

AHMAD KADOURA
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RESEARCH INTERESTS

Computational Transport Phenomena Laboratory (CTPL) 2011 – Current

- Coupling MC molecular simulation with flow simulators in porous media
- Using MC and MD in modeling shale gas sorption and transport processes

EDUCATION

Doctor of Philosophy Degree 2011 – Current
King Abdullah University of Science and Technology (KAUST), Thuwal, KSA
Earth Sciences and Engineering, GPA: 4.00/4.00
Core courses: Multiphase flow in porous media, Thermodynamics of subsurface reservoirs, Fluid dynamics

Master's Degree with Thesis 2009 – 2011
King Abdullah University of Science and Technology (KAUST), Thuwal, KSA
Chemical Engineering, GPA: 3.97/4.00
Thesis title: Study of Monte Carlo Simulation Method for Methane Phase Diagram Prediction using two Different Potential Models
Core courses: Transport phenomena, Statistical thermodynamics, Reaction engineering

Bachelor of Science Degree 2005 – 2009
Middle East Technical University (METU), Ankara, Turkey
Petroleum and Natural Engineering, GPA: 3.74/4.00
Core courses: Reservoir, drilling and production engineering, Thermodynamics for engineers

EXPERIENCE

COOP at Schlumberger Dhahran Carbonate Research Center (SDCR), Dhahran, KSA 2013

- Developed a new dielectric model for rock wettability estimation
- Validated the proposed model with both laboratory and field measurements
- Published a conference SPE paper (Details in Conference Papers section)

Research Projects with Saudi Aramco, Dhahran, KSA 2012 – 2013

- Evaluation of solid elemental sulfur solubility in natural gas using Monte Carlo molecular simulation
- Modeling phase behavior of different reservoir fluids by Monte Carlo molecular simulation
- Contributed significantly in work and preparation of the delivery and final reports

Chemical Warehouse at KAUST, Thuwal, KSA 2011

- Supervised a team of 7 students
- Created a database for all chemicals used at KAUST laboratories and warehouse

United Nations UNHCR office, Ankara, Turkey 2009

- Assisted refugees in registration form completion
- Conducted interviews and translation

Internship at Natural Gas Thrace Basin Company, Tekirdağ, Turkey 2008

- Worked closely with field engineers
- Learned field applications such as casing, cementing and reservoir monitoring

Internship at Turkish National Oil Company, Adiyaman, Turkey 2007

- Attended field drilling, production and well completion processes

LANGUAGES

- ✓ Arabic (Native)
- ✓ English (Excellently written and spoken)
- ✓ Turkish (Well written and spoken)

COMPUTER SKILLS

- ✓ C, C++ and FORTRAN Programming Languages
- ✓ MATLAB and CADKEY
- ✓ MedeA Gibbs software for molecular simulation
- ✓ Latex, Beamer and Microsoft Office package

AWARDS & ACTIVITIES

- ✓ **Academic Excellence Award** at KAUST, Earth Sciences and Engineering 2013
- ✓ **Lead the organization** of SPE Sub-Regional Student Paper Contest for first time at KAUST 2013
- ✓ **KAUST-SPE Student Chapter President** 2012 – 2013
- ✓ **Second place** at SPE sub-regional paper contest for Master's level 2011
- ✓ **Academic Excellence Award** at KAUST, Chemical and Biological Engineering 2011
- ✓ Member of **KAUST Community Advisory Committee** 2010 – 2012
- ✓ **Finalist at KAUST Talent Show** in composing **Arabic poem** 2010
- ✓ Elected for the **Inaugural Student Council** at KAUST 2009 – 2011
- ✓ Granted **Discovery scholarship** for Master's degree at KAUST 2009 – 2011
- ✓ **Second place** at SPE sub-regional paper contest for undergraduates 2009
- ✓ **Presented METU at IPTC** student workshop in Malaysia 2008
- ✓ Started as active Member in the Society of Petroleum Engineers (SPE) 2006
- ✓ Listed as **High Honor** student 6 times, and 2 as **Honor** during my 8 semesters at METU 2005 – 2009
- ✓ Selected to represent high school students from Lebanon (**was one of 6 students chosen out of 1700 applicants**) in a cultural exchange program in USA 2004

JOURNAL PAPERS

1. **Kadoura A.** Sun S. and Salama A. Accelerating Monte Carlo Molecular Simulations by Reweighting and Reconstructing Markov Chains: Extrapolation of Canonical Ensemble Averages and Second Derivatives to Different Temperature and Density Conditions. **Journal of Computational Physics**, 270, 70-85, 2014.
2. **Kadoura A.** Salama A. and Sun S. A Conservative and a Hybrid Early Rejection Schemes for Accelerating Monte Carlo Molecular Simulation. **Molecular Physics**, in press, 2014.
3. El Gharamti M. **Kadoura A.** Valstar J. Sun S. and Hoteit I. Constraining a Compositional Flow Model with Flow-Chemical Data using an Ensemble-Based Kalman Filter. **Water Resources Research**, 50, 2444–2467, 2014.

