ANDREAS MICHAEL, Ph.D.

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EDUCATION

Ph.D., Petroleum Engineering, *Louisiana State University*, Baton Rouge, LA (December 2020)
- Doctoral Dissertation: "Fluid-Driven Fracture Initiation from Oil and Gas Wells Considering Lifetime Stresses," Ipsita Gupta, (advisor)

M.S., Petroleum Engineering, *The University of Texas at Austin*, Austin, TX (May 2016)
- Master's Report: "Hydraulic Fracturing Optimization: Experimental Investigation of Multiple Fracture Growth Homogeneity via Perforation Cluster Distribution," Jon E. Olson (advisor), Matthew T. Balhoff (co-advisor)

B.S., Petroleum Engineering, *The University of Texas at Austin*, Austin, TX (December 2013)
- Senior design project: "Reevaluation and Appraisal of the Cuthbertson Field, DeWitt County, Texas"

WORK EXPERIENCE

University of North Dakota, Grand Forks, ND

Assistant Professor of Energy & Petroleum Engineering (September 2023 – Present)
- Graduated 2 Ph.D. students.
- Advising 2 graduate students (1 Ph.D. and 1 dual M.S./Ph.D.), besides teaching courses.
- Society of Petroleum Engineers (SPE) – UND Student Chapter Faculty Advisor
- American Rock Mechanics Association (ARMA) – UND Student Chapter Faculty Advisor
- American Association of Drilling Engineers (AADE) – UND Student Chapter Faculty Advisor (founded in 2024)

Instructor of Petroleum Engineering (January – August 2023)
- Taught undergraduate (ABET-certified) and graduate-level courses.
- Full member of Graduate Faculty since March 2023: advised (solely) 4 graduate students.

Colorado School of Mines, Golden, CO

Postdoctoral Research Fellow (January 2022 – January 2023)
- Civil and Environmental Engineering Department: University Transportation Center for Underground Transportation Infrastructure (UTC-UTI), supervised by Marte Gutierrez
- Mechanics of tunnel intersections: development of closed-form expressions for deformation modeling and stability-against-shear-failure predictions.

Field Geo Services, Inc., Jal, NM

Field Geologist II (November 2021 – January 2022)
- Collecting, describing, and recording rock cutting samples. Monitoring and maintaining gas detection equipment. Creating mudlogs with the collected data. Creating and updating daily drilling and mudlog reports.
- Using XRF (X-ray florescence) for elementary analysis of rock cuttings.

Edge Systems/PML Exploration Services LLC, Pinehurst, TX

Mudlogger (August – November 2021)

- Examination of mud-return samples to identify the lithology as well as traces of hydrocarbons.
- Worked in operations in South and West Texas (Eagleford, Bone Springs, and Wolfcamp).

Louisiana State University, Baton Rouge, LA

Graduate Research Assistant (GRA), Geofluids Modeling Group (June 2018 – December 2020)

- Fluid-driven fracture initiation problems in wellbores, supervised by Ipsita Gupta.
- Derived semi-analytical models to optimize hydraulic fracture initiation from perforated wells in poroelastic media.
- Developed workflows for broaching prevention during loss of well control, considering production flowrates (worst-case-discharge/WCD predictions).
- Quantification of local *in-situ* stress field using drilling-induced tensile fractures (DITFs).

The University of Texas at Austin, Austin, TX

GRA, Fracture Research & Application Consortium (January 2015 – May 2018)

- Hydraulic fracture-related topics, supervised by Jon E. Olson and Matthew T. Balhoff.
- Lab-scale investigation of stress-shadowing mitigation technologies for hydraulic fracturing operations (non-uniform perforation cluster spacing) with experiments performed on transparent reservoir analogue specimens.
- Built numerical simulations (coupled geomechanics/fluid flow models).

Summer Undergraduate Research Internship (SURI) – *Supervisor*, Center for Petroleum and Geosystems Engineering (CPGE)

- Provided interns with a "side project" related to my M.S. project and supervised progress.
- Helped giving interns in-depth knowledge on petroleum engineering/industry.
- Gave intern and prospect graduate student an overview of the department's M.S. and Ph.D. programs.
- Interns: Patrick R. Nebel (2015), Matthew M. Mlynski (2016)

GRA, Energy Geomechanics Lab (January – August 2014)

- Geomechanical and adsorptive properties of hydrocarbon-bearing shales, supervised by D. Nicolas Espinoza.
- Devised a laboratory setup for the measuring of swelling on organic shales induced via the exposure to methane or carbon dioxide (adsorbate) gases.
- Targeting the development of a manometric method for sorbed gas estimation in organic shales as an alternative to the conventional canister (or direct) method.

Teaching Assistant (TA), Department of Petroleum and Geosystems Engineering (2014)

- Petrophysics (PGE 424) and Reservoir Geomechanics (PGE 334) with D. Nicolas Espinoza and Masa Prodanovic.
- Theoretical concepts on linear elasticity/poroelasticity, *in-situ* stress/faults, borehole stability (washouts and DITFs), induced seismicity, porosity, relative permeability, capillary pressure, electrical/acoustic/mechanical rock properties, reservoir performance.
- Laboratory sessions aimed on understanding the basic techniques for measuring these properties on core-scale and to understand the potential sources for error and uncertainty in these techniques (triaxial/Brazilian/SCB/sonic testing).

Undergraduate Research Assistant (URA), CPGE (September – December 2012)

- Quoc P. Nguyen's improved heavy oil recovery lab with Ph.D. student, Kelli M. Rankin.

