

E-MRS Symposium Covers Computer Simulation of Casting and Solidification

Symposium C at the E-MRS Spring Meeting held in Strasbourg, France during the week of June 16, 1986 covered the "State of the Art of Computer Simulation of Casting and Solidification Processes." The symposium organizers were H. Fredriksson (Royal Institute of Technology, Stockholm), G. Lesoult (Ecole des Mines, Nancy), W. Kurz (Ecole Polytechnique, Lausanne), and P. Sahn (Giesserei Institut, Aachen).

The symposium was intended to be a forum for metallurgists, physicists, and mechanical and chemical engineers to discuss the possibilities of combining heat flow laws with kinetic and thermodynamic laws in numerical methods in order to understand and control solidification and casting processes. The more than 30 contributions given during the 2½ day symposium featured European lecturers and contributors from other parts of the world.

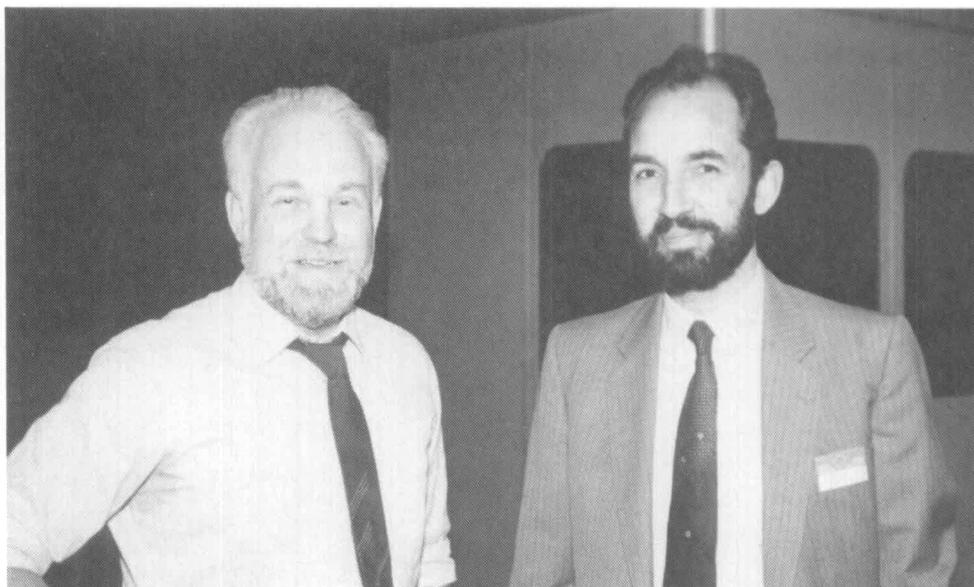
Analytical and numerical methods to describe heat flow were discussed during the first session. In an introductory talk, Dr. Preben Hansen from Denmark gave an overview of different FDM methods, and he also compared FDM and FEM methods. In another lecture, Prof. Francis Durand from France discussed the effect of convection on the solidification process.

The second session of the symposium dealt with problems such as the thermodynamic models used in solidification processes. In this session also, different types of kinetic as well as segregation models were presented to describe solidification structures.

In the last session, a series of papers presented heat flow models combined with kinetic and segregation laws. These papers described the structure formed in cast iron castings and in aluminum castings.



W. Kurz (Ecole Polytechnique).



H. Fredriksson (Royal Institute of Technology) and G. Lesoult (Ecole des Mines).

The papers contributed during this symposium gave rise to many stimulating discussions, successfully fulfilling the aim of the symposium.

(Editor's note: John Agren, who gave an invited talk entitled "Thermodynamic Modeling in Heterogeneous Phase Transformations" in this symposium, has contributed a historical survey of this topic for this issue of the BULLETIN.)

CRTM Offers Collaborative Materials Research in Aquitaine

The Aquitaine region of France, already famous for Bordeaux wine, is also being recognized for its research and development capacity in materials science. The presence of university and CNRS (National Center for Scientific Research) laboratories of international reputation and of large companies involved in advanced materials development has led to the creation of an interface structure—the Center for Research and Technology in Advanced Materials (CRTM)—between universities and industries.

Founded in 1985, the CRTM is a network of 19 laboratories from Bordeaux and Pau, representing about 400 researchers, engineers and technicians, all concerned with materials. The CRTM's objective is to develop Aquitaine's materials research potential by:

- ...organizing a regional network of laboratories,
- ...letting firms know about the Aquitaine region's research potential,
- ...assessing materials needs in industry,
- ...providing top-level scientific and technological assistance to industry,

- ...initiating creative thinking about basic and in-service training in the science of materials, and

- ...helping to establish new firms.

High-level research teams in Aquitaine represent the majority of materials science specialties, including electronics and optics, storage and energy conversion devices, and high mechanical and thermal performance materials.

As part of its efforts to improve traditional materials and develop new ones for industry, the CRTM offers liaison services between firms and component laboratories. The CRTM also:

- Fully guarantees contractual research, offering confidential treatment and protection of industrial property for large and small companies.
- Establishes fundamental research programs, defined through collaboration with industrialists and researchers, with results benefiting both.
- Offers training in CRTM laboratories for industry and university engineers and technicians so they can acquire specific knowledge or techniques.
- Will share in the purchase of heavy equipment.
- Is developing a data bank of available facilities and current topics.
- Provides scientific consultancy to companies.

In addition to its regional and national programs, the CRTM seeks international collaboration with Europe, Japan, and the United States.

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