

# Gina Javanbakht

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## Education

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|-------------|---|
| 2014 – 2018 | PhD Petroleum Engineering, University of Wyoming<br><b>Dissertation:</b> Impact of Asphaltene and Surfactant molecular Structure on Pore-Scale Displacement Mechanisms of Nonaqueous-Phase Liquids in Heterogeneous |
| 2013 – 2014 | MS Petroleum Engineering, University of Wyoming   |
| 1999 – 2004 | BS Geology, University of Tehran, Iran  |

## Research Interests

- NAPL remediation on contaminated aquifers
- Experimental investigations of effect of surfactants on contamination remediation
- Molecular dynamic simulation
- Pore scale physics of flow in porous media
- Experimental studies on rock surface properties using dynamic contact angle and interfacial tension measurements
- Experimental studies on asphaltene adsorption and wettability alteration of rock surfaces
- Core flooding experiments
- Rock mineralogy
- Experimental investigations of effect of surfactants on enhanced oil recovery

## Professional Experience

### Graduate Research Assistantship

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|-------------------------|---|
| Fall 2013               | Opportunity Creation, Energy Innovation Center, UW  |
| Spring 2014             | K-12 Energy Literacy Education Program, UW          |
| Fall 2014 – Spring 2018 | National Science Foundation (Career Award #1351296) |

- Molecular Dynamic Simulation of contact angle and interfacial tension of CO<sub>2</sub>/water/quartz system to investigate the impact of CO<sub>2</sub> dissolution in water at reservoir condition.
- Wettability alteration of aquifer rocks caused by presence of oil contaminations is investigated using contact angle and asphaltene deposition measurements.
- Surfactant-based NAPL remediation process in aquifers with heterogeneous mineralogy is studied using spontaneous imbibition systems and core flooding experiments. The mineralogy of the rocks was determined using high resolution focused ion beam-scanning electron microscopy system.
- Study of rock mineralogy and fluid occupancy using High-resolution micro-CT images and electron microscopy and energy dispersive x-ray spectroscopy.
- Macro-scale and micro-scale study of impact of surfactant structure on mobilization and solubilization of adsorbed asphaltene on surfaces.
- Molecular Dynamic Simulation study on effect of polydispersity on asphaltene aggregation.

### **Graduate Teaching Assistantship**

|                           |                                  |
|---------------------------|----------------------------------|
| Spring 2017 – Spring 2018 | PETE 3100: Rock and Fluid Lab    |
| Fall 2015 – 2017          | PETE 5080: Interfacial Phenomena |
| 2012 – 2013               | GED mathematics                  |

### **Industrial work experience**

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| 2006 – 2011 | Sale Manager, Mihanfoolad Engineering, Trading Oil Company, Tehran, Iran |
|-------------|--|

### **Outreach Activities**

|                     |   |
|---------------------|---|
| 04/2016, 04/2017    | Undergraduate research scholar panel                          |
| 03/2016             | Wyoming State student science fair                            |
| 04/15, 07/15, 04/16 | Students campus visits (Lab demos), Petroleum Engineering, UW |
| 06/16, 06/15, 06    | ESP Halliburton field trip                                    |
| 06/14, 11/14        | Students campus visits (Lab tours), Petroleum Engineering, UW |
| 06/14, 07/14, 08/14 | Energy summer institute                                       |

## Publications

1. Gina Javanbakht, Mohammad Sedghi, William Welch, and Lamia Goual :*"Molecular Dynamics Simulations of CO<sub>2</sub>/Water/Quartz Interfacial Properties: Impact of CO<sub>2</sub> Dissolution in Water"*, Langmuir, 2015
2. Gina Javanbakht and Lamia Goual: *"Mobilization and Micellar Solubilization of NAPL Contaminants in Aquifer Rocks"*, Journal of Contaminant Hydrology, 2016
3. Gina Javanbakht and Lamia Goual: *"Surfactant-based NAPL remediation process in aquifers with heterogeneous mineralogy"*, Industrial & Engineering Chemistry Research, 2016
4. Gina Javanbakht, Maziar Arshadi, Tianzhu Qin, and Lamia Goual *"Micro-scale displacement of NAPL by surfactant and microemulsion in heterogeneous porous media"*, Advances in Water Resources, 2017
5. Tianzhu Qin, Gina Javanbakht, Mohammad Piri, Brian Towler, and Lamia Goual *"Microemulsion-enhanced displacement of oil in porous media containing carbonate cements"*, Colloids and Surfaces A:Physicochemical and Engineering Aspects, 2017
6. Gina Javanbakht, Mohammad Sedghi, William Welch, Lamia Goual and Michael Hoepfner *"Molecular Polydispersity Improves Prediction of Asphaltene Aggregation"*, Journal of Molecular Liquids, 2018

## Patent

Microemulsions and Uses Thereof to Displace Oil in Heterogeneous Porous Media," Provisional Patent 15/367,478

## Conferences

|         |   |
|---------|---|
| 08/2015 | 250 <sup>th</sup> American Chemical Society (ACS) National Meeting and Exposition, Boston |
| 11/2016 | 23rd International Petroleum Environmental Conference, New Orleans                        |
| 04/2017 | Petroleum Engineering Dept. University of Wyoming- Seminar 5890                           |

## **Honors and Awards**

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|----------------|---|
| 2017           | Harry Hill Graduate Excellence Award, Petroleum Engineering, UW |
| 2014 – Present | National Science Foundation (Career Award #1351296)             |
| 2013 - Present | Department of Petroleum Engineering Graduate Assistantship, UW  |
| 2013           | Student Honored Society Award, UW                               |

## **Memberships**

|                     |   |
|---------------------|---|
| Fall 2014 – Present | Society of Petroleum Engineer (SPE)                                   |
| Fall 2015 – Present | American Chemical Society (ACS)                                       |
| 2014 – 2016         | Secretary of the Persian Student Association at University of Wyoming |

## **Computer Skills**

GROMACS MD software, MATLAB, Python, CMG reservoir simulator, Avizo, Origin, MANGO

## **Languages**

English, Farsi, Turkish, Azari

## **Supporting Faculty Mentor**

- Dr. Lamia Goual  
Associate Professor  
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