National Guard of Cyprus, Larnaca, Cyprus

Soldier, Mandatory military service (July 2008 – July 2010)

- General and motorized infantry (286 M/K ΤΠ, 346 ΤΠ, 291 ΤΠ)
- In charge of a military outpost with seven soldiers.

TEACHING

Undergraduate Courses (all ABET certified)

PTRE 411: Drilling Engineering
PTRE 465: Petroleum Geomechanics
PTRE 451: Advanced Drilling Engineering
PTRE 475: Well Completions

Graduate Courses

PTRE 545: Advanced Topics in Drilling Engineering
PTRE 575: Advanced Stimulation Techniques

Laboratory Courses (all ABET certified)

PTRE 361: Petroleum Engineering Laboratory I
PTRE 462: Petroleum Engineering Laboratory II

HONORS AND AWARDS

SPE Cedric K. Ferguson Medal (2025, for SPE-218137-PA co-authored with Abdelmalek Abes)
SPE Section Regional Recognition (Canada and Rocky Mountain North America Region) – Technical Dissemination (awarded to the UND SPE Student Chapter, 2024)
"Distinguished Dissertation of the Year Award" from the LSU Alumni Association (2020)
"Outstanding Ph.D. Dissertation Award" from the LSU College of Engineering (2021)
EAGE Louis Cagniard Award (2020)
SPE PetroBowl Championship
- 2019 1st Place, ATCE in Calgary, Canada – LSU Team Captain
- 2019 3rd Place, North America Regional Qualifier – LSU Team Captain
- 2018 3rd Place, North America Regional Qualifier – UT Team Captain and Coach
- 2015 2nd Place, ATCE in Houston, TX – UT Team Captain
- 2013 2nd Place, ATCE in New Orleans, LA – UT Team Undergraduate Member

SPE Student Paper Contest – Ph.D. Division
- 2020 1st Place (tie) – Local, LSU
- 2019 2nd Place – International at ATCE in Calgary, Canada
- 2019 1st Place – Regional, Eastern North America
- 2019 1st Place – Local, LSU

"Outstanding Content Creator" Award, *The Way Ahead*, SPE's magazine for Young Professionals.

Pi Epsilon Tau (ΠΕΤ) Honor Society, Lifetime member (UT Austin Class of 2012, LSU Class of 2020)
University Honors (2010-11, 2013)
"Soulla Georghiades" Prize to the student with the highest improvement, by staff vote (2008)

SCHOLARSHIPS AND FELLOWSHIPS

Association of International Petroleum Negotiators (AIPN) Scholarship, $5,000 (2015)
"Michael J. Economides" Scholarship Award in Engineering (one-off award) from the Pancyprian Association of Texas, $3,000 (2014)
Chevron Departmental Fellowship, $5,000 (2014)
International Association of Drilling Contractors (IADC) Houston Chapter Scholarship, $9,000 (2012-14)
Moni Pulo/Baker Hughes, Inc. Endowed Scholarship in Engineering, $10,500 (2011-13)
Hellenic Professional Society of Texas (HPST) Scholarship, $2,300 (2012, 2016)
"Thekla Protopapas" Scholarship Award from the Pancyprian Association of Texas, $1,000 (2011)

CERTIFICATIONS

Total Professeurs Associes (TPA) – Supported by TOTAL S.A.
- Foundations Skills in Business Management & Development for Engineers (2019)
- Shale Oil and Gas: An Energy Revolution (2019)
- Reservoir Evaluation (2019)
- Logging for Oil & Gas Evaluation (2019)
- Oil & Gas Project Management (2018)
- Mid-to-Deep Offshore Drilling Techniques and Operations (2018)

Fundamental Level for Drilling with Stack Qualification of Surface, *Wild Well Control, Inc.,* License No. 136868 (2013)
Teaching Assistant certification, *Cockrell School of Engineering,* UT Austin (2014)

GRANTS AND CONTRACTS

Year	Title	Funding Source	Role	Amount
2025-26	Itasca Education Partnership (IEP) Research Program (participating student: Nassim Bouabdallah)	Itasca Consulting Group (provides *FLAC3D* 9.3.26 and Griddle software)	PI	US$11,988+3,000 (annual commercial value of provided software)
2026	Energy Education	UND Connect	Co-PI	US$5,000

	Workshop (in collaboration with Williston Basin Career & Technical Education Center)			

STUDENT ADVISEMENT

#	Name	Thesis/Dissertation Title	Degree	Semester Graduated	Funding Grants	Post-Graduate Placement
2	Abdlemalek Abes	"Reactive-Fluid-Transport Controls on CO_2-EOR Applications in the Upper Red River Carbonate Reservoir"	Ph.D. in Petroleum Engineering	May 2026	NDIC G-51-098	
1	Abdelhakim Khouissat	"Dynamic Wellbore-Integrity Framework for Post-Blowout Capping of Offshore Wells"	Ph.D. in Petroleum Engineering	December 2025	NDIC G-51-098	Stasis Drilling Solutions

Current students advised (no co-advisors):

1. Nassim Bouabdallah (Ph.D. in Petroleum Engineering, expected in May 2027).
2. Chukwuemeka Kalu (M.S. in Petroleum Engineering, expected in May 2026).

