (Jönköping University, Sweden)
	Gating System Design and Simulation of Gray Iron Casting by MAGMASoft to Elimination gas porosity Caused by Turbulence <u>Alireza Modaresi</u> (Asia Pearlite Casting Industries Co, Saveh, Iran)
11:20 - 12:00	POSTER
12:00 - 13:00	Lunch

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MONDAY 4TH OF SEPTEMBER		
	ROOM A	ROOM B
	2 A - Graphite inoculation Chairman: Professor Marcin Górný	2 B - Sand and moulding materials Chairman: Dr. Judit Svidró
13:00 - 13:20	Contribution on Graphite Formation in Cast Irons <u>Julian Riposan</u> (POLITEHNICA University of Bucharest, Romania)	New possibilities with improved green sand testing equipment <u>Hubert Kerber</u> (Österreichisches Gießerei-Institut, Austria)
13:20 - 13:40	Trace Elements Influence on the Nature of the Nucleus of the Graphite in Ductile Iron <u>Gorka Alonso</u> (IK4-Azterlan, Durango (Bizkaia), Spain)	Design and Control of Pressing Process Based on Metal Temperature Analysis in Sand Mold Press Casting <u>Hideto Seno</u> (Toyohashi University of Technology, Japan)
13:40 - 14:00	Reassessment of crystal growth theory of graphite in cast iron <u>Doru M. Stefanescu</u> (Ohio State Univ., Columbus, Ohio and Univ. of Alabama, Tuscaloosa, Alabama, USA)	Three-Dimensional Modeling of Green Sand and Squeeze Molding Simulation <u>Yuuka Ito</u> (Dept. of Mechanical Engineering, Daido Univ., Japan)
14:00 - 14:20	Effect of sulfur content and inoculation rate in the graphite morphology in thin walls of grey iron castings <u>Manuel J. Castro-Román</u> (Cinvestav Unidad Saltillo, México)	The effect of resin level in furan sand on the heat absorption capacity of moulds and cores <u>József Tamás Svidró</u> (Jönköping University, School of Engineering, Sweden)
14:20 - 15:00	COFFEE BREAK + POSTER	
	ROOM A	ROOM B
	3 A - Graphite nucleation Chairman: Prof. Dr. Gotthard Wolf	3 B - ADI Transformation - 1 Chairman: Dr. Pál Schmidt
15:00 - 15:20	The Structure of Cast Irons <u>John Campbell</u> (Department of Metallurgy and Materials, University of Birmingham, UK)	Transformation Kinetics and Mechanical Properties of Copper-Alloyed and Copper-Nickel Alloyed ADI <u>Marcin Górný</u> (AGH University of Science and Technology, Poland)
15:20 - 15:40		Impact of molybdenum on heat treatment and microstructure of ADI <u>Julius A. Gogolin</u> (TU Clausthal, Institut für Metallurgie, Clausthal-Zellerfeld, Germany)
15:40 - 16:00	Melt Stirring of Nodular Cast Iron <u>Fareed Ashraf Khan</u> (KTH Royal Institute of Technology, Sweden)	ADI 1050-6 mechanical behavior at different strain rates and temperatures <u>Andrew Ruggiero</u> (DICeM, University of Cassino and SL, Cassino, Italy)
16:00 - 16:20	Effect of Cooling Rate and Aluminium Addition on Graphite Growth during Solidification and Graphitization <u>Jacques Bourdie</u> (CIRIMAT, Université de Toulouse, France)	Plastic Deformation Induced Phase Transformation in Austempered Ductile Cast Iron (ADI) <u>Susil Putatunda</u> (Wayne State University, Detroit, USA)
16:20 - 17:00	POSTER	

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TUESDAY 5TH OF SEPTEMBER		
	ROOM A	ROOM B
	4 A - Chunky graphite Chairman: Professor Ingvar L. Svensson	4 B - ADI Transformation - 2 Chairman: Professor Dr. Adel Nofal
08:00 - 08:20	Analysis of nuclei composition in heavy-section nodular iron casting <u>Mayerling Martinez Celis</u> (Université de Caen Normandie, Caen, France)	Correlation Between Microstructure and Mechanical Properties of an Austempered Ductile Iron <u>Vinícius Cardilo C. Alves</u> (Universidade Federal Fluminense, Brasil)
