# 71st Annual Technical Conference & Exhibition of the Investment Casting Institute (INCAST 2024)

Milwaukee, Wisconsin, USA 20-23 October 2024

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### **PROGRAM AGENDA**



## Receptions

Sun. 5:30 p.m. Tues. 6:00 p.m.

#### **Exposition**

Mon. 2:30 p.m. - 6:00 p.m. Tues. 2:30 p.m. - 5:00 p.m.

# IN INVESTMENT CASTING OCTOBER 20-23, 2024

Milwaukee, Wisconsin

#### **SUNDAY, OCTOBER 20, 2024**

3:00 p.m. - 7:30 p.m. **REGISTRATION** 

5:30 p.m. - 7:30 p.m. WELCOME RECEPTION

#### **MONDAY, OCTOBER 21, 2024**

7:00 a.m. - 5:30 p.m. **REGISTRATION** 

8:00 a.m. - 8:10 a.m.

#### PRESIDENT'S GREETING

Nipendra Singh, S&A Consulting Group, LLP, ICI Director

8:10 a.m. - 8:40 a.m.

#### **AWARD CEREMONY**

Intern Scholarships, Innovator of The Year, Member Emeritus, University Casting Contest Award Joseph E. Fritz, Investment Casting Institute Intern Scholarships Russ Rosmait, Pittsburg State University

8:40 a.m. - 9:00 a.m.

#### INTERN FUNDING PRESENTATION

IPC Foundry Group Dip Room Innovation and Construction, Mason Scott, ICI Intern

9:00 a.m. - 10:00 a.m.

#### **KEYNOTE SPEAKER**

Casting Around the Red Tape: Experiences in Building Innovative Partnerships between the DoD and the Investment Casting Industrial Base Dr. Rachel Abrahams

10:00 a.m. - 10:30 a.m.

**BREAK** 

10:30 a.m. - 11:00 a.m.

Insuring a Viable Workforce for the Future of Metal Casting...1 Gerard Thiel, Precision Casting Technologies, LLC

11:00 a.m. - 11:30 a.m.

Slurry Formulation and the Impact They Have On Drying Times...3 Carel Wegman, Ransom & Randolph Holland

11:30 a.m. - 12:00 p.m.

Eco-Friendly Investment Casting: Technical Ceramic 3D Printing Leads the Way...16 Rouslan Svintsitski, 3D Ceram Sinto

12:00 p.m. - 1:00 p.m.

#### LUNCH

1:00 p.m. - 1:30 p.m.

Latest Developments in High Pressure Heat Treatment of Cast Components...26 Andrew Cassese, James Kurzawa, Quintus Technologies LLC

1:30 p.m. - 2:00 p.m.

Versatility and Cost Savings Through the Modernization of the Wax Room...46 Aaron Phipps, MPI, Inc.; Norm Hirter, Tech Cast

2:00 p.m. - 2:30 p.m.

Safety & Ergonomics in the Investment Casting Foundry - A Panel Discussion...59 Scott Benda, Ergo Flex, Inc., Howard Pickard, LBBC Technologies, Stephen Murtagh, A.W. Bell Machinery Pty Ltd.

2:30 p.m. - 6:00 p.m.

**EXPO** 

#### **TUESDAY, OCTOBER 22, 2024**

7:00 a.m. - 5:00 p.m. **REGISTRATION** 

8:00 a.m. - 8:10 a.m. **GREETING** 

8:10 a.m. – 9:00 a.m.
The Investment Casting Conversion
Process: An Industry Consensus...61
Vasko Popovski, Ransom & Randolph

9:00 a.m. – 9:30 a.m.

Comparison of Common 3-D Printed
Pattern Types in Investment Casting...82

Anthony Rodriguez, Atlantic C&E Corporation

9:30 a.m. - 10:00 a.m.

A Sustainable Melt Furnace for School and Small Foundry Applications...94

S. Coles, Coles Castings; M. Neubauer, ASU; C. Luper, ASU and Bollinger Atelier; A. Sipos, ASU; D. Hesser, ASU

10:00 a.m. - 10:20 a.m.

BREAK

10:20 a.m. - 10:40 a.m.16th World Conference on Investment Casting-Kobe, Japan, Japan Foundry Society

10:40 a.m. - 11:00 a.m.
Foundry Education Updates
Al Torok, Yamaha Marine Precision Propellers, Inc..

11:00 a.m. - 11:40 a.m.

Forces Exerted on an Investment Casting Shell by a Printed Pattern during Autoclave De-Wax...106 Tom Mueller, Mueller Additive Manufacturing Solutions

11:40 a.m. - 12:00 p.m.

The Big 3 Pattern Wax Fillers – What is the Difference and What is Best for My Process?...119 Azhar Juhari, Randy Morss, Joshua Rinzel, REMET Corporation; Gavin Dooley, REMET UK, Ltd.

12:00 p.m. - 1:00 p.m. **LUNCH** 

1:00 p.m. - 1:30 p.m.

A Case Study of Separately Molded Offset Pouring Basins for use in Investment Casting...135 Jorge Arellano, POK NUCOR; Evan Letourneau, MAGMA Foundry Technologies, Inc.

1:30 p.m. - 2:05 p.m. Automation in the IC Industry...146 Brian Williams, Brad Witte, Signicast 2:05 p.m. - 2:30 p.m. Utilizing CFD with 3D Printed Filters to Increase Casting Yields by Flow Optimization...154 John Stuecker, Robocasting

2:30 p.m. – 5:00 p.m.

**EXPO** 

6:00 p.m. - 8:00 p.m. **RECEPTION** 

#### **WEDNESDAY, OCTOBER 23, 2024**

7:00 a.m. - 12:00 p.m. **REGISTRATION** 

8:00 a.m. - 8:10 a.m.

**GREETING** 

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IMPACT Project Review - AM Ceramic Shell
Technology for Investment Casting...161
Paul Finelt, Concurrent Resources LLC

9:00 a.m. – 9:30 a.m.
Use of Additive Manufacturing at Scale in
Investment Casting...163
Nick Serpa, John Morison, Hitchiner Manufacturing
Co., Inc.

9:30 a.m. – 10:00 a.m. A Fundamental Analysis into The Life of Investment Casting Slurries: A Longitudinal Study Using Advanced Analyses...170 Gavin Dooley, Alex Spence, Sareh Movahed, REMET UK, Ltd.

10:00 a.m. - 10:20 a.m.

**BREAK** 

10:20 a.m. – 11:00 a.m. Surface Finish - Requirements & Inspection...187 Mark White, Impro Aerotek USA, Inc.

11:00 a.m. - 11:30 a.m.

Autoline: Intelligent Full Function Shell-Making Line...196 Jacquelyn Weaver, Autoline Intelligent Tech Co. Ltd.

11:30 a.m. - 12:00 p.m.

#### AWARD CEREMONY

Casting Contest Awards, Best Paper Award Joseph E. Fritz, Investment Casting Institute

12:00 p.m.

#### **ADJOURNMENT**

Joseph Fritz, ICI Executive Director