Ph.D. Committees (completed):

1. Abiodun Gbadegesin Adeyemi, "Experimental Investigation of the Suitability of Soybean-Derived Surfactant (SODS) in Gas Well Deliquification" (pp. 183; August 2024). Committee Member (First Advisor: Kegang Ling).
2. Ibrahim Zallum, "Mudstone Deposition from Continental to Shallow-Marine Realms—Examples from The Triassic of Western North America" (December 2025) Member-at-Large (First Advisor: Sven O. Egenhoff).

M.S. Committees (completed):

1. Christopher Nkansah, "CO_2-Storage Trapping in Deep Saline Aquifers: Numerical Modeling on the Broom Creek Formation" (pp. 119; August 2024). Committee Member (First Advisor: Kegang Ling).

INVITED TALKS

"How to Engineer Transverse Hydraulic Fractures from Horizontal Wells in Reverse-Faulting Stressed Environments," *ARMA Hydraulic Fracturing Seminar* (2025, September 18). American Rock Mechanics Association – Hydraulic Fracturing Community.

"Seafloor Broaching Prevention After an Offshore-Well Blowout," *ARMA Future Leaders Webinar Series* (2025, February 27). American Rock Mechanics Association.

"Hybrid Data-Driven/Physics-Based Modeling Approaches for Drilling and Completions: Towards Simple-and-Effective Predictive Tools," Research Seminar for the Petroleum Engineering Department (2024, March 6). Colorado School of Mines.

"A Hybrid Data-Driven/Physics-Based Approach for Near-Wellbore Hydraulic Fracture Modeling," *ARMA Future Leaders Webinar Series* – Lecture 20 (2023, December 15). American Rock Mechanics Association.

"Petroleum Engineering: The History, Money, and Politics of the Most Lucrative Engineering Discipline," presented to UND's ENGR 100: Introduction to Engineering class (2023, October 10).

"Excellence in Petroleum Engineering," presented to UND's Department of Petroleum Engineering (2023, July 17).

"Orientation of Hydraulic Fracture Initiation from Perforated Horizontal Wellbores," Industry Technical Focused Presentations (2020, February 10). *Society of Petroleum Engineers – North America Student Symposium.* University of Southern California, Los Angeles, CA.

"Getting Involved in Undergraduate Research," Panelist (2019, November 13). *LSU Discover – Undergraduate Research Program.* Louisiana State University, Baton Rouge, LA.

PUBLICATIONS

Peer-Reviewed Journal Articles

j1. Kalu, C., **Michael, A.**, and Abes, A. (2026). Method and Means for Promoting Transverse Hydraulic Fractures from Horizontal Wells in Reverse-Faulting Stressed Environments. *Engineering Fracture Mechanics*, 343, 112285. Elsevier, https://doi.org/10.1016/j.engfracmech.2026.112285.

j2. **Michael, A.** (2026). Wellbore-Integrity Problems Suppressing Induced Seismicity? Wastewater Disposal Using Class II Injection Wells in the Fort Worth Basin. *Computers and Geotechnics*, 195, 108063. Elsevier, https://doi.org/10.1016/j.compgeo.2026.108063.

j3. Abes, A., and **Michael, A.** (2026). Core-Scale Reactive-Transport Modeling for CO_2-EOR Operations in the Upper Red River Carbonate Formation. *Chemical Engineering Journal*, 534 174977. Elsevier, https://doi.org/10.1016/j.cej.2026.174977.

j4. Bouabdallah, N., and **Michael, A.** (2026). Mathematical Foundations for Thermo-Poro-Hydro-Mechanical Modeling for Hydraulic Fracture Initiations from Perforated Wells: Towards a Predictive Tool. *Geomechanics for Energy and the Environment*, 45 100778. Elsevier, https://doi.org/10.1016/j.gete.2025.100778.

j5. Khouissat, A., and **Michael, A.** (2025). Using Pre-Spud Worst-Case-Discharge Predictions to Prevent Underground Blowouts After Offshore-Well Capping. *SPE J*. 30(10): 6028-6044. OnePetro, https://doi.org/10.2118/228439-PA.

j6. **Michael, A.** (2025). Mechanistic Assessments of Wellbore Integrity for Geologic Carbon Sequestration in Deep Saline Aquifers via Bulk-CO_2 Injection. *International Journal of Greenhouse Gas Control*, 146, 104425. Elsevier, https://doi.org/10.1016/j.ijggc.2025.104425.

j7. Abes, A., and **Michael, A.** (2025). Experimental Investigation of Geochemical/Petrophysical Alteration Chains from CO_2 Injection in Dolomitic Formations. *Journal of Environmental Chemical Engineering*, 13(4) 117102. Elsevier, https://doi.org/10.1016/j.jece.2025.117102.

j8. **Michael, A.** (2025). Tunnel Intersection Mechanics: Closed-Form Pseudo-3D Approximations for Deformation Modeling and Shear-Failure Prediction. *Tunnelling and Underground Space Technology*, 158, 106394. Elsevier, https://doi.org/10.1016/j.tust.2025.106394.

j9. **Michael, A.**, and Khouissat, A. (2025). Coupling Reservoir Depletion and Geomechanics to Assess Risks During Post-Blowout Well Capping: Case Study on Macondo. *Ore and Energy Resource Geology*, 100068. Elsevier, https://doi.org/10.1016/j.oreoa.2024.100068.

j10. Khouissat, A., and **Michael, A.** (2024). Blowout Contingency Decision-Making Leveraging Reservoir/Wellbore Pressure Modeling: Cap-and-Restrain or Cap-and-Divert? *SPE J*. 29 (12): 6775–6792. OnePetro, https://doi.org/10.2118/223626-PA.

