***Curriculum Vitae***

**⚫ Personal Information**

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| Name: Rui Song（宋睿） | Gender: Male |
| Tel: +86 **15828353970** | Birth of Date: 6 May, 1987 |
| Email: rui.song@kaust.edu.sa |  |

**⚫ Education and Work Experience**

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| --- | --- | --- |
| January, 2018-Now | School of Geoscience and Technology, Southwest Petroleum University, China | Associate Professor |
| July, 2016-December,2017 | School of Geoscience and Technology, Southwest Petroleum University, China | Lecture |
| March, 2016-May, 2016 | Faculty of Engineering,  SHIZUOKA University, Japan | Visiting Scholar |
| September, 2011-June, 2016 | Geological Resources and Geological Engineering,  Southwest Petroleum University, China | PhD |
| September, 2007-July, 2011 | Oil and Gas Storage and Transportation Engineering,  Southwest Petroleum University, China | Bachelor |
| September, 2009-July, 2011 | English Language and Literature (Double Major),  Southwest Petroleum University, China | Bachelor |

**⚫ Expertise**

* Pore Scale Modeling of Porous Media
* Micro-scale THM coupling Simulation of Rock
* Optimization of Compact Heat Exchanger
* Heat and Mass Transfer in Natural Gas Liquefaction Process

**⚫ Research Projects**

**National Natural Science Foundation of China, Grant No.51909225,** 《Porescale Study on Dissociation and Transportation Mechanism of Natural Gas Hydrate in Arenaceous Sediments》, 2020/01-2022/12 **(Principal Investigator)**

**Research Project Funded by PetroChina Exploration and Development Research Institute** 《Research on Modeling Microscale Pore Structure of Tight Reservoir Based on Digital Rock Technology》, 2019/01-2020/12 (**Principal Investigator**)

**National Science and Technology Major Project of China,** Grant NO.2017ZX05013001-002,《Reconstruction of 3D microscale pore structure and its evolution mechanism》, 2017/01-2021/12 (**Principal Investigator**)

**Open Fund of Key Laboratory supported by Open Research Fund of State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Sciences,** Grant NO.Z017009,《Study on Microscopic Water-Swelling and Creep Mechanism of Deep Mudstone》, 2018/01-2019/12 (**Principal Investigator**)

**Open Fund of Key Laboratory of Key Laboratory of Oil &Gas Equipment，Ministry of Education (Southwest Petroleum University),** 《Study on Flow and Heat transfer Characteristics of Corrugated Fins in Plate-fin Heat Exchanger》, Grant NO. OGE201702-15, 2017/10-2019/09 (**Main investigator**)

**Open Fund of** **Key Laboratory of Natural Gas Geology (Sichuan Province, China),** Grant NO. 2016trqdz05, 《Desorption – Diffusion – Migration Mechanism of Shale Gas at Micro Scale》, 2017/01-2017/12 (**Principal Investigator**)

**Natural Science Foundation of China,** Grant NO.51174170,《Impact of Stress on Pore Structure Evaluation and Water Flooding Efficiency》, 2013/01-2015/12 (**Main investigator**)

**National Science and Technology Major Project of China,** Grant NO.2011ZX05013-006-004,《Research on Development Technical Limits of Ultra-low Permeable Reservoirs》, 2013/01-2015/12 (**Main investigator**)

**Open Fund of Key Laboratory Funded by Ministry of Education**，《Automatic Mesh Generating Technology of Porous Media based on Digital Images》, 2014/01-2015/12 (**Main investigator**)

**Research Project Funded by PetroChina Exploration and Development Research Institute** 《Development of Pore Structure Scanning System and Pore-scale Seepage mechanism Simulation Software》, 2012/01-2013/12 (**Main investigator**)

**⚫ Major Honors**

First Science-Technology Progress Prize of Hubei province

Excellent Doctoral Dissertation Award of Chinese Society of Rock Mechanics and Engineering

Excellent Staff of Southwest Petroleum University in 2015-2018

Excellent Graduates of Sichuan Province

Excellent Graduates of Southwest Petroleum University

National Scholarship for Doctoral Students

Top Ten Academic Achievement Awards of Southwest Petroleum University

Top Ten Outstanding Doctors of Southwest Petroleum University

First Academic Scholarship of Southwest Petroleum University

**⚫ Significant publications**

Scholarly books

1. **\*Song, R.**, Liu, J., & Cui, M. (2017). Reconstruction of Pore-scale Model and It’s Application in Research on Thermal-Hydro-Mechanical Coupling Mechanism. Science Press: Beijing. ISBN:9787030554789.