08:20 - 08:40	Effect of Si and Ni addition on graphite morphology in heavy-section spheroidal graphite iron parts <u>Branko Bauer</u> (University of Zagreb, Croatia)	High Dynamic Deformation of ADI <u>Dawid Myszka</u> (Warsaw University of Technology, Warszawa, Poland)
08:40 - 09:00	From exploded to Chunky graphite <u>Babette Tonn</u> (Clausthal University of Technology – Institute of Metallurgy, Clausthal-Zellerfeld, Germany)	On the Austemperability of 2 wt% Aluminum-Alloyed Austempered Ductile Iron <u>R. Khadem Hosseini</u> (Metals Corrosion Research Group, RIPI, Iran)
09:00 - 09:20	Metallurgical Coating to Reduce Graphite Degeneration at the Surface Zone of Compacted Graphite Iron Castings <u>Ugo C. Nwaogu</u> (Foundry R&D Centre, Foseco Nederland BV, Netherlands)	
09:20 - 10:00	COFFEE BREAK + POSTER	
	ROOM A	ROOM B
	5 A - Volume change and Thermal Analysis of Solidification Chairman: Professor Dr. Primož Mrvar	5 B - SGI - ADI Chairman: Professor Dr. Iulian Riposan
10:00 - 10:20	Density variations at solidification of grey cast iron <u>Kristina Hellström</u> (Jönköping University, Sweden)	Thermo-mechanically Processed Multi-Phase Ductile Iron <u>Mohamed Soliman</u> (Institute of Metallurgy, Clausthal University of Technology, Germany)
10:20 - 10:40	Maximization and control of melt's self-feeding characteristics to minimize shrinkage <u>Carlos Silva Ribeiro</u> (Engineering Faculty of the Porto University (FEUP), Portugal)	Capability of modeling tensile behavior through physical-based constitutive equations in assessing ductile irons production <u>Giuliano Angella</u> (National Research Council of Italy (CNR) - Milan, Italy)
10:40 - 11:00	The Experimental and Theoretical Studies of Nodular Cast Iron Volume Changes during the Solidification <u>Abel Tadesse</u> (KTH Royal Institute of Technology, Sweden)	Free Ferrite morphology and mechanical properties of ferritic-ausferritic spheroidal graphite cast iron <u>Roberto Boeri</u> (Metallurgy Division, Faculty of Engineering, UNMDP, Mar del Plata, Argentina)
11:00 - 11:20	Extended method of volume change measurement on the solidification of lamellar graphite iron <u>Péter Svidró</u> (Jönköping University, Sweden)	Austempering experiments of production grade silicon solution strengthened ductile iron <u>Kaisu Soivio</u> (Aalto University, Finland)
11:20 - 12:00	POSTER	
12:00 - 13:00	Lunch	

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TUESDAY 5TH OF SEPTEMBER		
	ROOM A	ROOM B
	6 A - Characterisation - stereology-morphology Chairman: Professor Manuel de Jesús Castro Román	6 B - Tribology - Machinability - 1 Chairman: Professor Carlos Silva Ribeiro
13:00 - 13:20	X-ray imaging of Formation and Growth of Spheroidal Graphite in Ductile Cast Iron <u>Hideyuki Yasuda</u> (Kyoto University, Japan)	Effect of Graphite Morphology and Matrix structure on Tribological Properties of Cast Iron at Dry Sliding <u>CHEN Yue</u> (Henan University of Science and Technology, China)
13:20 - 13:40	Integrated Computational Materials Engineering for Advanced High-strength Cast Iron <u>Nicholas Hatcher</u> (QuesTek Innovations LLC, Evanston IL, USA and QuesTek Europe AB, Stockholm, Sweden)	Understanding the Machinability of Austempered Ductile Irons <u>Robert C. Voigt</u> (The Pennsylvania State University, USA)
13:40 - 14:00	Stereological analysis of the statistical distribution of the size of graphite nodules in DI <u>Andriy Burbelko</u> (AGH University of Science and Technology, Krakow, Poland)	Creation of the layers of wear resistant Fe-Cr-Mn-C and Fe-Cr-C cast irons, which self-harden in the process of wear <u>Oleksandr Cheiliakh</u> (Pryazovskyi State Technical University, Ukraine)