j11. Abes, A., and **Michael, A.** (2024). Dynamic-Permeability Variations Induced During CO_2-EOR Application in Carbonate Reservoirs: Upper Red River Formation, North Dakota. *SPE J*. 29 (11): 6402–6417. OnePetro, https://doi.org/10.2118/218137-PA.

j12. Ni, R., Ling, K., Fadairo A., **Michael, A.**, Zhao, J., and Chenyu, W. (2024). Improving Precision in Assessments for CO_2 Geological Storage: Investigating the Influence of Pore Pressure on Rock Properties. *Energy and Fuels,* American Chemical Society. ACS Publications, https://doi.org/10.1021/acs.energyfuels.4c02021.

j13. **Michael, A.** (2024). Transparent Gelatin as a Reservoir Analogue: Dimensional Scaling for Hydraulic Fracturing Laboratory Experiments. *International Journal of Rock Mechanics and Mining Sciences*, 177, 105732. Elsevier, https://doi.org/10.1016/j.ijrmms.2024.105732.

j14. Elnoamany, Y., **Michael, A.**, Gupta, I., Bhinde, T., Todman, S., Waltrich, P.J., and Chen, Y. (2024). Blowout-Capping-Fracturing-Relief Well: A Full Cycle Workflow. *SPE J*. 29 (02): 780-797. Society of Petroleum Engineers, SPE-217462-PA. OnePetro, https://doi.org/10.2118/217462-PA.

j15. **Michael, A.** (2023). A Hybrid Data-Driven/Physics-Based Modeling Approach for Hydraulic Fracture Initiation and Early-Phase Propagation in Shale. *Geomechanics for Energy and the Environment*, 100453. Elsevier, https://doi.org/10.1016/j.gete.2023.100453.

j16. **Michael, A.**, and Gupta, I. (2022). Wellbore Integrity After a Blowout: Stress Evolution Within the Casing-Cement Sheath-Rock Formation System. *Results in Geophysical Sciences*, 100045. Elsevier, https://doi.org/10.1016/j.ringps.2022.100045.

j17. **Michael, A.** (2021). Hydraulic Fractures from Non-Uniform Perforation Cluster Spacing in Horizontal Wells: Laboratory Testing on Transparent Gelatin. *Journal of Natural Gas Science and Engineering*, 104158. Elsevier, https://doi.org/10.1016/j.jngse.2021.104158.

j18. **Michael, A.**, and Gupta, I. (2021). A Comparative Study of Oriented Perforating and Fracture Initiation in Seven Shale Gas Plays. *Journal of Natural Gas Science and Engineering*, 103801. Elsevier, https://doi.org/10.1016/j.jngse.2021.103801.

j19. **Michael, A.**, and Gupta, I. (2021). A Semi-Analytical Modeling Approach for Hydraulic Fracture Initiation and Orientation in Shale Reservoirs. *SPE Prod & Oper* 36 (03): 501–515. Society of Petroleum Engineers, SPE-204480-PA. OnePetro, https://doi.org/10.2118/204480-PA.

j20. **Michael, A.**, and Gupta, I. (2021). Fracture Prevention Following Offshore Well Blowouts: Selecting the Appropriate Capping Stack Shut-In Strategy. *SPE Drill & Compl* 36 (02): 232–244. Society of Petroleum Engineers, SPE-199673-PA. OnePetro, https://doi.org/10.2118/199673-PA.

j21. **Michael, A.**, Olson, J.E., and Balhoff, M.T. (2020). Orientation Prediction of Fracture Initiation from Perforated Horizontal Wells: Application in Shale Reservoirs. *Journal of Petroleum Science and Engineering,* 107355. Elsevier, https://doi.org/10.1016/j.petrol.2020.107355.

j22. **Michael, A.**, and Gupta, I. (2020). Analytical Orientation Criteria for Drilling and Completion-Induced Fracture Initiation Considering Fluid Infiltration from the Wellbore. *Journal of Petroleum Science and Engineering*, 107033. Elsevier, https://doi.org/10.1016/j.petrol.2020.107033.

Conference Proceedings (Refereed)

c1. **Michael, A.** (2026). Two Educational Kick-Circulation Exercises for Dynamic Borehole-Integrity Management in Offshore Wells with Subsea Stacks. In 60th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro, https://doi.org/10.56952/ARMA-2026-0727.

c2. Kalu, C., and **Michael, A.** (2026). Revisiting Gelatin as a Lab-Scale Reservoir Analogue: Geometric, Kinematic, and Dynamic Scaling for Hydraulic Fracturing. In 60th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro, https://doi.org/10.56952/ARMA-2026-0718.

c3. Bouabdallah, N., **Michael, A.**, and Pyatigorets, A. (2026). Development of a True-3D Numerical Model for Fluid-Driven Fracture Initiations from Perforated Wells. In 60th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro, https://doi.org/10.56952/ARMA-2026-0646.

c4. Bouabdallah, N., **Michael, A.**, and Pyatigorets, A. (2026). Fluid-Driven Fracture Initiation from Perforated Horizontal Wells: The Effects of Perforation Geometry and Other Influencers. In 60th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro, https://doi.org/10.56952/ARMA-2026-0721.

c5. **Michael, A.**, Kalu, C., and Abes, A. (2025). How to Engineer Transverse Hydraulic Fractures from Horizontal Wells in Reverse-Faulting Stressed Environments. In 59th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro, https://doi.org/10.56952/ARMA-2025-0092.

