Mohammad Sedghi

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Education

2009–2013 **PhD in Petroleum Engineering, the University of Wyoming, USA**

Dissertation: Measurement and Modeling of Asphaltene Aggregation and Phase Behavior in Petroleum Fluids

GPA: 4.0/4.0

2004–2008 BSc in Petroleum Engineering, Sharif University of Technology, Iran

Academic Experience

2014–today **Post doctoral Research Associate at the University of Wyoming**

Investigating capillary pressure of oil and water in organic and non-organic nanopores

Examining nanoconfinement effects on capillary condensation of hydrocarbons in nanopores

Comparing effect of surfactant and microemulsion in removing oil contaminants

Assessing polymer dispersants in providing asphaltene stability in super critical CO_2 and normal alkanes

Investigating graphene synthesis from coal asphaltene

2009–2013 **Teaching Assistant at the University of Wyoming**

Courses: enhance oil recovery, Interfacial phenomena, Well testing, Well logging

Lab assistant: Drilling Fluid Lab

Computer Skills

- **Programming Languages**

  C, C++, Fortran, Python

- **Modeling Simulations**

  Pore-network modeling

  Molecular Dynamics: GROMACS, LAMMPS, DL_POLY

  Quantum Mechanics: GAUSSIAN, Gabedit

  Reservoir Simulation: CMG

Honors and Activities

- Recipient of Anadarko fellowship for excellence in energy scholarship – 2012
- Member of Tau Beta Pi
- Treasurer of the Persian Student Association at University of Wyoming – 2009-2011

- Recipient of TOTAL Summer School program scholarship

Publications

[1] Mohammad Sedghi, Lamia Goual, William Welch, and Jan Kubelka. Effect of asphaltene structure on association and aggregation using molecular dynamics. *The Journal of Physical Chemistry B*, 117(18):5765–5776, 2013.

[2] Lamia Goual, Mohammad Sedghi, Huang Zeng, Farshid Mostowfi, Richard McFarlane, and Oliver C Mullins. On the formation and properties of asphaltene nanoaggregates and clusters by dc-conductivity and centrifugation. *Fuel*, 90(7):2480–2490, 2011.

[3] Mohammad Sedghi and Lamia Goual. Role of resins on asphaltene stability. *Energy & Fuels*, 24(4):2275–2280, 2009.

[4] Lamia Goual, Mohammad Sedghi, Xiaoxiao Wang, and Ziming Zhu. Asphaltene aggregation and impact of alkylphenols. *Langmuir*, 30(19):5394–5403, 2014.

[5] Lamia Goual, Mohammad Sedghi, Farshid Mostowfi, Richard McFarlane, Andrew E Pomerantz, Soheil Saraji, and Oliver C Mullins. Cluster of asphaltene nanoaggregates by dc conductivity and centrifugation. *Energy & Fuels*, 28(8):5002–5013, 2014.

[6] Gina Javanbakht, Mohammad Sedghi, William Welch, and Lamia Goual. Molecular dynamics simulations of co2/water/quartz interfacial properties: Impact of co2 dissolution in water. *Langmuir*, 31(21):5812–5819, 2015.

[7] Mohammad Sedghi and Lamia Goual. Pc-saft modeling of asphaltene phase behavior in the presence of nonionic dispersants. *Fluid Phase Equilibria*, 369:86–94, 2014.

[8] Lamia Goual and Mohammad Sedghi. Role of ion-pair interactions on asphaltene stabilization by alkylbenzenesulfonic acids. *Journal of colloid and interface science*, 440:23–31, 2015.

[9] Mohammad Sedghi, Mohammad Piri, and Lamia Goual. Molecular dynamics of wetting layer formation and forced water invasion in angular nanopores with mixed wettability. *The Journal of chemical physics*, 141(19):194703, 2014.

[10] Evan Lowry, Mohammad Sedghi, and Lamia Goual. Molecular simulations of napl removal from mineral surfaces using microemulsions and surfactants. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 2016.

[11] Mohammad Sedghi, Mohammad Piri, and Lamia Goual. Atomistic molecular dynamics simulations of crude oil/brine displacement in calcite mesopores. *Langmuir*, 32(14):3375–3384, 2016.

[12] Mohammad Sedghi, Lamia Goual, et al. Molecular dynamics simulations of asphaltene dispersion by limonene and pvac polymer during co 2 flooding. In *SPE International Conference and Exhibition on Formation Damage Control*. Society of Petroleum Engineers, 2016.

[13] Evan Lowry, Mohammad Sedghi, and Lamia Goual. Novel dispersant for formation damage prevention in co2: A molecular dynamics study. *American Chemical Society*, 30(9):7187–7195, 2016.

[14] Evan Lowry, Mohammad Sedghi, and Lamia Goual. Polymers for asphaltene dispersion: Interaction mechanisms and molecular design considerations. *Journal of Molecular Liquids*, 230:589–599, 2017.

[15] Mohammad Sedghi, and Mohammad Piri. Capillary condensation and capillary pressure of methane in carbon nanopores: Molecular Dynamics simulations of nanoconfinement effects. *Fluid Phase Equilibria*, 459:169–207, 2018.

[16] Gina Javanbakht, Mohammad Sedghi, William Welch, Lamia Goual, and Michael Hoepfner. Molecular polydispersity improves prediction of asphaltene aggregation. *Journal of Molecular Liquids*, 256:382–394, 2018.