Refereed Journal papers

1. Song, R., Wang, Y. \*, Liu, J. J. \*, **Cui, M.**, & Lei, Y. (2019). Comparative analysis on pore‐scale permeability prediction on micro‐CT images of rock using numerical and empirical approaches. *Energy Science & Engineering*, https://doi.org/10.1002/ese3.465.
2. **Rui Song**, **\***Mengmeng Cui. (2019). Single- and multi-objective optimization of a plate-fin heat exchanger with offset strip fins adopting the genetic algorithm. *Applied Thermal Engineering*, 159: 113881.
3. Yao Wang, **\*Rui Song**, Jian-JunLiu, Meng-MengCui, P.G.Ranjith(2019). Pore scale investigation on scaling-up micro-macro capillary number and wettability on trapping and mobilization of residual fluid. *Journal of Contaminant Hydrology*, 225, 103499.
4. **Song, R.**, & **\***Cui, M. (2018). Molecular simulation on competitive adsorption mechanism of CH4/CO2 on shale kerogen. *Arabian Journal of Geosciences*, 11: 403.
5. **SONG Rui**, WANG Yao, LIU Jianjun. (2018) Microscopic Pore Structure Characterization and Fluids Transport Visualization of Reservoir Rock[J]. *Journal of* Southwest *Petroleum University (Science & Technology Edition)*, 40(6): 85–105.
6. **\*Song, R.**, Liu, J., & Cui, M. (2017). A New Method to Reconstruct Structured Mesh Model from Micro-Computed Tomography Images of Porous Media and Its Application. *International Journal of Heat and Mass Transfer,109*: 705–715.
7. **\*Song R**, Cui M, Liu J, Ranjith P.G., et al. (2017). A Pore-Scale Simulation on Thermal-Hydromechanical Coupling Mechanism of Rock[J]. *Geofluids*, 2017(21), 7510527.
8. **Song, R.**, **\***Cui, M., & Liu, J. (2017). Single and multiple objective optimization of a natural gas liquefaction process. *Energy*, 124, 19-28.
9. **Song, R.**, **\***Cui, M., & Liu, J. (2017). A correlation for heat transfer and flow friction characteristics of the offset strip fin heat exchanger. *International Journal of Heat & Mass Transfer*, 115(PB), 695-705.
10. **\***Liu, J., Wang Y., **Song, R.**.(2017). Research Progress of Visual Seepage Experiment and Application Prospect of Transparent Rock-Soil Material. *Earth Science,* 2 (8) :1287-1295.
11. Liu J, **\***Wang Y, **Song R**. (2017). A Pore Scale Flow Simulation of Reconstructed Model Based on the Micro Seepage Experiment[J]. *Geofluids*, 2017(5):1-8.
12. Liu, J., **\***Wu, M., **Song, R.**, et al. (2017). Study on simulation method of multi-scale fractures in low permeability reservoirs. *Journal of Southwest Petroleum University*, 39 (4) :90-103.
13. **\*Song, R.**, Liu, J., & Cui, M. (2016). Single-and two-phase flow simulation based on equivalent pore network extracted from micro-CT images of sandstone core. *SpringerPlus*, 5(1), 1-10.
14. **Song, R.**, **\***Liu, J., Wang, W., & Cui, M. (2016). Dynamic Simulation of Lumbar Vertebrae and Pelvis in Human Falls. *Acta Medica Mediterranea*, 32: 255-259.
15. Liu, J., & **\*Song, R.** (2015). Investigation of water and CO2 flooding using pore-scale reconstructed model based on micro-CT images of Berea sandstone core. *Progress in Computational Fluid Dynamics, An International Journal*, 15(5), 317-326.
16. Liu, J., **\*Song, R.**, & Cui, M. (2015). Improvement of predictions of petrophysical transport behavior using three-dimensional finite volume element model with micro-CT images. *Journal of Hydrodynamics, Ser. B*, 27(2), 234-241.
17. **\*Song, R.**, Liu, J., & Li, G. (2015). Researches on the Pore Permeability of Core Sample Based on 3D Micro-CT Images and Pore-scale Structured Element Models. *Journal of Southwest Petroleum University (Science & Technology Edition)*, 37(3), 138-145.
18. Yuan, Z., **\***Cui, M., **Song, R.**, & Xie, Y. (2015). Evaluation of prediction models for the physical parameters in natural gas liquefaction processes. *Journal of Natural Gas Science and Engineering*, 27, 876-886.
19. Yuan, Z., **\***Cui, M., **Song, R.**, Xie, Y, & Han, L. (2015). Performance improvement of a boil-off gas re-condensation process with pre-cooling at LNG terminals. *International Journal of Thermodynamics*, 18(2), 74-80.
20. Liu, J., **\*Song, R**., & Cui, M. (2014). Numerical simulation on hydromechanical coupling in porous media adopting three-dimensional pore-scale model. *Scientific World Journal*, 2014(1), 174-181.
21. **\*Song, R.**, Liu, J., & Li, M. (2014). New Method for Structured Finite Elements Modeling of Porous Media Reconstruction. *Electronic Journal of Geotechnical Engineering*, 19M, 2909-2915.
22. **\*Song, R.**, Liu, J., & Tang, R. (2014). Prediction of Fluid Properties in Rock Using Regular Cubic Pore Network Model. *Electronic Journal of Geotechnical Engineering*, 19N, 3387-3396.
23. **\*Song, R.**, & Liu, J. (2014). Advances in Microscopic Pore Structure Modelling of Rock. *Electronic Journal of Geotechnical Engineering*, 19U, 6063-6078.
24. Liu, J. & **\*Song, R.** (2014). Numerical Simulation Study on Non-Darcy Seepage Mechanism in micro-pore based on the Micro-fluidic Boundary Layer Theory. *Research Journal of Chemistry and Environment*, 18(5), 8-13.
25. **\*Song, R.**, & Liu, J. (2014). Application of the Fractal Theory to Seepage Mechanism. *Physical and Numerical Simulation of Geotechnical Engineering*, 14, 2-6.
26. **\***Liu, J., **Song, R.**, & Zhao, J. (2013). Numerical simulation research on seepage mechanism in pore-scale deformable porous media. *Disaster Advances*, 6(S1), 49-58.
27. Liu, J., **\***Lin, L., **Song, R.**, & Zhao, J. (2013). A Pore Scale Modelling of Fluid Flow in Porous Medium Based on Navier-Stokes Equation. *Disaster Advances*, 6(S1), 129-136.
28. **\*Song, R.**, Liu, J., & Qin, D. (2013). Numerical simulation of two phase flow in reconstructed pore network based on lattice Boltzmann method. *International Journal of Computer Science Issues*, 10(1), 193-200.
29. Liu, J., Wang, Y., **Song, R.**, & Sun, Y. (2017). Discussion of Visual Technique for Seepage Experiment Based on Transparent Rock-Soil Material. *The Open Civil Engineering Journal*, *11*(1).

