PREFACE: COMPUTATIONAL HEAT AND FLUID FLOW IN POROUS MEDIA (PART 2)

This special issue of the Journal of Porous Media (JPM) is dedicated to the 8th Asian Symposium on Computational Heat Transfer and Fluid Flow (ASCHT2021). The ASCHT is an international conference that concentrates on the most recent developments in computational methods in various aspects of theories, analyses, and applications. The ASCHT series began in Xi’an, China, in 2007 and was subsequently held in Jeju, Korea (2009), Kyoto, Japan (2011), Hong Kong, China (2013), Busan, Korea (2015), Madras, India (2017), Osaka, Japan (2019), and Qingdao, China (2021). At present, the ASCHT is an excellent academic exchange platform for scholars and engineers in the field of computational methods. ASCHT2021 was held in Qingdao, China, from September 23–26, 2021, and was chaired by Professor Yao Jun and Gong Liang from the China University of Petroleum (East China), Suga Kazuhiko from Osaka Prefecture University, Japan, Tang Guihua from Xi’an Jiaotong University, China, and Son Gihun from Sogang University, Korea. The conference covers a broad range of topics related to computational heat transfer and fluid flow methods and their applications, and participants present the most recent advancements in computational methods in Asia and around the world, disseminating the most cutting-edge research findings and discussing the future direction of the field.

From this conference, a total of 15 papers encapsulating the latest advancements in computational methods employed in porous media have been rigorously recommended for inclusion in this special issue of JPM. Subsequently, all these papers underwent a meticulous additional peer review process conducted by esteemed international reviewers possessing the requisite expertise to ascertain their eligibility for publication in JPM. After careful evaluation, 12 of these papers have successfully met the stringent publication criteria and have been accepted for inclusion in the special issue. These papers cover a broad range of engineering and scientific topics concerning heat and mass transfer in porous media such as three-phase reactive flow in porous media, thermal-hydraulic-mechanical coupled simulation in hot, dry rock, gas diffusion in the carbon xerogel nanoporous structure, and mass transfer in proton exchange membrane fuel cells. Specifically, Professor Nomura Kazuki from Shizuoka University contributed a numerical investigation of the unsteady overall thermal resistances related to heat conduction for porous media with high Biot numbers. Professor Guo Hang numerically investigated the mass transfer inside gas diffusion layers with non-uniformly distributed porosity. Professor Shi Yu performed numerical investigations on the competitive adsorption and diffusion behaviors of CO$_2$/CH$_4$/N$_2$/H$_2$O in coals.

As members of the organizing committee for ASCHT2021, we are delighted to have had the opportunity to produce this special issue and would like to express our gratitude to all the contributors for their support and cooperation. We would also like to express our appreciation to the reviewers for their insightful comments, which ensured the scholarly quality of this special issue. Furthermore, we would like to acknowledge and extend our profound gratitude to Editor-in-Chief Kambiz Vafai for his guidance and expertise in overseeing the publication of this special issue. We are also grateful to the dedicated editorial assistants and production managers for their invaluable assistance in managing the submission and review process. Last, but not least, we would like to express our appreciation to the publishing house for their commitment to disseminating high-quality research and for their support in bringing this special issue to fruition.

Guest Editors:

Tang Guihua                       Xie Gongnan
School of Energy and Power Engineering   School of Marine Science and Technology
Xi’an Jiaotong University, China          Northwestern Polytechnical University, China

Gong Liang
College of New Energy
China University of Petroleum (East China), China