Dheiaa Alfarge, PhD

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CURRENT POSITION

Lecturer at College of Petroleum Engineering, AL-Ayen University, **Thi-Qar, Nasiriyah 64001, Iraq**

Researcher at University of Warith Al-Anbiyaa, **Kerbala 56001, Iraq**

Lecturer at Department of Petroleum Engineering, University of Kerbala, **Kerbala 56001, Iraq**

Assistant Chief Petroleum Engineer in Iraqi Ministry of Oil, **Najaf 54001, Iraq**

Research Advisory Board Member, SRP-Center.iq, **Kerbala 56001, Iraq**

EDUCATION

PhD in Petroleum Engineering (GPA 4.0 / 4.0) July 2018
Missouri University of Science & Technology, Rolla, MO, USA

MS in Petroleum Engineering (GPA 4.0 / 4.0) July 2016
Missouri University of Science & Technology, Rolla, MO, USA

B.Sc. in Petroleum Engineering (he was the valedictorian, class 2011) July 2011
University of Baghdad, Baghdad, Iraq

EMPLOYMENT

09.2018-Current ***Senior Petroleum Engineer,*** *Oil Products Distribution Company, Najaf, Iraq*

09.2019-03.2020 ***Assistant Professor,*** *petroleum engineering department, Izmir Katip Celebi University, Izmir, Turkey.*

12.2020-Current ***Adjunct Professor,*** *University of Alayen, Thiqar, Iraq*

10.2018-Current ***Adjunct Professor,*** *University of Karbala, Karbala, Iraq*

04.2019-Current ***Research Advisory Board Member,*** *SRP-Center.iq, Karbala, Iraq*

05.2019-Current ***Iraq CMG Training Courses Instructor,*** *Iraq*

08.2016- 08.2018 ***Graduate Teaching Assistant,*** *Missouri University of Science & Technology*

08.2013- 08.2016 ***Graduate Student Scholar,*** *Higher Committee for Education Development in Iraq*

09.2012- 08.2013 ***Petroleum Engineer,*** *Oil Products Distribution Company, Najaf, Iraq*

11.2011 –09.2012 ***Drilling Engineer,*** *Maysan Oil Company, Mayasan, Iraq*

RESEARCH INTEREST

- ***Water-Shutoff Treatments in Oil & Gas Reservoirs***
- ***Enhanced Oil Recovery***
- ***IOR Methods in Unconventional Liquids Rich Reservoirs***
- ***Numerical Simulation Methods in Reservoir Engineering***

MEMBERSHIPS

Society of Petroleum Engineers (SPE)
Iraqi Engineers Union (IEU)

Courses Taught

Integrated Reservoir Management	*Alayen University, Fall, 2020*
Technical English	*Alayen University, Fall, 2020*
Enhanced Oil Recovery I	*University of Kerbala, Fall, 2020*
Enhanced Oil Recovery II	*University of Kerbala, Spring, 2019-current*
Oil Production Systems III	*University of Kerbala, Fall, 2018*
Reservoir Simulation	*University of Kerbala, Spring, 2019-current*
Oil Production Systems III	*Oil and Gas University - Spring,2020*
Oil Production Systems III	*Izmir Katip Celebi University, Spring,2020*
Introduction to Petroleum Engineering	*Izmir Katip Celebi University, Spring,2020*
Rock and Fluid Properties	*Izmir Katip Celebi University, Spring,2020*
Applied Reservoir Simulation	*Missouri S& T, Spring, 2017 and 2018*
Advanced Reservoir Simulation	*Missouri S& T, Fall, 2016 and 2017*