c6. **Michael, A.** (2025). Implications from Thermoelastic Stresses on the Lifecycle of Injection and Production Wells in Enhanced Geothermal Systems. In 59th U.S. Rock

Mechanics/Geomechanics Symposium. OnePetro, https://doi.org/10.56952/ARMA-2025-0091.

c7. **Michael, A.**, Kalu, C., and Bouabdallah, N. (2024). *MultiFracSimPPM*: A Data-Driven Probabilistic Predictive Model for Hydraulic Fracture Growth from Uniformly and Non-Uniformly-Spaced Perforation Clusters. In 58th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro, https://doi.org/10.56952/ARMA-2024-0529.

c8. Bouabdallah, N., and **Michael, A.** (2024). A Play-Agnostic Thermo-Poro-Hydro-Mechanical Approximation for Hydraulic Fracture Initiation: Insights on Stress Distortions Between the Wellbore and a Perforation Tunnel. In 58th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro, https://doi.org/10.56952/ARMA-2024-0622.

c9. **Michael, A.**, and Gutierrez, M. (2023). Mechanics of Tunnel Intersections: Closed-Form Approximations for Deformation Modeling and Failure Prediction. In 57th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro, https://doi.org/10.56952/ARMA-2023-0577.

c10. **Michael, A.** (2022). Analysis of Transparent Gelatin as a Reservoir Analogue for Hydraulic Fracturing Laboratory Experiments. In 56th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro, https://doi.org/10.56952/ARMA-2022-0817.

c11. **Michael, A.** (2022). On the Near-Wellbore Geometry of Hydraulic Fractures Initiated from Horizontal Wells. In 83rd EAGE Annual Conference & Exhibition (Vol. 2022, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, https://doi.org/10.3997/2214-4609.202210928.

c12. **Michael, A.** (2022). On the Scalability of Gelatin as a Reservoir Analogue in Hydraulic Fracturing Experiments. In 83rd EAGE Annual Conference & Exhibition (Vol. 2022, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, https://doi.org/10.3997/2214-4609.202210889.

c13. **Michael, A.** (2021). *PIMPS^{3D2P}*: A Practical, Efficient, Three-Dimensional, Two-Phase Reservoir Simulator Written in MATLAB. In 82nd EAGE Annual Conference & Exhibition (Vol. 2021, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, https://doi.org/10.3997/2214-4609.202113081.

c14. **Michael, A.** (2021). Manometric Method for Sorbed Gas Estimation in Organic-Rich Shales Considering Matrix Swelling: An Overview. In 82nd EAGE Annual Conference & Exhibition (Vol. 2021, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, https://doi.org/10.3997/2214-4609.202113142.

c15. **Michael, A.** (2021). Graphical Method for Constraining the Local Stress State in Arbitrarily-Oriented Wells Using Drilling-Induced Tensile Fracture Observations. In *82nd EAGE Annual Conference & Exhibition* (Vol. 2021, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, https://doi.org/10.3997/2214-4609.202113061.

c16. **Michael, A.**, and Gupta, I. (2020). Oriented Perforations: A Numerical Model for Fracture Initiation Pressure Prediction in Horizontal Wells. ARMA 19-2059, American Rock Mechanics Association. In 54th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro.

c17. Elnoamany, Y.A., **Michael, A.**, and Gupta, I. (2020). Numerical Modeling of Fracture Propagation During Post-Blowout Capping in Offshore Wells. ARMA 19-2012, American Rock Mechanics Association. In 54th U.S. Rock Mechanics/Geomechanics Symposium. OnePetro.

c18. **Michael, A.**, and Gupta, I. (2019). Analysis of Drilling-Induced Tensile Fracture Initiation in Porous, Permeable Media Considering Fluid Infiltration. ARMA 19-2053, American Rock Mechanics Association. In 53rd U.S. Rock Mechanics/Geomechanics Symposium. OnePetro.

c19. **Michael, A.**, and Gupta, I. (2019). Analysis of Fracture Initiation and Broaching Resulting from Worst Case Discharge Events. ARMA 19-143, American Rock Mechanics Association. In 53rd U.S. Rock Mechanics/Geomechanics Symposium. OnePetro.

c20. **Michael, A.**, and Gupta, I. (2019). Geomechanics of Post-Blowout Fracture Initiation and Broaching During Loss of Control in Offshore Wells, EAGE Extended Abstract 1697 (pp. 1-4). 81st EAGE Conference & Exhibition, in London, UK. *EarthDoc*, https://doi.org/10.3997/2214-4609.201900943.

c21. **Michael, A.**, and Gupta, I. (2019). Orientation of Hydraulic Fracture Initiation in Poroelastic Media: An Analytical Criterion for Perforated Wellbores, EAGE Extended Abstract 1701 (pp. 1-4). 81st EAGE Conference & Exhibition, in London, UK. *EarthDoc,* https://doi.org/10.3997/2214-4609.201901438.

c22. **Michael, A.**, Olson, J.E., and Balhoff, M.T. (2018). Analysis of Hydraulic Fracture Initiation from Perforated Horizontal Wellbores. ARMA 18-029, American Rock Mechanics Association. In 52nd U.S. Rock Mechanics/Geomechanics Symposium. OnePetro.

