Ali Zidane
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EDUCATION

2009 – 2012 **PhD in earth sciences (focus on fluid mechanics); thesis prepared as a collaboration work between Basel University (Switzerland) and Strasbourg University (France)**
Umweltgeologie, Geologisch-Paläontologisches Institut, *Switzerland*
Laboratoire d'Hydrologie et de Geochimie de Strasbourg, *France*
PhD supervisors:
Prof. Dr. Peter Huggenberger (Switzerland)
Prof. Dr. Anis Younes (France)
Topic
Modelling of density driven flow in porous media and in free flow media

2008 – 2009 **Master's degree in Mechanics, Lebanese University, Beirut**
Ranked number 1 in class
Recommended to do a PhD in Switzerland by the dean of the Faculty of Engineering in Lebanon Prof. Dr. Rafic Younes, Beirut, Lebanon

2003 – 2008 **Mechanical engineer studies, Lebanese University, Beirut**
Ranked number 2 in class

PROFESSIONAL EXPERIENCE

Since - 08/2013 **Researcher/Reservoir Simulation at Reservoir Engineering Research Institute, Palo Alto California, USA**
Duties include but not limited to

- Numerical modelling of single and multiphase flow in fractured and unfractured porous media
- Numerical simulation of compositional flow in poro-fractured domains based on higher-order numerical discretization
- Grid generation compatible with higher-order schemes in 2D and in 3D
- Writing custom software for numerical simulations (500K+ lines of code)
- Development of software interfaces to convert data from commercial simulators to ready-to-use file format in the higher-order simulator
- Interact with oil companies from the USA and outside to train their staff to use the higher-order reservoir simulator

01/2013 - 08/2013 **Research associate at Umweltgeologie, Geologisch-PaläontologischesInstitut, Basel, Switzerland**
Numerical modelling of salt dissolution in porous media

PUBLICATIONS

JOURNAL ARTICLES

- Zidane A., A. Firoozabadi. Higher-Order Simulation of Two-Phase Compositional Flow in 3D with Non-Planar Fractures. Journal Of Computational Physics. In press (https://doi.org/10.1016/j.jcp.2019.108896)
- Zidane A., A. Firoozabadi. Two-Phase Compositional Flow Simulation in Complex Fractured Media by 3D Unstructured Gridding with Horizontal and Deviated Wells. SPE Reservoir Evaluation & Engineering-Reservoir Engineering, to appear.

- Zidane A., A. Firoozabadi. Reservoir simulation of fractured media in compressible single-phase flow in 2D, 2.5D and 3D unstructured gridding. Adv. in Water Res. (2018) doi.org/10.1016/j.advwatres.2018.08.005
- Zidane A., A. Firoozabadi. Fracture cross-flow equilibrium in compositional two-phase reservoir simulation. SPEJ (2017), 184402-PA
- Zidane A., A. Firoozabadi. An implicit numerical model for multicomponent compressible two-phase flow in porous media. Adv. in Water Res. 85 (2015) 64–78
- Younes A., M. Fahs, A. Zidane, P. Huggenberger, E. Zechner. A new benchmark with high accurate solution for hot-cold fluids mixing. Heat and Mass Trans. 51 (2015) 1321-1336
- Zidane A., A. Firoozabadi. An efficient numerical model for multicomponent compressible flow in fractured porous media. Adv. in Water Res. 74 (2014) 127–147
- Zidane A., E. Zechner, P. Huggenberger, A. Younes. On the effects of subsurface parameters on evaporite dissolution (Switzerland). Cont. Hydrol. 160 (2014) 42–52
- Zidane A., E. Zechner, P. Huggenberger, A. Younes. Simulation of rock salt dissolution and its impact on land subsidence. Hydrol. Earth Syst. Sci. 18 (2014) 2177–2189
- Younes A., A. Markadi, A. Zidane, Q. Shao, L. Bouhala. A combination of Crouzeix-Raviart, Discontinuous Galerkin and MPFA methods for buoyancy-driven flows. Int. Jour. of Num. Meth. for Heat & Fluid Flow 24 (2014) 735-759
- Zidane A., A. Younes, P. Huggenberger, E. Zechner. The Henry semi- analytical solution for saltwater intrusion with reduced dispersion. Water Res. Res. 48 (2012) W06533
- Younes A., M. Konz, M. Fahs, A. Zidane, P. Huggenberger. Modelling variable density flow problems in heterogeneous porous media using the method of lines and advanced spatial discretization methods. Math. and Comp. in Sim. 81 (2011) 2346–2355
- Zidane A., A. Firoozabadi. Fully unstructured gridding in implicit compositional two-phase flow simulation. Submitted

