POZIV NA PREDAVANJE

U organizaciji Saveza inženjera metalurgije Srbije (SIMS), Tehnološko metalurškog fakulteta (TMF) i Srpskog hemijskog društva (SHD, Sekcija za metalurgiju),

Prof. Jean-Marie DREZET, Ecole Polytechnique Fédérale de Lausanne (EPFL), iz Švajcarske, će u utorak, **20. maja 2014.** u **14 h** u malom amfiteatru **(MA)** Tehnološko-metalurškog fakulteta, održati predavanja pod nazivom:

1. Internal stress generation during quenching of thick heat treatable aluminum alloy plates

In the current trend toward thicker heat treatable aluminium plates, a major concern is the stress build-up during quenching which causes distortions during further machining. Indeed, cooling rates are not high enough, especially at the core of such thick plates, to prevent any precipitation and quench induced precipitates lower the hardening potential. Multi-scale modelling is required when predicting macro-scale stresses after quenching for thick heat treatable aluminium components owing to the instantaneous strong coupling between phase precipitation at the nano-scale and material hardening due to precipitation, or softening owing to solute depletion at the microscale.

Internal stresses have been measured using neutron diffraction and layer removal techniques in cold water quenched AA7040 and AA7449 thick plates and the results have been compared with a thermomechanical finite element model of quenching that highlights the influence of precipitation.

and

2. Rigidity temperature, hot tearing and stress generation in Aluminium castings

The rigidity temperature of a solidifying alloy is the temperature at which the solid phase is sufficiently coalesced to transmit tensile stress during solidification. It is a major input parameter numerical modelling of solidification processes as it defines the point at which thermally induced deformations start to generate internal stresses in a casting. As an example, as-cast residual stresses have been measured using neutron diffraction and compared with the results of a finite element thermomechanical model of casting for both round billets and rolling sheet ingots.

In addition, the rigidity temperature has been determined for an as cast Al-13 wt% Cu alloy using in situ neutron and X-rays diffraction during casting in a dog bone shaped mould. It represents an important information for the study of hot tearing, a detrimental defect in castings.

Biography:

Prof. Jean-Marie DREZET

Affiliation

Ecole Polytechnique Federale Lausanne, Switzerland

What is your highest degree? (Degree name and field)

PhD in Materials science

Where did you earn this degree? (Give institution and year)

1996

What is your current position?

Professor in materials science

Please provide a few sentences on your professional background (optional):

After his PhD in 1996, Jean-Marie Drezet has been working as package leader in two European Projects (Empact and Vircast) dedicated to aluminum casting processes and product quality.

In 2009, he used neutron diffraction to measure internal stresses in as-cast industrial aluminum billets.

In 2012, he received the Grand Prix Constellium Prize at the Académie des Sciences in Paris.

His fields of expertise are :

- computations and measurements of internal stresses
- solidification and precipitation in aluminum alloys
- study of casting defects such as hot tearing.