SERVICES & HONOURS

The Recipient of the College of Engineering and Computing PhD Scholar	*Missouri S& T, 2018*
2nd Place Winner Graduate Research Showcase	*Missouri S& T, Spring2018*
Outstanding PhD Student Award in Petroleum Engineering	*Missouri S& T, 2018*
Finalist, SPE Mid-Continent Regional Student Paper Competition	*Tulsa, OK, 2018*
3rd Place Winner in GGPE Student Research Showcase Colloquium	*Missouri S& T, 2018*
Outstanding Contribution in Reviewing	*Elsevier, 2018*
Elsevier Journal of Petroleum Science and Engineering (Reviewer)	*Elsevier, 2017-Current*
Elsevier Journal of Petroleum Science (Reviewer)	*Elsevier, 2018-Current*
Finalist, 3MT Competition Student	*Missouri S& T, 2017*
Finalist, SPE Mid-Continent Regional Student Paper Competition	*Richardson, TX, 2017*
MST Petrobowl Team Member	*Austin, TX, 2016*
MST Petrobowl Team Member	*Denver, CO, 2017*
A Certificate from TOTAL Company in Integrated Reservoirs Management	*Turkey, 2010*

PRESENTATIONS GIVEN

SPE Improved Oil Recovery Conference *Tulsa, OK, April-2018*
SPE Improved Oil Recovery Conference *Tulsa, OK, April-2018*
SPE Canada Unconventional Resources Conference *Calgary, March-2018*
Missouri University of Science and Technology 3MT Competition *Missouri, December-2017*
Abu Dhabi International Petroleum Exhibition & Conference *Abu Dhabi, UAE, November,2017*
SPE Kuwait Oil & Gas Show and Conference *Kuwait City, Kuwait, October-2017*
Carbon Management Technology Conference *Houston, Texas, July- 2017*
SPE Western Regional Meeting *Bakersfield, California, April-2017*
SPE Kingdom of Saudi Arabia Annual Technical Symposium *Saudi Arabia, April- 2017*

SELECTED PUBLICATIONS

Book

1. August 2020**.** Elsevier.
   Book Title*: Fundamentals of Enhanced Oil Recovery Methods for Unconventional Oil Reservoirs, Volume 67.* Paperback ISBN: 9780128183434.

THESIS

2. September 2018. (**PhD**) **Dissertation.**
   Title*: Integrated Study on the Applicability of CO_2-EOR in Unconventional Liquids Rich Reservoirs*
   Supervisor: Dr. Mingzhen Wei.
3. November 2016. (**MS**) **Thesis.**
   Title*: Study on the Applicability of Relative Permeability Modifiers for Water Shut Off Using Numerical Simulation*
   Supervisor: Dr. Baojun Bai.

SELECTED PUBLISHED PAPERS

1. Shakir, A., Abdulhameed, R.F., Hilal, H.A., **Alfarge, D**. & Aljarah, A. (2023). Factors impacting the performance of polymer-based EOR in oil reservoirs. Chem. Pap. (2023). https://doi.org/10.1007/s11696-023-02824-1.

2. Abdulridha, H.L., Abdulaziz, A.M., Khalil, A.A., *Alhussainy, S., Abd Askar, A.S., Dahab, A.A.,* ***Alfarge, D***. (2023). Study on Uncertainty Analysis for Drilling Engineering Applications: Wellbore Stability Assessments. *Arab J Sci Eng* **47**, 11687–11698 (2022). https://doi.org/10.1007/s13369-021-06389-7.

3. Al-Yaseri, A., Yekeen, N., Al-Mukainah, H.S., Kakati, A., **Alfarge, D.**, Myers, M. (2022). Rock-Wettability Impact on CO_2-Carbonate Rock Interaction and the Attendant Effects on CO2Storage in Carbonate Reservoirs, Journal of Natural Gas Science and Engineering, Volume 104, 2022,104664,ISSN 1875-5100, https://doi.org/10.1016/j.jngse.2022.104664.

4. Dheyauldeen, A., Alkhafaji, H., **Alfarge, D.,** Elgmati, A., Falih, K. T., Alali, N. (2022). Using Agarwal analytical approach with superposition rate and time solutions to analyze multi and single well systems, Journal of Petroleum Science and Engineering, Volume 215, Part B, 2022, 110693, ISSN 0920-4105, https://doi.org/10.1016/j.petrol.2022.110693.

