editorial

Selected Papers from the Seventh International Conference on Nanochannels, Microchannels, and Minichannels

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It gives us great pleasure to present this special issue highlighting some of the papers presented at the ASME Seventh International Conference on Nanochannels, Microchannels, and Minichannels, held at the Pohang University of Science and Technology (POSTECH), in Pohang, South Korea, June 22-24, 2009. The conference was held under the sponsorship of ASME and was co-hosted by Dr. Moo-Hwan Kim, professor and director of the Two Phase Flow Laboratory at POSTECH. On behalf of the conference organizing committee and the participants, we would like to thank him and his team of students and staff for putting together a world-class event.

Pohang, home of the Pohang Steel Corporation, is a prosperous port city on the eastern side of Korea. As one of Korea’s top universities dedicated to science and engineering, POSTECH offers 4-year programs in 10 departments and POSTECH’s Graduate School offers programs in 14 departments. The excellence of the university extends far beyond the campus, as POSTECH has international cooperative agreements in place with 68 sister universities. We had more than 150 papers presented over 3 days in 24 sessions. The conference theme of interdisciplinary research was once again showcased with researchers working in diverse areas such as traditional heat and mass transfer, lab-on-chips, sensors, biomedical applications, micromixers, fuel cells, and microdevices, to name just a few. Selected papers in the field of heat transfer and fluid flow are included in this special volume.

There are 19 papers included in this special volume. The topics covered include review of cooling technology using microchannels, single-phase flow in microchannels with porous/fibrous structures, boiling and bubble dynamics, T-junction micromixers for two-phase flow, capillary filling, wetting in microgrooves with liquid metals, gas flow in rough nanochannels, effect of ultrasound on subcooled flow boiling, explosive boiling, flow patterns, and falling film flow on periodic structures. These topics indicate that the microchannels are now being used in many diverse applications.

The conference organizers are thankful to all authors for participating enthusiastically in this conference series. Special thanks are due to the authors of the papers in this special issue. The authors have worked diligently in meeting the review schedule and responding to the reviewers’ comments. The reviewers have played a great role in improving the quality of the papers. The help provided by Enrica Manos in the Mechanical Engineering Department at Rochester Institute of Technology with this special issue is gratefully acknowledged.

We thank Professor Afshin Ghajar for his dedication to this field and his willingness to publish this special issue highlighting the current research going on worldwide. He has been a major supporter of this conference series, and I am indebted to him for this collaborative effort.
Satish G. Kandlikar is the Gleason Professor of Mechanical Engineering at Rochester Institute of Technology (RIT). He received his Ph.D. degree from the Indian Institute of Technology in Bombay in 1975 and was a faculty member there before coming to RIT in 1980. His current work focuses on heat transfer and fluid flow phenomena in microchannels and minichannels. He is involved in advanced single-phase and two-phase heat exchangers incorporating smooth, rough, and enhanced microchannels. He has published more than 180 journal and conference papers. He is a fellow of the ASME, associate editor of a number of journals including ASME Journal of Heat Transfer, and executive editor of Heat Exchanger Design Handbook published by Begell House and Heat in History Editor for Heat Transfer Engineering. He has received RIT’s Eisenhart Outstanding Teaching Award in 1997 and Trustees Outstanding Scholarship Award in 2006. Currently he is working on a Department of Energy-sponsored project on fuel cell water management under freezing conditions.