Other Conference Proceedings

c23. **Michael, A.**, and Alamooti, M. (2026). Exploitation of Oceanic Natural-Gas-Hydrate Deposits Leveraging Technology Transfer from Enhanced Geothermal Systems: An Overview. In Offshore Technology Conference, OTC. OnePetro, https://doi.org/10.4043/37118-MS.

c24. Khouissat, A., and **Michael, A.** (2026). A Generalized Approach for Engineering Safe Capping Procedures for Offshore-Well Blowouts. In Offshore Technology Conference, OTC. OnePetro, https://doi.org/10.4043/37107-MS.

c25. **Michael, A.** (2025). The Peer-Review System Needs a Hard Review. In SPE Annual Technical Conference and Exhibition. OnePetro, https://doi.org/10.2118/228193-MS.

c26. **Michael, A.** (2025). Integrated Geo-Techno-Economic Reevaluation and Appraisal of the Cuthbertson Field: Low-Footprint Waterflood in a Heavily-Depleted Reservoir. In SPE Oklahoma City Oil and Gas Symposium/Production and Operations Symposium. OnePetro, https://doi.org/10.2118/224385-MS.

c27. Khouissat, A., and **Michael, A.** (2024). Blowout Contingency Decision-Making Leveraging Pressure Modeling: Cap-and-Restrain or Cap-and-Divert? In Offshore Technology Conference, OTC. OnePetro, https://doi.org/10.4043/35477-MS.

c28. Khouissat, A., and **Michael, A.** (2024). Using Worst Case Discharge (WCD) Estimations to Prevent Underground Blowouts After Well Capping. In Offshore Technology Conference, OTC. OnePetro, https://doi.org/10.4043/35260-MS.

c29. Khan, J.A., Khouissat, A., and **Michael, A.** (2024). Revisiting Post-Blowout Wellbore Integrity: Mechanistic Modeling of the Stress Evolutions Within the Casing-Cement Sheath-Rock Formation System. In SPE/IADC Drilling Conference and Exhibition. OnePetro, https://doi.org/10.2118/217691-MS.

c30. Abes, A., and **Michael, A.** (2024). Recovery-Impacting Petrophysical Alterations of CO_2-EOR Application in Carbonate Formations: Case Study on North Dakota's Upper Red River. In SPE Improved Oil Recovery Conference. OnePetro, https://doi.org/10.2118/218137-MS.

c31. Khan, J.A., and **Michael, A.** (2024). Mechanistic Modeling of Wellbore Integrity During CO_2 Injection in Deep Saline Aquifers. In SPE International Conference and Exhibition on Formation Damage Control. OnePetro, https://doi.org/10.2118/217873-MS.

c32. Khan, J.A., and **Michael, A.** (2024). Wellbore Integrity Challenges in Saltwater Disposal: Case Study on the Fort Worth Basin. In SPE International Conference and Exhibition on Formation Damage Control. OnePetro, https://doi.org/10.2118/217850-MS.

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c41. **Michael, A.**, and Gupta, I. (2019). Orientation Criteria of Fracture Initiation in Poroelastic Media: Application in Unconventional Reservoirs. In SPE Europec featured at EAGE Conference and Exhibition, Society of Petroleum Engineers. OnePetro, https://doi.org/10.2118/195494-MS.

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Magazine Articles

m1. **Michael, A.** (2022). Guest Editorial: Four Real-World Challenges in Hydraulic-Fracture Modeling. SPE *Journal of Petroleum Technology*, Society of Petroleum Engineers online magazine, https://jpt.spe.org/four-real-world-challenges-in-hydraulic-fracture-modeling.

m2. **Michael, A.** (2022). Profile of a Successful Energy Startup. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/profile-of-a-successful-energy-startup.

m3. **Michael, A.** (2022). Brownfield IOR: Selecting the Appropriate Artificial Lift Method. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/brownfield-ior-selecting-the-appropriate-artificial-lift-method.

m4. **Michael, A.** (2021). TWA Managing Editor's Column: Five Classic R&D Challenges for Modern Petroleum Technology. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/twa-managing-editors-column-five-classic-r-d-challenges-for-modern-petroleum-technology.

m5. **Michael, A.** (2021). TWA Managing Editor's Column: How to Build Your Own Reservoir Simulator. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/twa-managing-editors-column-how-to-build-your-own-reservoir-simulator.

m6. **Michael, A.** (2021). Managing Editor's Column: A Petroleum Engineer's Perspective on Energy Transition. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/managing-editors-column-a-petroleum-engineers-perspective-on-energy-transition.

m7. **Michael, A.** (2021). Managing Editor's Column: Technology Transfer and the Challenges Foreign Students Face. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/managing-editors-column-technology-transfer-and-the-challenges-foreign-students-face.

m8. Srivastava, A., **Michael, A.**, Garg, L., and Harkouss, R. (2020). End-to-End Digital Transformation of Petroleum Engineering: The Evolution of a Revolution. SPE *The Way Ahead*, SPE magazine for Young Professionals, https://jpt.spe.org/twa/end-end-digital-transformation-petroleum-engineering-evolution-revolution.

m9. Ighalo, S., **Michael, A.**, and Blaney, J.W. (2020). The True Market Value of a Good Petroleum Engineer. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/true-market-value-good-petroleum-engineer (Republished in SPE Kingdom of Saudi Arabia (KSA) Chapter's *SandRose* magazine, July 2020 issue, pp. 64-67).

m10. Ighalo, S., Blaney, J.W., **Michael, A.**, and Dokun, O. (2020). The Big Crew Change — Bang or Whimper? SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/big-crew-changebang-or-whimper.

m11. **Michael, A.** (2019). The Past, Present, and Uncertain Future of California's Oil Business. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/past-present-and-uncertain-future-californias-oil-business.

m12. **Michael, A.** (2019). LSU Travels Long Road to PetroBowl Victory. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/lsu-travels-long-road-petrobowl-victory.

m13. Blaney, J.W., **Michael, A.**, and Cronin, M. (2019). Dog Eat Dog: Chasing Scale in a Crowded, Maturing Permian. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/dog-eat-dog-chasing-scale-crowded-maturing-permian.