CONFERENCES

- Zidane, A., A. Firoozabadi. Fracture Cross-Flow Equilibrium in Simulation of Three-Phase Compositional Flows. SPE-195890-MS SPE conference Paper (Calgary, Canada, 2019)
- Zidane, A., A. Firoozabadi. Reservoir Simulation of Planar and Non-Planar Fractures in Compositional Two-Phase Flow. 2118/193117-MS SPE conference Paper (Abu Dhabi, UAE, 2018)
- Zidane A., A. Firoozabadi. Efficient Simulation of Two-Phase Compositional Flow in Fractured Reservoirs Using 3D Unstructured Gridding in Complex Geometries. 191405-MS SPE Conference Paper (Texas, USA, 2018)
- Zidane A., A. Firoozabadi. Compositional Reservoir Simulation of Highly Heterogeneous and Anisotropic Fractured Media in 2D and 3D Unstructured Gridding. AGU Fall Meeting (New Orleans, USA, 2017)
- Zechner E., A. Zidane, P. Huggenberger, A. Younes. Evolution of intrastratal karst within evaporitic sequences. EGU General Assembly Conference Abstracts 17-12048 (Vienna, Austria, 2015)
- Zidane A., A. Firoozabadi. Efficient and robust compositional numerical modelling in unfractured and fractured permeable media based on new concepts, SIAM conference on mathematical and computational issues in geosciences (Stanford, CA, USA, 2015).

- Younes A., A. Zidane, C. Oltean, P. Huggenberger. Modelling coupled Stokes flow and mass transport within fractures. Proceedings of International conference on Advances and Challenges in Porous Media (ACPM) (Sousse, Tunisia, 2013)
- Zechner E., A. Zidane, P. Huggenberger, A. Younes. Effects of fault structures on evaporite dissolution. EGU General Assembly Conference Abstracts, p.13095 (Vienna, Austria 2013)
- Zidane A., A. Younes, P. Huggenberger, E. Zechner. Modeling Density-Coupled Stokes Flow and Mass Transport through Fractures. Computational Methods in Water Resources (Urbana Champaign, IL, USA, 2012)
- Zechner E., A. Zidane, A. Younes, P. Huggenberger. Simulation of high contrast density-driven transport at field scale. Geophysical Research Abstracts 13, EGU11-11892 (Vienna, Austria, 2011)
- Zechner E., A. Zidane, M. Konz, A. Younes, P. Huggenberger. Subsurface dissolution of evaporitic rocks. Proceedings 9th Conference on Limestone Hydrogeology (Besançon,France, 2011)

BOOKS CHAPTERS *(Internal author in):*

- Urban Geology: Huggenberger, Peter; Epting, Jannis (Eds.).
  Process-Oriented Concepts for Adaptive and Integrated Resource Management
  2011, XVI, 216 p., Springer
- The Role of Tectonic Structures and Density-Driven Groundwater Flow for Salt Karst Formation; P. Huggenberger, A.Zidane, E. Zechner, D. Gechter
  Engineering Geology for Society and Territory, Volume 5, 609-612

IT SKILLS

Programming languages:

- Fortran, C, C ++, Python, and mixed languages programming (compiling source codes from C and Fortran into one executable). Experience with both sequential and parallel programming (using OpenMP)
- *Programming platforms:* Windows, Linux, macOS

Professional Software Packages:

- MATLAB, Tecplot, Visit, gnuplot, Origin, MRST, Mathematica, Maple

Other software:
AutoCad, Adobe illustrator, Adobe Photoshop, Carrier Hap, LATEX, Microsoft Office Package, EndNote

LANGUAGE SKILLS

Arabic (native), fluent in English and French, basic German skills