5. Dheyauldeen, A., Alkhafaji, H., Mardan, Z.A., **Alfarge, D.**, Al-Fatlawi, O., &Hossain, M. Effect of well scheduling and pattern on project development management in unconventional tight gas reservoirs. (2022). Arab J Geosci 15, 1241 (2022). https://doi.org/10.1007/s12517-022-10500-z.

6. Allawi, R., Al-Jawad, M. & **Alfarge, D**. New empirical equation to predict the pore pressure in oil reservoirs. (2022). Arab J Geosci 15, 701 (2022). https://doi.org/10.1007/s12517-022-09961-z.

7. Dheyauldeen, A., Alkhafaji, H., Mardan, Z.A., **Alfarge, D.**, Al-Fatlawi, O., &Hossain, M. (2022). Performance evaluation of analytical methods in linear flow data for hydraulically-fractured gas wells, Journal of Petroleum Science and Engineering, Volume 208, Part B, 2022, 109467, ISSN 0920-4105, https://doi.org/10.1016/j.petrol.2021.109467.

8. **Alfarge, D.,** Aljarah, A., Wei, M., Bai, B., Alali, N., Al-Shibly, A., Alameedy, U. (2021). Factors Affecting Gel Strength Design for Conformance Control: An Integrated Investigation, Journal of Petroleum Science and Engineering, 2021,108711 ISSN 0920-4105, https://doi.org/10.1016/j.petrol.2021.108711.

9. **Alfarge, D.,** Wei, M., Bai, B. (2019, January). Evaluating the performance of hydraulic-fractures in unconventional reservoirs using production data: Comprehensive review. Journal of Natural Gas Science and Engineering, Volume 61, 2019, Pages 133-141, ISSN 1875-5100, https://doi.org/10.1016/j.jngse.2018.11.002.

10. **Alfarge, D.,** Wei, M., Bai, B., & Almansour, A. (2018, August). Numerical simulation study to understand the performance of RPM gels in water-shutoff treatments, Journal of Petroleum Science and Engineering, 2018, ISSN 0920-4105, https://doi.org/10.1016/j.petrol.2018.07.082.

11. **Alfarge, D.,** Wei, M., and Bai, B. (2018). CO_2-EOR mechanisms in huff-n-puff operations in shale oil reservoirs based on history matching results, Fuel, Volume 226, 2018, Pages 112-120, ISSN 0016-2361, https://doi.org/10.1016/j.fuel.2018.04.012.

12. **Alfarge, D.,** Wei, M., Bai, B., & Alsaba, M. (2018). Lessons learned from IOR pilots in Bakken formation by using numerical simulation, Journal of Petroleum Science and Engineering, Volume 171, 2018, Pages 1-15, ISSN 0920-4105, https://doi.org/10.1016/j.petrol.2018.07.025.

13. **Alfarge, D.,** Wei, M., and Bai, B. (2018). Data Analysis for CO_2-EOR in Shale-Oil Reservoirs Based on a Laboratory Database. Journal of Petroleum Science and Engineering. https://doi.org/10.1016/j.petrol.2017.10.087".

14. **Alfarge, D.,** Wei, M., & Bai, B. (2018). A Review of Improved-Oil-Recovery Methods in North American Unconventional Reservoirs. SPE JPT (Volume: 70, Issue: 1) Edited by Carpenter, C.

15. **Alfarge, D.,** Wei, M., & Bai, B. (2017, July 7). Factors Affecting CO_2-EOR in Shale-Oil Reservoirs: Numerical Simulation Study and Pilot Tests. Journal of Energy& Fuel. DOI: 10.1021/acs.energyfuels.7b01623.

16. **Alfarge, D.,** Wei, M., & Bai, B. (2017). Numerical Simulation Study on Miscible-EOR Techniques for Improving Oil Recovery in Shale-Oil Reservoirs. Journal of Petroleum Exploration and Production Technology. DOI: 10.1007/s13202-017-0382-7.