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m15. Blaney, J.W., **Michael, A.**, Cronin, M., and Anand, A. (2019). Saltwater Disposal: A Key to Permian Productivity. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/saltwater-disposal-key-permian-productivity.

m16. **Michael, A.**, and Habibi, A. (2018). Three Stress-Shadowing Mitigation Techniques for Hydraulic Fracturing Operations: An Overview. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/three-stress-shadowing-mitigation-techniques-hydraulic-fracturing-operations-overview.

m17. Dixit, G., Blaney, J.W., Dixit, H., and **Michael, A.** (2018). Blockchain Technology for the Oil and Gas Industry. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/blockchain-technology-oil-and-gas-industry.

m18. **Michael, A.** (2018). The State of Petroleum Engineering Academia in its Post-Centennial Years. SPE *The Way Ahead*, Society of Petroleum Engineers magazine for Young Professionals, https://jpt.spe.org/twa/state-petroleum-engineering-academia-its-post-centennial-years.

Abstracts and Presentations

1. **Michael, A.**, Kalu, C., and Abes, A. (2026). *How to Engineer Transverse Hydraulic Fractures from Horizontal Wells in Reverse-Faulting Stressed Environments.* Selected for "Special Session: Highlights from American Rock Mechanics Association (ARMA)" in SPE Hydraulic Fracturing Technology Conference and Exhibition; ARMA-2025-0092 paper from the 59th U.S. Rock Mechanics/Geomechanics Symposium of ARMA. Feb. 3-5, The Woodlands, TX.
2. Elnoamany, Y.A., **Michael, A.**, and Gupta, I. (2020). *Broaching Analysis During Post-Blowout Capping Following Worst Case Discharge: A Gulf of Mexico Case Study.* In *AGU Fall Meeting 2020*. AGU.
3. **Michael, A.**, and Gupta, I. (2020). *Selecting the Optimal Capping Stack Shut-In Strategy Following a Blowout.* 24th Annual Gulf of Mexico Deepwater Technical Symposium, New Orleans, LA.
4. **Michael, A.**, and Gupta, I. (2019). *Broaching During Loss of Well Control in the Gulf of Mexico: Fracture Initiation Following Worst Case Discharge.* 23rd Annual Gulf of Mexico Deepwater Technical Symposium, New Orleans, LA.
5. **Michael, A.**, and Gupta, I. (2018). *Fluid-Driven Fracture Initiation During Loss of Control Situations*. Abstract (MR51B-0062) presented at 2018 AGU Fall Meeting, Washington, D.C.
6. **Michael, A.** (2018). *Orientation of Hydraulic Fracture Initiation from Horizontal Wellbores: An Analytical and Numerical Study*. 1st SIAM TX-LA Regional Section Meeting.

7. **Michael, A.**, Olson, J.E., and Balhoff, M.T. (2018). *Hydraulic Fracture Initiation Experiments and Modeling*. Presentation at the Fracture Research & Application Consortium (FRAC) Annual Meeting, Casper, WY.
8. **Michael, A.**, Olson, J.E., and Balhoff, M.T. (2018). *Determining the Orientation of Induced Hydraulic Fracture Initiation*. Poster session presented at the meeting of UT GAIN (Graduate and Industry Networking), Austin, TX.
9. **Michael, A.**, Olson, J.E., and Balhoff, M.T. (2017). *Experimental and Theoretical Evaluation of Transverse Fracture Initiation from Horizontal Wells*. Poster session presented at the Fracture Research & Application Consortium (FRAC) Annual Meeting, Austin, TX.
10. **Michael, A.**, Olson, J.E., and Balhoff, M.T. (2017). *Near-Wellbore Orientation of Hydraulic Fractures Initiated from Horizontal Wells*. Poster session presented at the meeting of CPGE Research Showcase in Petroleum and Geosystems Engineering, Austin, TX.
11. **Michael, A.** (2017). *Hydraulic Fracturing Design and Optimization for Horizontal Wells*. Poster session presented at the meeting of UT Department of Petroleum & Geosystems Engineering, 2017 Graduate Recruitment Event, Austin, TX.
12. **Michael, A.**, Olson, J.E., and Balhoff, M.T. (2016). *Stress Shadow Mitigation via Perforation Cluster Spacing in Hydraulic Fracturing Operations*. Poster session presented at the Fracture Research & Application Consortium (FRAC) Annual Meeting, Bastrop, TX.
13. **Michael, A.**, Olson, J.E., Balhoff, M.T., and Schultz, R. A. (2016). *Mitigation of Stress Shadow Effects via Non-Uniform Perforation Cluster Distribution: A Laboratory Case Study*. Poster session presented at the meeting of CPGE Research Showcase in Petroleum and Geosystems Engineering, Austin, TX.
14. **Michael, A.**, Olson, J.E., and Balhoff, M.T. (2015). *Multi-frac Propagation Experiments on Transparent Media*. Poster session presented at the Fracture Research & Application Consortium (FRAC) Annual Meeting, Austin, TX.
15. **Michael, A.**, Olson, J.E., and Balhoff, M.T. (2015). *Simultaneous, Multiple Fracture Growth Optimization: Experimental Investigation on Transparent Blocks*. Poster session presented at the meeting of CPGE Research Showcase in Petroleum and Geosystems Engineering, Austin, TX.

