Call for Papers

Oil & Gas Science and Technology - Revue d'IFP Energies nouvelles

Special Issue on

"Advanced Modeling and Simulation of Flow in Subsurface Reservoirs with Fractures and Wells for A Sustainable Industry"

Managing Guest Editor:

Prof. Shuyu Sun, King Abdullah University of Science and Technology, Kingdom of Saudi Arabia

Guest Editors:

Michael Edwards, Swansea University, UK

Florian Frank, Friedrich-Alexander-University of Erlangen-Nürnberg, Germany

Jingfa Li, Beijing Institute of Petrochemical Technology, China

Amgad Salama, University of Regina, Regina, Sk., Canada

Bo Yu, Beijing Institute of Petrochemical Technology, China

Synopsis

Flow in subsurface reservoirs has been found a wide range of applications in many aspects of engineering and science at different time and space scales, such as petroleum exploration and recovery, groundwater contamination, subsurface carbon sequestration, and geothermal reservoir engineering, etc. As an effective method, modeling and simulation of flow in subsurface reservoirs become essential components of many scientific and engineering applications in recent years. And with the rapid development of various relevant technologies, the research of flow in subsurface reservoirs is growing very fast nowadays than ever before.

Significant advances have been witnessed in this area, but accurate modeling and efficient, robust simulation still remain a challenging problem, especially for the flow in subsurface reservoirs with fractures and wells. For example, the scale coupling of pore-scale and Darcy-scale flow in fractured porous media is still challenging the mathematical modeling with determining the proper correlation coefficient, and the meanings, interpretations and measuring windows of the same variables at different scales can vary with each other. There has not been any model which can be accepted by all to describe the coupling of different scales and various mechanisms. Further explorations with multi-scale, multi-domain, multi-physics and multi-numerics are needed to understand the flow and transport behaviors better for flow though fractures and wells in practical engineering cases. Computational efficiency and robustness are challenged in these models as the error estimation, sensitivity analysis, uncertainty quantification and many other procedures are difficult to perform due to the complex model with all these coupling as well as with fractures and wells. Especially, the selection of the most suitable variable transmission between different scales and mechanisms are the typical difficulty, which calls for much more effort to modify the corresponding industrial processes.

To facilitate the exchange and dissemination of original research results and state-of-the-art reviews pertaining to flow in subsurface reservoirs with fractures and wells efficiently, we propose this special issue that aims to bring together researchers in the aforementioned fields to highlight the current developments of modeling and simulation of flow in subsurface reservoirs with fractures and wells both in theory and methods, to exchange the latest research ideas, and to promote further collaborations in the community. We invite investigators to contribute to this special issue with original research articles as well as comprehensive review articles addressing the recent advances. Only the most influential work will be considered in this special issue.

Potential topics of this special issue mainly include, but are not limited to:

- Advanced numerical modeling of fractures and wells in reservoirs
- Novel numerical methods and algorithm for flow in fractured reservoirs
- Physical and mathematical models to describe flow and transport in reservoirs
- Mesh adaptation, model reduction and fast solvers
- Multi-scale and multi-physics modeling and simulation for flow in the well
- Carbon dioxide sequestration
- Enhanced Geothermal System
- Secondary and tertiary EOR

Important dates

January 31, 2020: Full paper submission due (OGST online submission)
March 31, 2020: Notification of full paper decision
April 30, 2020: Accepted final papers due
May 31, 2020: Online and hard-print of the issue

Suggestions for the preparation of full papers:

Online submission tutorial: https://ogst.ifpenergiesnouvelles.fr/submit-an-article

Note: Please select our special issue title when you submit your manuscript.

All papers will be peer-reviewed by at least two independent reviewers. Requests for additional information should be addressed to the editors.