14:00 - 14:20		Effect of C content on high temperature erosive wear characteristics of Fe-based V containing multi-component white cast iron with Ni <u>Kazumichi Shimizu</u> (Muroran Institute of Technology, Japan)
14:20 - 15:00	COFFEE BREAK + POSTER	
15:00 - 15:40	<i>International Organization Committee meeting</i>	
19:00 - 22:00	<i>Conference Banquette</i>	

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WEDNESDAY 6TH OF SEPTEMBER		
	ROOM A	ROOM B
	7 A - Nucleation, structure investigation and solid state transformations Chairman: Dr. Daniel Holmgren	7 B - Tribology - Machinability - 2 Chairman: Professor Robert C. Voigt
08:00 - 08:20	Evolution of the macrostructure of gray cast iron from eutectic to hypereutectic composition <u>Roberto Boeri</u> (Faculty of Engineering, UNMdP, Mar del Plata, Argentina)	Influence of nickel addition on erosive wear behavior of Fe-based Nb containing multi-component white cast iron <u>Kenta Kusumoto</u> (Muroran Institute of Technology, Japan)
08:20 - 08:40	Effect of cooling rate on the eutectoid transformation in compacted graphite cast iron <u>Jacques Lacaze</u> (CIRIMAT, Université de Toulouse, France)	Tribological Behaviour of Si Solution Strengthened Ferritic Compacted Graphite Iron Using Scratch Testing <u>Rohollah Ghasemi</u> (School of Engineering, Jönköping University, Sweden)
08:40 - 09:00	Recent advances in ultrasonic testing of structures, properties and defectoscopy of iron castings <u>Liubov V. Voronkova</u> (ROSATOM Scientific Centre of Russian Federation JSC RPA "CNIITMASH")	Influence of Strain Induced Martensitic Transformation on The Machinability of Different Grades of ADI <u>Adel Nofal</u> Central Metallurgical R&D Institute (CMRDI), Egypt
09:00 - 09:20	Modifying the inoculation process to improve the graphite nodules distribution (25) <u>Haji Muhammad Muhmond</u> (Kungliga Tekniska Högskolan, Sweden)	Investigating the Spheroidal Graphite in Ductile Cast Irons using Modern Methods <u>Dr. Hasan Fares Hadlah</u> (Damascus University, Syria)
09:20 - 10:00	COFFEE BREAK + POSTER	
	ROOM A	ROOM B
	8 A - Microstructure vs. Properties in LGI Chairman: Professor Doru M. Stefanescu	8 B - New mathematical models and applications 1 Chairman: Professor Niels Skat Tiedje
10:00 - 10:20	Correlation Between Solidification and Cooling Rate, Microstructure and Tensile Strength of a Low Alloyed Grey Cast Iron <u>Pål Schmidt</u> (Volvo Powertrain Corporation, Gothenburg, Sweden)	Mathematical characterization of the tensile deformation curve of cast iron materials <u>Ingvar L Svensson</u> (Jönköping University, School of Engineering, Sweden)
10:20 - 10:40	Strength prediction of Lamellar Graphite Iron: From Griffith's to Hall-Petch modified equation <u>Vasilios Furlakidis</u> (Swerea SWECAST AB, Jönköping, Sweden)	Three-dimensional microstructural characterization of cast iron alloys for numerical analyses <u>Kent Salomonsson</u> (School of Engineering, Jönköping University, Sweden)
10:40 - 11:00	A generic model to predict the thermal conductivity in pearlitic lamellar graphite iron <u>Daniel Holmgren</u> (Federal Mogul, Anqing, Anhui, China)	Local microstructure and material behaviour in structural optimization of ductile iron castings <u>Jakob Olofsson</u> (Jönköping University, School of Engineering, Sweden)
11:00 - 11:20	Electrical resistivity measurements during solidification of grey cast irons <u>Mitja Petrič</u> (University of Ljubljana, Slovenia)	On variations in the distribution of local mechanical behavior in a ductile iron component <u>Jakob Olofsson</u> (Jönköping University, School of Engineering, Sweden)