17. **Alfarge, D.**, Wei, M., and Bai, B. 2017. Numerical simulation study of factors affecting relative permeability modification for water-shutoff treatments. *Fuel Journal*, Volume 207, 2017, Pages 226-239, ISSN 0016-2361, https://doi.org/10.1016/j.fuel.2017.06.041.

18. **Alfarge,** D., Wei, M., Bai, B., & Alsaba, M. (2018). Miscible Gases Based EOR in Unconventional Liquids Rich Reservoirs: What We Can Learn. Society of Petroleum Engineers. doi:10.2118/193748-MS.

19. **Alfarge, D.,** Wei, M., Bai, B., & Almansour, A. (2018, August). Numerical Simulation Study on the Applicability of Relative Permeability Modifiers for Water-Shutoff in Oil Production Wells. Society of Petroleum Engineers. doi:10.2118/192414-MS.

20. **Alfarge, D.,** Wei, M., & Bai, B. (2017, April 23). IOR Methods in Unconventional Reservoirs of North America: Comprehensive Review. Society of Petroleum Engineers. doi:10.2118/185640-MS.

21. **Alfarge, D.**, Wei, M., Bai, B., & Almansour, A. (2017, June 1). Optimizing Injector-Producer Spacing for CO_2 Injection in Unconventional Reservoirs of North America. Society of Petroleum Engineers. doi:10.2118/188002-MS.

22. **Alfarge, D**., Wei, M., Bai, B., & Almansour, A. (2017, June 1). Effect of Molecular-Diffusion Mechanism on CO_2 Huff-n-Puff Process in Shale-Oil Reservoirs. Society of Petroleum Engineers. doi:10.2118/188003-MS.

23. **Alfarge, D.,** Wei, M., & Bai, B. (2017). Comparative Study for CO_2-EOR and Natural Gases Injection-Techniques for Improving Oil Recovery in Unconventional Oil Reservoirs. Carbon Management Technology Conference. doi:10.7122/485175-MS.

24. **Alfarge, D.,** Wei, M., & Bai, B. (2017). Applicability of CO_2-EOR in Shale-Oil Reservoirs Using Diagnostic Plots. Carbon Management Technology Conference. doi:10.7122/502143-MS.

25. **Alfarge, D.,** Wei, M., & Bai, B. (2017). Feasibility of CO_2-EOR in Shale-Oil Reservoirs: Numerical Simulation Study and Pilot Tests. Carbon Management Technology Conference. doi:10.7122/485111-MS.

26. **Alfarge,** D., Wei, M., Bai, B., & Alsaba, M. (2017). Analysis of IOR Pilots in Bakken Formation by Using Numerical Simulation. Society of Petroleum Engineers. doi:10.2118/188633-MS.

27. **Alfarge, D.,** Wei, M., Bai, B., & Alsaba, M. (2017). Selection Criteria for Miscible-Gases to Enhance Oil Recovery in Unconventional Reservoirs of North America. Society of Petroleum Engineers. doi:10.2118/187576-MS.

28. **Alfarge, D.,** Wei, M., & Bai, B. (2018). Mechanistic Study for the Applicability of CO2-EOR in Unconventional Liquids Rich Reservoirs. Society of Petroleum Engineers. doi:10.2118/190277-MS.

29. **Alfarge, D.,** Wei, M., & Bai, B. (2018). Integrated Investigation of CO2-EOR Mechanisms in Huff-n-Puff Operations Based on History Matching Results. Society of Petroleum Engineers. doi:10.2118/190234-MS.

30. Alhuraishawy, A., **Alfarge, D.**, Wei, M., & Bai, B. (2018). Influencing Factors Analysis in the Combination of Gel Treatment and Low Salinity Water Flooding Using Sensitivity Analysis. Society of Petroleum Engineers. DOI:10.2118/190357-MS.