CONFERENCE PAPERS

1. Amir S. **Kadoura A.** Salama A. and Sun S. Accelerating Monte Carlo Molecular Simulations using Novel Extrapolation Schemes Combined with Fast Database Generation on Massively Parallel Machines. Poster at *17th IEEE High Performance Extreme Computing Conference (IEEE-HPEC)*, Massachusetts, USA, Sept. 10-12, 2013.
2. **Kadoura A.** Salama A. Sun S. and Sherik A. An NPT Monte Carlo Molecular Simulation-Based Approach to Investigate Solid-Vapor Equilibrium: Application to Elemental Sulfur-H₂S System. *Procedia Computer Science*, 18, 2109-2116, 2013. Oral presentation at *13th International Conference on Computational Science (ICCS)*, Barcelona, Spain, June 5-7, 2013.
3. Sun S. **Kadoura A.** and Salama A. An Efficient Method of Reweighting and Reconstructing Monte Carlo Molecular Simulation Data for Extrapolation to Different Temperature and Density Conditions. *Procedia Computer Science*, 18, 2147-2156, 2013. Oral presentation at *13th International Conference on Computational Science (ICCS)*, Barcelona, Spain, June 5-7, 2013.

ORAL PRESENTATIONS

1. **Kadoura A.** and Sun S. Speeding up Monte Carlo Molecular Simulation by a Non-Conservative Early Rejection Scheme. *14th International Conference on Computational Science (ICCS)*, Cairns, Australia, June 10-12, 2014.
2. Sassi K.H. and **Kadoura A.** A New Model to Determine Wettability from Multi-frequency Dielectric Dispersion Measurements. Oral presentation at *SPE Annual Technical Symposium & Exhibition*, Al-Khobar, KSA, Apr. 21-24, 2014.
3. **Kadoura A.** and Sun S. Accelerating Monte Carlo Molecular Simulations for Studying Phase Behavior of Reservoir Hydrocarbons by a Conservative Early Rejection Scheme. *“East meets West” International Student Petroleum Congress and Career Expo*, Krakow, Poland, Apr. 9-11, 2014.
4. Amir S. Salama A. Sun S. and **Kadoura A.** Accelerating Large Data Generation for Monte Carlo Molecular Simulations using Novel Extrapolation Schemes. *International Conference on Parallel Computing (ParCo)*, Munich, Germany, Sept. 10-13, 2013.
5. El Gharamti M. **Kadoura A.** Valstar J. Hoteit I. and Sun S. Estimation of Subsurface Aquifer Properties in a Compositional Flow Model using Ensemble Based Joint and Dual State-Parameter Estimation. *6th International Conference on Water Resources & Environment Research (ICWRER)*, Koblenz, Germany, June 3-7, 2013.

POSTERS

1. El Gharamti M. **Kadoura A.** Valstar J. Sun S. and Hoteit I. Constraining a Compositional Flow Model with Flow-Chemical Data using an Ensemble-Based Kalman Filter. *2nd International KACST-KAUST-JCCP Workshop on Surface & Subsurface 4D Monitoring*, Thuwal, KSA, Mar. 4-6, 2014.

TECHNICAL REPORTS

1. **Kadoura A.** Sun S. and Salama A. Speeding up Monte Carlo Molecular Simulations by Reweighting and Reconstructing Pre-Computed Markov Chains. Center for Subsurface Imaging and Fluid Modeling (CSIM) Annual Book, Texas, USA, Feb. 9-11, 2014.
2. **Kadoura A.** and Sun S. Study of Monte Carlo Simulation Method for Methane Phase Diagram Prediction using Two Different Potential Models. Center for Subsurface Imaging and Fluid Modeling (CSIM) Annual Book. Oral presentation and poster at Texas, USA, Feb. 9-11, 2012.

REFERENCES AVAILABLE UPON REQUEST