

# Yu Zhao

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## Research Interests

Reservoir Modeling and Simulation, Transport Phenomena in Porous Media, Computational Heat Transfer and Fluid Flow

## Education

**China University of Petroleum** Beijing, China

*Master in Oil & Gas Storage and Transportation* Sep.2011 – Expected Jun.2014

- Overall GPA: **87.6/100** Ranking: **Top 1/42** Advisor: Prof. Bo Yu
- TOEFL(iBT): 106 (R28 L28 S20 W30) GRE: 321+3.5 (V154 Q167 AW3.5)

**China University of Petroleum** Beijing, China

*Bachelor of Oil & Gas Storage and Transportation* Sep.2007 – Jun.2011

- Overall GPA: **90.3/100** Ranking: **Top 3/129**
- Relevant Coursework: Advanced Mathematics, Linear Algebra, Probability and Statistics, Engineering Thermodynamics & Heat Transfer, Engineering Mechanics, Fluid Mechanics

## Research Experience

**National Natural Science Foundation of China** Sep.2011 – Present

*Research Assistant*

- Assisted with comparative studies on accuracy and convergence rate of different computational methods for unstructured grids
- Independently developed improved methods to generate high-quality unstructured and hybrid grids, programmed corresponding grid generators in Fortran
- Conducting coupled simulation of temperature, water and stress fields of porous media utilizing finite volume method (FVM) and finite element method (FEM) for unstructured grids

**PetroChina Research Project** Oct.2012 – Jun.2013

*Research Assistant*

- Established the mathematical model and employed FVM to simulate the temperature field of large floating roof oil tank under different conditions
- Wrote temperature field prediction software in Fortran and VB (computing kernel in Fortran and software interface in VB)

## Publications

### **Journal Papers**

- **Yu Zhao**, Bo Yu, Wenquan Tao. An Improved Paving Method of Automatic Quadrilateral Mesh Generation. *Numerical Heat Transfer, Part B: Fundamentals*, 2013, 64(3), 218-238.
- **Yu Zhao**, Bo Yu. A Modified Paving Algorithm for Quadrilateral Mesh Generation. *Journal of Engineering Thermophysics*, 2013, 34(4), 728-732. (in Chinese)
- Guojun Yu, Bo Yu, **Yu Zhao**, Jingfa Li, Qianqian Shao, Jianyu Xie. An unstructured grids-based discretization method for convection–diffusion equations in the two-dimensional cylindrical coordinate systems. *International Journal of Heat and Mass Transfer*, 2013, 67, 581-592.
- Guojun Yu, Bo Yu, **Yu Zhao**, Jinjia Wei. Comparative studies on accuracy and convergence rate between the cell-centered scheme and the cell-vertex scheme for triangular grids. *International Journal of Heat and Mass Transfer*, 2012, 55, 8051-8060.
- Guojun Yu, Bo Yu, **Yu Zhao**, Qianqian Shao, Jianyu Xie. The Discretization Method for

Convention-Diffusion Equations in Two-Dimensional Cylindrical Coordinate Systems Based on Unstructured Grids. *Procedia Computer Science*, 2013, 18, 2117-2126.

- Dongxu Han, Bo Yu, Guojun Yu, **Yu Zhao**, Wenhua Zhang. Study on a BFC-based POD-Galerkin ROM for the steady-state heat transfer problem. *International Journal of Heat and Mass Transfer*, 2014, 69, 1-5.
- **Yu Zhao**, Bo Yu, Guojun Yu. A New Two-dimensional Hybrid Grid Generation Method based on Improved Hole Cutting. *Computers & Fluids*, 2013, under review.

#### **Conference Papers**

- **Yu Zhao**, Bo Yu, Guojun Yu, Wang Li. Numerical simulation for coupling of temperature and water fields of frozen soil around buried oil pipeline in cold regions. *International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control*, Xi'an, China, 2013.
- **Yu Zhao**, Bo Yu, Guojun Yu. A New Method of Two-dimensional Intelligent Hybrid Grid Generation. *4th Asian Symposium on Computational Heat Transfer and Fluid Flow*, Hong Kong, China, 2013.
- **Yu Zhao**, Bo Yu. A Modified Paving Algorithm for Quadrilateral Mesh Generation. *National Conference on Engineering Thermal Physics*, Dongguan, China, 2012.
- Zaiguo Fu, **Yu Zhao**, Bo Yu, Yasuo Kawaguchi. Numerical Simulation of Soil Frost Heave around the Buried Oil Pipeline in Permafrost Talik Regions. *4th Asian Symposium on Computational Heat Transfer and Fluid Flow*, Hong Kong, China, 2013.
- Jingfa Li, Bo Yu, **Yu Zhao**, Peng Wang, Ruilong Li, Wang Li. Study on Residual Restriction Operator of Multigrid Method Based on Flux Conservation. *4th Asian Symposium on Computational Heat Transfer and Fluid Flow*, Hong Kong, China, 2013.

#### **Professional Activities**

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##### **Domestic and International Academic Conferences**

- Participated 5 times in domestic or international academic conferences on numerical heat transfer and computational fluid dynamics, delivered 3 oral presentations

##### **2013 China National Doctoral Forum on Sustainable Development of Oil and Gas Resources**

- Submitted research paper was accepted and recommended for oral presentation in the forum

##### **The 3rd National Petroleum Engineering Design Competition (NPEDC2013)**

- Collaborated closely with teammates to complete the development plan for a deep heavy oil reservoir, including geological modeling, reservoir simulation and other key procedures

##### **SPE Student Chapter in China University of Petroleum, Beijing**

- Served as vice president and officer of academic department for more than two years
- Participated in 2012 International Oil and Gas Symposium in Malaysia and 2012 SPE/Shell Yuntai Mountain Geological Field Trip (one of the 4 participants selected school-wide)

#### **Honors & Awards**

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- Outstanding Presentation Award of National Doctoral Forum, 4 out of 180+ participants, 2013
- National Third Prize of NPEDC2013, top 10% of 560+ teams, 2013
- National Graduate Scholarship, China Ministry of Education, 2013
- PETROMENTOR Scholarship, China University of Petroleum, 2009-2010
- SINOPEC Scholarship, China University of Petroleum, 2008-2009
- Shengli Oilfield Scholarship, China University of Petroleum, 2007-2008

#### **Skills**

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Programming Languages: C/C++, Fortran, VB and Matlab.

Softwares: ANSYS, Tecplot, Origin.