Foreword

Olivier Minster

Received: 8 July 2009 / Accepted: 8 July 2009 / Published online: 18 July 2009
© Springer Science + Business Media B.V. 2009

This volume of the Journal of Microgravity Science and Technology features articles reporting on research works presented at the Fourth International Topical Team Workshop on Two Phase Systems for Ground and Space Applications that took place in Novosibirsk on 6–8 September 2009.

International Topical Teams are research networks that are co-sponsored by several space agencies. The objective of these networks is to define coordinated research programmes utilising the space environment as an experimental tool. Recently, the international partners to the International Space Station (ISS) project have committed to promoting more assertively the development of such networks on a large scale with a view to defining an international research plan for the utilisation of the ISS.

Heat transfer phenomena are ubiquitous and represent an important element in many industrial processes, obviously for electrical energy generation purposes, but also in other branches of industry.

The worldwide pressure on reducing energy waste and improving the efficiency of energy conversion and utilisation calls for the development of more advanced, knowledge based and efficient industrial systems.

Also, in preparation for an international endeavour towards space exploration, the development of light weight, highly efficient and reliable systems capable of operating during the different phases of manned missions is one of the critical challenges facing the space agencies. The design of these systems must be based on a significant body of scientific knowledge to meet performance and reliability targets.

The first of this series of International Workshops took place in Brussels in September 2006, the second one in Kyoto in October 2007 and the third in Brussels in September 2008. This fourth workshop marked a decisive broadening of the international participation and thereby, the prospect of cooperation in space experimentation.

Heat transfer in two phase systems is tackled theoretically, numerically and experimentally by many groups and the discussions in the Workshops stimulate synergistic activities and the resulting coordination of efforts enables significant advancements in the field. It can thus be hoped that future heat transfer systems for both ground and space applications will be based less on empirical approaches and more on sound principles. Participants in follow-on editions of this workshop should witness this evolution.

The organisers and the scientific committee are grateful to the Russian Foundation for Basic Research and to the Institute of Thermophysics of the Russian Academy of Sciences in Novosibirsk, the host of this edition, for co-sponsoring the workshop along with the space agencies. They also are indebted to Springer

O. Minster (✉)
European Space Agency, Paris, France
e-mail: Olivier.Minster@esa.int

that publishes and disseminates the scientific papers. We would particularly like to express our gratitude to the Workshop Secretary Dr. Yulia Kabova and the local organizing committee, chaired by Prof. Sergey Alekseenko. For more detailed information about the Workshop please see <http://hti.ulb.ac.be/>.

There is no doubt that the coordinated efforts of many at all levels will enable all of us to successfully tackle the challenges of the future.

On behalf of the Scientific Committee

ESA Noordwijk,
July 8, 2009

Dr. Olivier Minster
Physical Sciences Unit Head
Directorate of Human Spaceflight
European Space Agency