# FOREWORD

The 2nd International Conference on Thermal Process Modelling and Computer Simulation (ICTPMCS) has been held from March 31st to April 2nd 2003 in Nancy, France. The first conference in the series was held in Shanghai (China) March 2000. The conference in Nancy has attracted more than 150 participants from 20 countries. Participants came mainly from university research centers but an important industrial attendance can be mentioned (about 50 representatives from automotive, steel, equipment, aeronautic industries and software suppliers).

The aim of the conference was to bring together specialists in modelling in materials science, solid mechanics and fluid mechanics as well as in numerical simulation to discuss the state of the art from both theoretical and applied viewpoints.

130 papers were presented at the conference of which three plenary lectures by T. Inoue (Kyoto University, Japan), M.A.J. Somers (Technical university of Denmark) and M. Plateau (PSA Peugeot Citroën). Papers dealt mainly with the modelling and computer simulation of heat treatments and surface engineering processes such as quenching, tempering, high grade energy density heat treating (e.g. induction, laser and electron beam heating), carburizing, carbonitriding, nitrogen-carburizing, coatings (PVD, CVD,), etc. Other thermal processes such as casting, forging, welding were also concerned. The emphasis was on metallic alloys, but contributions on other materials (polymers, ceramics, composites) were considered. On the one hand, the materials-related physical phenomena (such as diffusion, phase transformations, thermomechanical behaviour) and their combinations are modelled. On the other hand, the process-related phenomena (heat transfer including fluid dynamics and combinations with electromagnetic phenomena, mass transfer) are described. In addition, simulations are supported by advanced numerical techniques.

Finally, the proceedings have been structured in five chapters :

I. Modelling of the physical phenomena at different scales

II. New developments in numerical methods and techniques

III. Computer simulation of whole processes

IV. Experimental validation of models and numerical simulation

V. Application of computer simulation in industry.

The good development of a conference such as ICTPMCS requires a lot of work by many people. We would like to thank all members of the Organising Committee, the session chairmen and all the people who helped out with the reviewing procedure of the contributed papers. Our special thanks go to Mr Paul Riboud and Mrs Monique Nivet from SF2M. The financial and technical support of different institutions and industrial societies is also gratefully acknowledged.

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