11:20 - 12:00	POSTER	
12:00 - 13:00	Lunch	

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WEDNESDAY 6TH OF SEPTEMBER		
	ROOM A	ROOM B
	9 A - Microstructure and alloying elements vs. mechanical properties Chairman: Dr. Jessica Elfsberg	9 B - New mathematical models and applications 2 Chairman: Dr. Wilson Luiz Guesser
13:00 - 13:20	Effect of Boron and Cross-section Thickness on Microstructure and Mechanical Properties of Ductile Iron <u>Keivan A. Kasvayee</u> (School of Engineering, Jönköping University, Sweden)	Prediction of Solidification Shrinkage in Iron Castings Using a Microporosity Model <u>Sung-Bin Kim</u> (AnyCasting Software Co., Seoul, Korea)
13:20 - 13:40	Sensitivity to Variation of Tensile Properties of High Silicon Ductile Iron <u>Henrik Borgström</u> (Swerea SWECAST AB, Jönköping, Sweden)	Quantified X-ray mapping in the WDS mode <u>Gunilla Runnsjö</u> (Corr-Control, Avesta, Sweden)
13:40 - 14:00	Mechanism of Damage of Ferritic Ductile Iron, Influence of Matrix Heterogeneity <u>Roberto E. Boeri</u> (INTEMA, Universidad Nacional de Mar del Plata-CONICET, Argentina)	Analysis of microsegregation and shrinkage porosity formation in spheroidal and compacted graphite irons using EPMA-WDS <u>Biörn Domeij</u> (Jönköping University, Sweden)
14:00 - 14:20	Microstructure & Phase Transformation in Drop-tube processed Grey Cast Iron Droplets <u>Olamilekan Oloyede</u> (Institute for Material Research, University of Leeds, UK)	Cast Iron Components with Intelligence <u>Lennart Elmquist</u> (Swerea SWECAST, Jönköping, Sweden)
14:20 - 15:00	COFFEE BREAK + POSTER	
15:00 - 17:00	ORDINARY POSTER SESSION	
19:00 - 22:00	Dinner at Gyllene Yttern	

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THURSDAY 7TH OF SEPTEMBER		
	ROOM A	ROOM B
	10 A - High temperature properties Chairman: Dr. Werner Menk	10 B - SGI and Residual stresses Chairman: Prof. Dr.-Ing. Babette Tonn
08:00 - 08:20	High-temperature oxidation of a high silicon SiMo spheroidal cast iron in air with in-situ change in H ₂ O content <u>Andre Ebel</u> (CIRIMAT, Université de Toulouse, France)	Revisiting models for spheroidal graphite growth <u>Niels Skat Tiedje</u> (Technical University of Denmark, Denmark)
08:20 - 08:40	High-temperature corrosion-fatigue behavior of ductile cast irons for exhaust manifolds applications <u>Shengmei Xiang</u> (Royal Institute of Technology, Stockholm, Sweden)	Residual stresses around individual graphite nodules in ductile iron: Influence of process parameters and impact on the tensile mechanical properties <u>Tito Andriollo</u> (Technical University of Denmark, Denmark)
08:40 - 09:00	High temperature strength of cast irons for cylinder heads <u>Wilson Luiz Guesser</u> (Tupy and UDESC - Joinville – SC - Brazil)	Residual stresses in cast iron components – simulated results verified by experimental measurements <u>Lennart Elmquist</u> (Swerea SWECAST, Jönköping, Sweden)
09:00 - 09:20	Oxidation resistant Cast Iron for High-Temperature Application <u>Nico Scheidhauer</u> (Gießerei-Institut TU Bergakademie Freiberg, Germany)	Evaluation of creep properties of ductile cast irons by measuring stress relaxations during thermal cycling <u>Christian Öberg</u> (Royal Institute of Technology, Stockholm, Sweden)
09:20 - 10:00	COFFEE BREAK + POSTER	
	ROOM A	ROOM B
	11 A - Property of high alloyed cast iron Chairman: Dr. Lennart Elmquist	11 B - Fatigue and toughness Chairman: Professor Roberto Enrique Boeri