Other Research Outputs

1. \*First-class Science-Technology Progress Prize of Hubei Province (Project: Nonlinear Hydro-mechanical coupling Mechanism of rock and its Applications in Engineering, ranking 7 of 15).

**⚫ Oral Presentations**

* 1. Pore-scale Modeling and research on Thermal-hydro-mechanical coupling of rock, CHINA ROCK 2018, 2018, Beijing, China.
  2. Research on the Permeability Prediction of Core Sample Based on 3D Micro-CT Images and Pore-scale Structured Element Models, 13th China National Conference & International Forum on Fluid Flow in Porous Media, 2015, Chengdu, China.
  3. Micro-scale Simulation on Hydrologic-Mechanical Coupling Mechanism of Rock, 4th International Symposium on Multi-Field Coupling Theory of Rock and Soil Media and Its Applications, 2015, Zhoushan, China.
  4. Research on Geological Disasters Caused by Exploitation of Oil and Gas, Symposium of the Mechanical Institute of Sichuan Province, 2014, Mianyang, China.
  5. Investigation of Seepage Mechanism in Reconstructed Pore-scale Porous Media Model, 12th China National Conference & International Forum on Fluid Flow in Porous Media, 2013, Qingdao, China

**⚫ OTHER EXPERIENCES**

**Member of**

Chinese Society of Theoretical and Applied Mechanics, CSTAM

Chinese Society for Rock Mechanics & Engineering, CSRME

Geological Society of China, GSC

**Referee for Journals**

Petroleum 2016

Energy 2018

International Journal of Rock Mechanics and Mining Sciences 2019

Applied thermal engineering 2018

Petroleum Science, 2019

Journal of Thermal Science,

Special Topics & Reviews in Porous Media - An International Journal 2019

Scientific Reports 2017

Plos one， 2017

JAFM (Journal of Applied Fluid Mechanics)， 2019