31. **Alfarge, D.,** Wei, M., & Bai, B., (2017). A Parametric Study to Compare Different Miscible Gases to Enhance Oil Recovery in Unconventional Liquids Rich Reservoirs. Society of Petroleum Engineers. doi:10.2118/189785-MS.

PUBLISHED BOOK CHAPTERS

1. **Alfarge, D.,** Wei, M., Bai, B. (2020). Comparative analysis between CO_2-EOR mechanisms in conventional reservoirs versus shale and tight reservoirs. Developments in Petroleum Science, 2020, 67, pp. 45–63.

2. **Alfarge, D**., Wei, M., Bai, B. (2020). The effects of nanopore confinement on different enhanced oil recovery methods. Developments in Petroleum Science, 2020, 67, pp. 201–216.

3. **Alfarge, D**., Wei, M., Bai, B. (2020). Selection criteria for miscible gases-based EOR in unconventional liquid-rich reservoirs (ULR). Developments in Petroleum Science, 2020, 67, pp. 165–183.

4. **Alfarge, D**., Wei, M., Bai, B. (2020). The impacts of geomechanics coupling on CO2-EOR. Developments in Petroleum Science, 2020, 67, pp. 217–243.

5. **Alfarge, D**., Wei, M., Bai, B. (2020). CO_2-EOR in shale-oil reservoirs based on a laboratory database. Developments in Petroleum Science, 2020, 67, pp. 15–44.

6. **Alfarge, D**., Wei, M., Bai, B. (2020). Chemical enhanced oil recovery methods for unconventional reservoirs. Developments in Petroleum Science, 2020, 67, pp. 141–163.

7. **Alfarge, D**., Wei, M., Bai, B. (2020). Comparative and optimization of CO2 and natural gas EOR methods. Developments in Petroleum Science, 2020, 67, pp. 245–265.

8. **Alfarge, D**., Wei, M., Bai, B. (2020). Other enhanced oil recovery methods for unconventional reservoirs. Developments in Petroleum Science, 2020, 67, pp. 185–199.

9. **Alfarge, D**., Wei, M., Bai, B. (2020). Introduction to shale and tight oil reservoirs. Developments in Petroleum Science, 2020, 67, pp. 1–13.

10. **Alfarge, D**., Wei, M., Bai, B. (2020). Natural gas-based EOR versus CO_2-EOR in shale and tight oil reservoirs. Developments in Petroleum Science, 2020, 67, pp. 65–85.

11. **Alfarge, D**., Wei, M., Bai, B. (2020). Water injection in unconventional reservoirs. Developments in Petroleum Science, 2020, 67, pp. 113–140.

12. **Alfarge, D**., Wei, M., Bai, B. (2020). Air injection in shale and tight oil reservoirs. Developments in Petroleum Science, 2020, 67, pp. 87–111.

MANUSCRIPT REVIEWED

A-Journal of Petroleum Science and Engineering

1- **PETROL23337R1**: Numerical Simulation of the Feasibility of Supercritical CO2 Storage and Enhanced Shale Gas Recovery Considering Complex Fracture Networks.
2- **PETROL23337**: Numerical Simulation of the Feasibility of Supercritical CO2 Storage and Enhanced Shale Gas Recovery Considering Complex Fracture Networks.
3- **PETROL17902**: Comparative study on pre-gas injection in low pressure Chang 7 tight oil.
4- **PETROL17081R1**: Microbially-induced Calcium Carbonate Plugging for Enhanced Oil Recovery.
5- **PETROL17081**: Microbially-induced Calcium Carbonate Plugging for Enhanced Oil Recovery.
6- **PETROL15576R2**: A Comparative Study of CO2 and N2 Huff-n-Puff EOR Performance in Shale Oil Production.
7- **PETROL15576R1**: A Comparative Study of CO2 and N2 Huff-n-Puff EOR Performance in Shale Oil Production.
8- **PETROL15921**: Investigation of molecular diffusion and adsorption on CO2 Huff-n-Puff process in Eagle Ford tight oil reservoirs.
9- **PETROL15576**: A Comparative Study of CO2 and N2 Huff-n-Puff EOR Performance in Shale Oil Production.

