

ALUMINIUM SUMMER SCHOOL 2014

28. July - 01. August 2014 | RWTH Aachen

SUMMER SCHOOL

The school has previously taken place in Trondheim (Norway), Worcester (USA) and Vicenza (Italy). Topics concerning light alloys solidification and processing have been traditionally covered by the Summer School. In 2013 it will be focused on the path to be followed from innovative design to advanced applications in order to make light alloys castings suitable to sustain the challenges of product reliability, industrial competitiveness and technological sustainability. As demonstrated by recent Integrated Research Projects, such challenges require, from light alloys casting industry, innovative and integrated approaches based on:

- fundamentals of metallurgy,
- modeling and simulation of process,
- knowledge of conventional and innovative treatments and processing solutions,
- availability of advanced criteria and tools for design of casting and components.

The International School will offer an overview of this new scenario, aiming at a understanding of topics which are important both for industrial engineers (knowledge of innovative solutions and approaches) and for researchers (knowledge of the industrial requirements to be targeted by innovation) who are working on light alloys castings.

The program and the lecturers have been selected with the basic idea that integration will be the key concept for making research and industrial development in the field of light alloys casting more competitive.

INITIATORS

COMMITTEE

This International Summer School is, in 2014, a joint effort among NTNU (Norway), WPI (USA), DTG (Italy) and RWTH Aachen (Germany).

D. Apelian; WPI, Worcester Polytechnic Institute, USA
L. Arnberg; NTNU, University of Trondheim, Norway
F. Bonollo; DTG, University of Padova, Italy
A. Bührig-Polaczek; Foundry Institute, RWTH Aachen University, Germany

INDUSTRIAL ADVISORY BOARD MEMBER

Dr. Gerd-Ulrich Grün (Hydro Al)
Dr. Hubert Koch (Trimet)
Dr. Claudio Mus (Teksid)
Dr. Franco Pinna (Ferrari)
Ansgar Pithan (Honsel AG)
Dr. Jose Talamantes-Silva (NEMAK)
Dr. David Weiss (Eck Industries)

RWTH AACHEN UNIVERSITY

RWTH Aachen University is one of Germany's elite universities and one of the most highly recognized technical universities in Europe. With 260 institutes within nine faculties, it is one of Europe's leading institutions for science and engineering research. With innumerable industrial cooperation partners, the education that students receive at RWTH Aachen University is firmly rooted in real-world applications. As a result, RWTH graduates are highly sought after by business and industry and one in five board members of German corporations is an alumnus of RWTH Aachen University.

More than 6500 people with an international background, from more than 120 countries, currently study, research, teach, and work at RWTH Aachen. This internationality lived out at RWTH Aachen is flanked by strategies, measures, and services for promoting the internationality of academics, teaching, and research.

ORGANISATION

RWTH INTERNATIONAL ACADEMY

As the official executive education academy of RWTH Aachen University, the RWTH International Academy is backed by the diverse knowledge of the various institutes and research organizations of the university. Through this close cooperation, practical executive education programmes are professionally conceived, organized and offered. The institutes of RWTH Aachen University are responsible for the technical content of the programmes.

PARTICIPATION FEE

Participation fees are staggered as follows:
Standard Participant: 2.160 Euro
ACRC Member, AIM Member: 1.920 Euro
Student*: 960 Euro

** Please send proof of your student status by email or by fax (0049 241 80 92525).*

The participation fee includes course materials, meals and framework programme, but not the cost of accommodation and travel expenses.

VENUE

The lectures take place in **lecture room H218**, Foundry Institute at RWTH Aachen, Intzestraße 5, 52072 Aachen, Germany.

HOTEL CONTINGENT

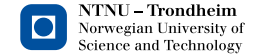
A number of rooms will be provided for the duration of the Summer School. More information on this will be in advance of the date.

REGISTRATION

You can register online using the registration form on www.academy.rwth-aachen.de or by email to the address below. Terms and conditions are available at www.academy.rwth-aachen.de/de/agb.

