Preface to the Special Issue for Multiscale Multiphase Process Engineering (MMPE) 2017

This special issue of Journal of Chemical Engineering of Japan (JCEJ) includes selected papers presented at the 3rd International Symposium on Multiscale Multiphase Process Engineering (MMPE) held in Toyama, Japan on 8–11 May, 2017. We have selected 3 journal reviews from keynote lectures and 6 original research papers from oral presentations.

The third MMPE symposium is a continuation of the MMPE symposiums successfully held in Kanazawa, Japan, 2011, and in Hamburg, Germany, 2014. The third symposium was chaired by Prof. Koichi Terasaka, Keio University, and was financially supported by the Japan Society of Promotion of Science (JSPS), the Deutsche Forschungsgemeinschaft (DFG), Toyama city and Toyama prefecture, and some private companies. There were 81 interesting and attractive presentations including 4 keynote lectures. Over 110 participants from Japan, Germany, and other countries, enjoyed exchanging ideas and fruitful discussions in a friendly atmosphere.

Multiscale Multiphase Process Engineering is the core of chemical engineering, because most of chemical processes deal with multiphase phenomena and multiphase flows, where multiscale modeling over nano-, micro- and macro-scale is essential. Hence the topics covering the MMPE symposium are divers: fundamentals including fluid dynamics, and mass and heat transports; advanced measurement and experimental techniques; computational fluid dynamics and simulations; nanotechnologies and micro-reactors; multiphase reaction systems, such as catalytic reactions and bioreactors; design of conventional equipment, such as bubble columns, extraction columns, and fluidized beds; other state-of-the-art applications like fine bubble technologies. We hope that this special issue is of value to all readers engaging those topics.

This special issue is published with the financial support from the subdivision of Bubbles, Drops, and Particle Dispersion Engineering, in the Fluid and Particle Processing Division of The Society of Chemical Engineers, Japan. We are expressing our sincere gratitude to the authors for their contributions, and to the reviewers for providing their thoughtful and constructive comments. We are grateful to Prof. Masahiro Shishido, Yamagata University, the Editor-in-Chief of JCEJ, for his substantial support. We are also grateful to Ms. Kazuko Yamashita, in the editorial office, for her assistance and devotion in the preparation of this special issue.

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DOI: 10.1252/cej.18pr5104