10- **PETROL13581**: The effects of boundary layer and fracture networks on the water huff-n-puff process of tight oil reservoirs.
11- **PETROL12955**: Discrete fracture network modelling and gel injection simulation in fractured carbonates: A Case Study of Raman Field in Turkey.
12- **PETROL12974**: Simulation Study of Produced Gas Re-injection for CO2 Flooding in Ultra-low Permeability Reservoir.
13- **PETROL11568R1**: Chemical EOR characterization: insights on the value of production data and pondered data acquisition.
14- **PETROL12421**: Robust Implementations of the 3D-EDFM Algorithm for Reservoir Simulation with Complicated Hydraulic Fractures.
15- **PETROL11330R1**: Performance of CO2 flooding in a heterogeneous oil reservoir using Autonomous Inflow Control.
16- **PETROL12217**: Experimental study on the adaptation of water alternating gas flooding in ultra-low permeability reservoir.
17- **PETROL11568**: Chemical EOR characterization: insights on the value of production data and pondered data acquisition.
18- **PETROL11246**: Simulation of the THAI Heavy Oil Recovery Process in Reservoir Underlain by Bottom Water.
19- **PETROL11643**: Comparisons of Residual Oil Recovery by Different Types of Surfactant and Polymer Flooding in Five-spot Wells Setup.
20- **PETROL11330**: Performance of CO2 flooding in a heterogeneous oil reservoir using Autonomous Inflow Control.

B-Journal of SPE Reservoir Evaluation and Engineering

1- **RE-1019-0006:** Industry-First Hydrocarbon-Foam EOR Pilot in an Unconventional Reservoir: Design, Implementation and Performance Analysis.
2- **RE-0419-0014:** Study of Massive Water Huff-n-Puff Technology in Tight Oil Field and Its Field Application.
3- **RE-1218-0003:** Study of Massive Water Huff-n-Puff Technology in Tight Oil Field and Its Field Application.

C- Fuel Journal

1- **JFUE-D-21-01556:** Assessment of Improved Oil Recovery by Osmotic Pressure in Unconventional Reservoirs: Application to Niobrara Chalk and Codell Sandstone.
2- **JFUE-D-21-01656:** Experimental study on the feasibility of nitrogen huff-n-puff in a heavy oil reservoir.
3- **JFUE-D-20-08519R1:** Potential of Dimethyl Ether as an Additive in CO2 for Shale Oil Recovery.
4- **JFUE-D-20-08519:** Potential of Dimethyl Ether as an Additive in CO2 for Shale Oil Recovery.
5- **JFUE-D-19-04879:** A numerical and experimental study of enhanced shale-oil recovery by CO2 miscible displacement with NM.

D-Journal of Petroleum Science and Technology

1- **LPET-2021-0115:** Analysis of the influence of acidification on relevant mechanical parameters of oil shale fracturing.
2- **LPET-2021-0044:** Unconventional Oil Resources in the United States and their Recovery Applications.
3- **LPET-2020-0886:** Evaluation of CO2 injection in shale gas reservoirs based on numerical simulation.

E-Journal of Energy& Fuels

1- **ef-2019-03423y:** Enhanced shale oil recovery by the huff and puff method using CO2 and cosolvent mixed fluids.

F-Journal of Petroleum Science

1- **PETROSCI-2021-0079:** Lag times in Toe-to-Heel Air Injection (THAI) operations explains underlying heavy oil production mechanisms.
2- **PETROSCI-2017-0459:** Exploitation of Fractured Shale Oil Resources by Cyclic CO2 injection Method

REFERENCES

1. **Dr. Baojun Bai**
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   Missouri University of Science and Technology
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   Montana Tech University
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