Further information and registration

RWTH International Academy
Kackertstraße 10 | 52072 Aachen, Germany
E-Mail: aluminium.summerschool2014@academy.rwth-aachen.de
Web: www.academy.rwth-aachen.de/aluminiumsummerschool



ALUMINIUM SUMMER SCHOOL 2014

RWTH AACHEN UNIVERSITY

JULY 28 – AUGUST 01, 2014



PROGRAM

28. July – 01. August 2014 | RWTH Aachen

MONDAY, 28. JULY 2014

- 10.00 – 14.00 **Welcome and Registration**
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- 14.00 – 18.00 **1. Introduction, Overview Process - Structure - Properties**
The Molten Metal and its Care Prior to Casting
Diran Apelian (WPI)
- Development of Microstructure During Solidification**
Lars Arberg (NTNU)
- Transport Phenomena Considerations - Heat Flow, Fluid Flow and Mass Flow-affecting and Influencing Microstructure and Control of Defects**
Diran Apelian (WPI)

TUESDAY, 29. JULY 2014

- 9.00 - 13.00 **2. Simulation**
Simulation and Optimization of Aluminium Castings and Casting Processes
Moritz Weidt (MAGMA GmbH)
- Simulation of a Cast Microstructures for Aluminium-Alloys on the Grain Scale**
Markus Apel (ACCESS e.V.)
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- 14.00 - 18.00 **3. Processes and Process Control**
A short Overview of Foundry Processes for Light Alloys
Franco Bonollo (DTG), Nicola Gramegna (Enginsoft)
- Quality Mapping in Light Alloys Castings**
Franco Bonollo (DTG), Nicola Gramegna (Enginsoft)
- Key-Process Parameters for high-quality Light Alloys Castings**
Franco Bonollo (DTG), Nicola Gramegna (Enginsoft)

WEDNESDAY, 30. JULY 2014

- 9.00 - 13.00 **4. Alloys**
Principals for the Design of Cast Alloys and an Overview of Commercial Alloys
M. M. Makhoulf (WPI), Diran Apelian (WPI), Lars Arberg (NTNU)
- Grain Refinement and Modification of Cast Alloys**
Lindsay Greer (Cambridge University)
- Primary, Secondary Alloys, and the Effect of Impurities and Trace Elements**
Giulio Timelli (DTG)
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- 14.00 – 18.00 **5. Innovative Processes and Materials**
Production of Aluminium Nano-Composites
M. M. Makhoulf (WPI), Diran Apelian (WPI)
- Diffusion Solidification for the Casting of Wrought Alloys**
S. Shankar (WPI), Diran Apelian (WPI)
- Semi-Solid Processing - Status Report**
John Jorstad (JLJ Technologies), Diran Apelian (WPI)
- Innovations in High Pressure Die Casting**
Lothar Kallien (GTA)
- Hybrid Components (Steel/Al/Mg/Polymer) produced in High Pressure Die Casting**
Andreas Bührig-Polaczek (RWTH)

THURSDAY, 31. JULI 2014

- 9.00 – 13.00 **6. Ingot casting**
DC Casting Fundamentals
Gerd-Ulrich Grün (Hydro Aluminium Rolled Products GmbH)
- Recycling**
Gerd-Ulrich Grün (Hydro Aluminium Rolled Products GmbH)
- DC Casting Technologies**
A. Håkonsen (Hycast)
- Melt Treatment of Aluminium**
A. Håkonsen (Hycast)
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- 14.00 - 18.00 **7. Advances in Foundry Management**
Life Cycle Assessment (LCA) applied to Light Alloys Casting Production
Franco Bonollo (DTG)
- Recycling of Aluminium**
Ragnhild Aune (NTNU)
- Aluminium Mini Mills**
Diran Apelian (WPI)

FRIDAY, 01. AUGUST 2014

- 9.00 – 13.00 **8. Industrial Cases**
Case Studies from Industry
- 13.00 – 13.30 **Closing of the Summer School**
Andreas Bührig-Polaczek (RWTH)

