



SOLIDIFICATION & CRYSTALLIZATION OF METALS

**64. International
Scientific Conference
18-20.09.2024**

Conference programme



POLISH ACADEMY OF SCIENCES

KATOWICE

PAN

POLAND

FOUNDRY ENGINEERING COMMITTEE

SECTION OF TECHNOLOGICAL

PROCESSES OF

ME&M COMMITTEE

64th
International Scientific
Conference

Solidification and
Crystallization of Metals 2024

P R O G R A M M E

Gliwice
18 - 20. 09. 2024

Organizers:

**Stowarzyszenie Wychowanków Politechniki Śląskiej
„Kolo Odlewników”
with scientific and organizational collaboration of
Department of Foundry Engineering, Faculty of Mechanical
Engineering, Silesian University of Technology**

Co - Organizers:

Casting Committee of the Polish Academy of Sciences (PAS)

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**General Programme of 64. International Scientific Conference
„Solidification and Crystallization of Metals 2024”**

18.09.2024 (Wednesday) HOTEL Malinowski Business in Gliwice

11 -	Reception
12 ⁰⁰ - 14 ⁰⁰	Lunch
14 ⁰⁰	Opening Ceremony
14 ³⁰ – 15 ³⁰	Plenary Session
15 ³⁰ – 16 ⁰⁰	Coffee Break
16 ⁰⁰ – 17 ¹⁵	Plenary Session
19 ⁰⁰ – 24 ⁰⁰	Banquet

19.09.2024 (Thursday) HOTEL Malinowski Business in Gliwice

8 ⁰⁰ – 9 ⁰⁰	Breakfast
9 ⁰⁰ – 10 ⁴⁵	Lecture Session
10 ⁴⁵ – 11 ³⁰	Coffee Break
11 ⁰⁰ – 13 ⁰⁰	Poster Session
11 ³⁰ – 12 ⁴⁵	Lecture Session
13 ⁰⁰	Lunch
14 ⁰⁰	Transport to the Queen Luiza Mine in Zabrze, Silesian Feast.

20.09.2024 (Friday) HOTEL Malinowski Business in Gliwice

8 ⁰⁰ – 9 ⁰⁰	Breakfast
9 ³⁰ – 11 ¹⁵	Lecture Session
11 ³⁰	Closing Ceremony
12 ⁰⁰	Lunch

**Detailed Conference Programme
18.09.2024 (Wednesday)**

14⁰⁰ Opening Ceremony

14³⁰ – 15³⁰ PLENARY SESSION

14³⁰ **J. Campbell:** A Future for Cast Metals

15³⁰ – 16⁰⁰ BREAK

16⁰⁰ – 17¹⁵ PLENARY SESSION

Chairman:

**prof. M. Górny
prof. J. Jezierski**

16⁰⁰ **U. Brandenberger, R. Gerke-Cantow:** Status quo in casting process planning

16¹⁵ **J. Antonic:** Future of Global Foundry Business

16³⁰ **Y. Aftandiliants, S. Gnyloskurenko, H. Menailo, V. Khrychikov:**
Influence of chemical composition on concentration supercooling of structural steels

16⁴⁵ **Chao Zhou, Ziqi Zhang, Zongpeng Zhang, Qi Zeng, Rong Li:** Study on the modification properties of Er to cast aluminum-copper alloy (ZL203) – online

19⁰⁰ – 24⁰⁰ **Banquet**

19.09.2024 (Thursday)

9⁰⁰ – 10⁴⁵

LECTURE SESSION

Chairman:

prof. J. Zych
prof. J. Szajnar

- 9⁰⁰ **M. Maj, W. Stachurski:** Application of elasto-optical methods in research on casting structures
- 9¹⁵ **A. Kiljan, J. Popis, K. Młynarek-Żak, R. Babilas, R. Nowosielski:** The influence of the crystallization process of the Mg66Zn30Ca4 alloy on the structure and selected properties
- 9³⁰ **L. Jamrozowicz:** The role of mould surface shape in the migration of moisture from the protective coating into the sand mould surface layer
- 9⁴⁵ **K. Konopka:** Prototype induction hardening furnace with a wide frequency range generator
- 10⁰⁰ **G. Tęcza, A. Garbacz-Klempka:** Characteristics of retained austenite in GX70CrMnSiNiMo2 alloy tool steel
- 10¹⁵ **B. Pisarek, T. Szymczak, B. Januszewicz, M. Różycka:** Analysis of the Applicability of Heat Treatment of Castings of EN AC-46000 Alloy Made in Vacuum-Assisted HPDC Technology

10⁴⁵ – 11³⁰ BREAK

11⁰⁰ – 13⁰⁰

POSTER SESSION

Chairman: prof. K. Janerka, dr A. Dulaska

1. **M. Mróz, P. Rąb, B. Kupiec, M. Radoń:** Application of zirconium coating on AlSi7Mg alloy castings
2. **J. Augustyn-Nadzieja:** Effect of heat treatment on microstructural, strength and corrosion properties of prosthetic CrCrW alloy for dental prosthetics application
3. **P. Mikołajczak:** Microstructure modification under stirring in slowly solidified hypoeutectic Al-Si-Mn alloys
4. **S. Kobylecka, A. Zyska:** Quality control of cast iron by the Itaca thermal analysis system
5. **B. Kalandyk, R. Zapala, J. Kasińska, P. Furmańczyk, K. Piotrowski:** Changing mechanical properties of V modified low-carbon cast steel depending on wall thickness
6. **A. Garbacz-Klempka, L. Żygadlo, M. Wardas Lasoń, M. Masojć, A. Fijolek, L. Kamyszek, T. Wiktor, J. Piekalski:** A foundry workshop from