10:00 - 10:20	Influence of Cooling Rate on Nature and Morphology of Intercellular Carbides and Thermal Stability of SiMo Ductile Irons <u>Adel Nofal</u> (Central Metallurgical R&D Institute (CMRDI), Egypt)	A fatigue and fracture study on high strength cast irons <u>Wilson Luiz Guesser</u> (Tupy and UDESC - Joinville – Brazil)
10:20 - 10:40	Optimum Cast Iron Grades for Stub-Anode Connection in the Aluminum Electrolytic Cells <u>Adel Nofal</u> (Central Metallurgical R&D Institute (CMRDI), Egypt)	Ductile cast iron with high toughness at low temperatures <u>Stephanie Duwe</u> (Clausthal University of Technology – Institute of Metallurgy, Germany)
10:40 - 11:00	Study the Thermal properties of Highly Alloyed Aluminum Cast Iron with globular Graphite and features of its structure forming <u>Edis B. TEN</u> (National University of Science and Technology “MISIS”, Moscow, Russia)	Improving the mechanical properties and impact toughness of high silicon ductile iron <u>Moritz Riebisch</u> (RWTH Aachen University, Foundry-Institute, Germany)
11:00 - 11:20	A New High Strength High Ductile Nodular Iron <u>Werner Menk</u> (Georg Fischer Automotive AG, Switzerland)	Advanced High Energy X-ray Techniques for the Characterization of Graphite Structure in Compact-graphite Cast Iron <u>John Hryn</u> (Argonne National Laboratory, USA)
11:20 - 12:00	POSTER	
12:00 - 13:00	Lunch	

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THURSDAY 7TH OF SEPTEMBER	
13:00 - 15:00	<i>Round Table Discussion and Closing Section</i>
	Conference End

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Poster Presentations	
	<p>Evolution of shrinkage incidence with carbon equivalent and inoculation in ductile cast irons A.Regordosa^{1,2}, N. Llorca-Isern², J. Sertucha³, and J. Lacaze⁴ 1Departament de Metallúrgia, Fundería Condals, S. A., E-08241 Manresa, Spain 2Departament de Ciència de Materials i Química Física, Universitat de Barcelona, E-08028, Barcelona, Spain 3Ingeniería, I+D y Procesos Metalúrgicos, IK4-Azterlan, Aliendalde auzunea 6, E-48200 Durango (Bizkaia), Spain 4CIRIMAT, Université de Toulouse, ENSIACET, Toulouse, France</p>
	<p>Crystallography of growth blocks in spheroidal graphite Etienne Brodu¹, Emmanuel Bouzy¹, Jean-Jacques Fundenberger ¹, Benoit Beausir ¹, Lydia Laffont ², Jacques Lacaze ² 1LEM3, Université de Lorraine, Metz, France 2CIRIMAT, Université de Toulouse, Toulouse, France</p>
	<p>Thermo-mechanical fatigue of grey cast iron for cylinder heads – Effect of niobium, molybdenum and solidification rate Peter Skoglund¹, Jessica Elfsberg¹, Nulifer Ipek¹, Vasile-Lucian Diaconu², Mari Larsson³, Pål Schmidt⁴ 1Scania CV AB, S-151 87 Södertälje, Sweden 2Jönköping University, Box 1026, SE-551 11 Jönköping, Sweden 3Volvo Group Trucks Operation, SE-541 87 Skövde, Sweden 4Volvo Group Trucks Operation, Gropegårdsgatan, SE-405 08 Göteborg Sweden</p>
	<p>Solidification Control by a Dual Technique: Simultaneous Cooling and Contraction / Expansion Curves Analysis Stelian Constantin Stan, Mihai Chisamera, Iulian Riposan POLITEHNICA University of Bucharest, Romania</p>
	<p>Modeling of the chemical composition ductile cast iron to ausferrite nanostructurization A. Kochanski¹, D. Myszka¹, A. Wiczorek² 1Warsaw University of Technology, Poland 2Silesian University of Technology, Poland</p>
	<p>Study of (%TiO₂)/ [% Ti] partition coefficient in Cupola Furnace Viridiana Herrera-Vázquez¹, Manuel Castro-Román¹, Hector Mancha-Molinar², Martín Herrera-Trejo¹ 1Cinvestav Unidad Saltillo, Av. Industria Metalúrgica 1062, 25900 Ramos Arizpe, COAH, México. 2Tupy Mexico Saltillo S.A. de C.V., Boulevard Isidro López Zertuche 4003, Zona Industrial, 25230 Saltillo, COAH, Mexico</p>