- Kraków-Zesławice from the Bronze and Iron Ages. An interdisciplinary approach
7. **M. Piękoś, Z. Smorawiński:** Selected aspects process of improvements of the aluminium in a complex barbotage refining system
 8. **J. Kozana, A. Garbacz-Klempka, M. Piękoś:** Tin substitution in tin bronzes
 9. **J. Wiśniowski, M. Brzeziński:** Analysis of the impact of selected control charts on the reliability of information about the stability of high-volume production
 10. **J. Kolczyk-Tylka:** Development of innovative ceramic mold manufacturing technology for increasing the driftability of "difficult" castings
 11. **G. Radzioch, D. Bartocha, M. Kondracki:** The impact of alloying additives on the shrinkage processes and corrosion resistance of lead-free casting brasses
 12. **M. Mróz, S. Olszewska:** Scratch test of the connection of the $\text{Al}_2\text{O}_3+40\%\text{TiO}_2$ coating with the AZ91 alloy casting
 13. **P. Rąb, M. Mróz:** Evaluation of the quality of the connection between the $\text{ZrO}_2\text{-Y}_2\text{O}_3$ coating with a NiAl interlayer and the AlSi7Mg alloy casting using the scratch test method
 14. **M. Radoń, B. Kupiec:** Cavitation resistance of WCCoCr and CrC/Ni coatings sprayed by the APS method
 15. **K. Janerka, M. Wojciechowski, J. Jezierski, K. Rosanowski:** Comparison of Methods for Evaluating the Quality of Carburizing Materials Used in the Cast Iron Melting Process
 16. **A. Jakubus:** Preliminary assessment of the possibility of operating ADI and AGI cast iron in variable temperature conditions
 17. **N. Przyszlak, T. Wróbel:** Application of SiC based moulding sand in technology of layered castings
 18. **K. Chrzan, M. Grudzień-Rakoczy, K. Jaśkowiec, W. Oleksy, R. Żuczek, Ł. Rakoczy, R. Cygan:** Effect of preheating on the microstructure of high gamma prime Ni-based superalloy manufactured by investment casting
 19. **A. Dulaska, N. Przyszlak, J. Szajnar:** Computer modeling of layered castings solidification: analysis and optimization
 20. **G. Kaczor, J. Trzoska, J. Jezierski, P. Kramarczyk, R. Przerwa, W. Polek:** The experience of GZUT Odlewnia Sp. z o.o. in implementing cores produced using 3D printing technology
 21. **D. Witasiaak, A. Garbacz-Klempka, J. Kozana, M. Piękoś, M. Papaj, P. Papaj:** Leak test of castings using the pressure change method. Effect of alloying additives and tin content on the tightness of CuSn10 bronze castings
 22. **J. Kamińska, K. Sanocki, M. Angrecki:** The implementation of in-mold spheroidization technology in the "KAW-MET" Foundry

23. **J. Kostrzewa:** The effect of the ageing process of high-carbon steel on its structural and mechanical properties
24. **D. Medyński:** The effect of ceramic particles on selected mechanical properties of the GX120Mn13 + Al₂O₃ composite

11³⁰ – 12⁴⁵

LECTURE SESSION

Chairman:

prof. A. Garbacz-Klempka
prof. P. Popielarski

- 11³⁰ **B. Cygan, L. Michels, J. Jezierski, M. Pawlyta:** Graphite - the key to success in ductile iron – online
- 11⁴⁵ **J.S. Zych, K. Piotrowski, T. Snopkiewicz, M. Myszka:** Controlling the process of filling cavities in large-sized sand molds poured with iron alloys
- 12⁰⁰ **T. Wróbel, D. Bartocha, J. Jezierski, K. Kostrzewa, E. Feliks:** The pilot technological line dedicated to monoblock crossings of manganese cast steel at Huta Małapanew Ltd.
- 12¹⁵ **J. Mocek, J.S. Zych:** The problem of tightness of foundry alloys and castings made from them – new research method

13⁰⁰ – Lunch

14⁰⁰ **Transport to the Queen Luiza Mine in Zabrze**

15⁰⁰ – 17⁰⁰ – Queen Luiza Mine – Miner's Trail

17⁰⁰ – 21⁰⁰ – Silesian Feast in Coal Mining Museum

21⁰⁰ – Transport to Malinowski Hotel

20.09.2022 (Friday)

9³⁰ – 11¹⁵ LECTURE SESSION

Chairman:

prof. B. Kalandyk
prof. M. Cholewa

- 9³⁰ **S. Sobula, T. Wiktor:** Microstructure of aluminium-TiC composite manufactured by centrifugal casting
- 9⁴⁵ **N. Matonis, J.S. Zych:** Physical methods of accelerating the binding of moulding sands with chemical binders - ultrasonic control of the kinetics of the hardening processes
- 10⁰⁰ **J. Wiśniowski, M. Brzeziński:** Analysis of the air occlusion phenomenon in the runner system for the selected HPDC proces.
- 10¹⁵ **A. Dmitruk, K. Naplocha, N. Łobacz-Raźny:** Evaluation of the accuracy of Mg alloy castings manufactured by investment casting using printed models
- 10³⁰ **M. Grudzień-Rakoczy, K. Chrzan, Ł. Rakoczy, W. Oleksy, R. Żuczek, R. Cygan:** Analysis of the microstructure changes of the Ni-based superalloy after gas tungsten arc welding
- 10⁴⁵ **B. Tokarski, J. Jezierski, M. Janczak:** The Impact of Alloying Additions on the Eutectic Transformation of High-Chromium Cast Iron

11³⁰ CLOSING CEREMONY

12⁰⁰ Lunch