Reviewer

- *SPE Journal* (SPEJ)
- *Geomechanics for Energy and the Environment* (GETE)
- *Journal of Natural Gas Science and Engineering* (JNGSE)
- *Journal of Petroleum Science and Engineering* (JPSE)
- *Geoenergy Science and Engineering* (GEOEN)
- *International Journal of Solid Structures* (IJSS)
- *Rock Mechanics and Rock Engineering* (RMRE)
- American Rock Mechanics Association (ARMA)
- European Association of Geoscientists and Engineers (EAGE)
- *Applied Sciences* (APPLSCI)
- *Underground Space* (UNDSP)

SERVICE

Ad-Hoc Committee Assignments

Early Career Keynote Lecture Selection Committee, ARMA (2024, 2025)
Scholarship Selection Committee, UND (2023)
Department of Petroleum Engineering
Harold Hamm School of Geology & Geological Engineering
Graduate Student Faculty Selection Committee, UT Austin (2016, 2018)

The Way Ahead, Editorial Board
Society of Petroleum Engineers, Young Professionals (SPE YP) magazine

- *Advisor,* Leadership Team (2021-22)
- *Managing Editor (de facto Editor-in-Chief),* Leadership Team (2020-21)
- *Advisor,* Technical Topics (2020)
- *Lead Content Creator,* Technical Topics (2020)
- *Content Creator,* Business Benchmarks, HR Discussions (2018-20)
- *Associate Content Creator,* Business Benchmarks (2018)

During my tenure as the Editor-in-Chief (2020-21), the magazine's average monthly pageviews number increased by 32%, the average monthly users number increased by 37% and the nominations to the magazine's "TWA Energy Influencers" program increased by 50%.

***ARMA Future Leaders* (Class of 2023)**, American Rock Mechanics Association (ARMA)
Group within the ARMA community intended to provide an opportunity to young professionals in the rock mechanics community to practice leadership and get actively involved in ARMA's organization and leadership.

Conference Session Developer/Co-Developer

- *Geomechanics of Hydraulic Fracture Interference: Intra-Stage, Intra-Well, and Inter-Well,* 55th U.S. Rock Mechanics/Geomechanics Symposium, Virtual, June 2021 (Developer)
- *Drilling: Cased Hole Wellbore Integrity,* 55th U.S. Rock Mechanics/Geomechanics Symposium, Virtual, June 2021 (Co-Developer)

Conference Session Chair/Co-Chair

- *Drilling & Completion: Cased Hole,* 59th U.S. Rock Mechanics/Geomechanics Symposium, Santa Fe, NM, June 8-11, 2025 (Co-Chair)
- *Drilling Geomechanics: Offshore, Onshore and Depleted Reservoirs II,* 53rd U.S. Rock Mechanics/Geomechanics Symposium, New York City, NY, June 23-26, 2019 (Co-Chair)
- *Production and Management EOR C,* 81st EAGE Annual Conference & Exhibition, London, UK, June 3-6, 2019 (Chair)

Other Volunteer Work

- Judge for Student Research Competition, ARMA (2026)
- Judge for Student Poster Contest, ARMA (2025, 2026)

- Judge for International Student Paper Contest (MS Division), SPE (2018)

PROFESSIONAL SOCIETIES

- Member, Society of Petroleum Engineers, SPE (2013 – Present)
- Lifetime Member, American Rock Mechanics Association, ARMA (2021 – Present)
- Member, International Society of Rock Mechanics, ISRM (2022)
- Student Member, American Association of Drilling Engineers, AADE (2010-20)
- Student Member, American Geophysical Society, AGU (2018-19)

SOFTWARE/CODING SKILLS

FLAC^{3D}; MATLAB; Drilling Simulator 3 (iOS App); CMG (IMEX, STARZ); NI LabVIEW; IPM (PROSPER, GAP, MBAL, REVEAL); FracproPT; DrillSim; PHDWin; MRST; ResFrac; JOINTS; XFRAC; PVTsim

Exercises Created on "Drilling Simulator 3" (iOS App) to Enhance Well Control Learning

- Pump Pressures Testing + Start of Drilling
- Ignoring a Kick & Causing a Blowout
- Kick Detection + Well Shut-In (Surface Stack)
- Shutting a Well (with Surface Stack) After Taking a Kick
- Kick Circulation via "DRILLER'S" Method (2 Circulations)
- Kick Circulation via "WAIT-&-WEIGHT" Method (1 Circulation)
- Underground Blowout Triggered by Gas-Kick Migration and Expansion
- Filling the Marine Riser's Annulus with KMW (Subsea Stack)

"Program for Integrated Modeling of Petroleum Systems" (PIMPS)

A generic, MATLAB-based, multi-purpose reservoir simulator which rigorously evaluates reservoir pressures and saturations over a pre-specified number of time-steps, in three-dimensional (3D) grids for the appropriate boundary and initial conditions. *PIMPS* can easily be adapted to model any parametric study, giving immediate numerical results similar to those expensive commercial simulators produce.

Related publication links:

- How to Build Your Own Reservoir Simulator (TWA Managing Editor's Column)
- *PIMPS3D2P*: A Practical, Efficient, Three-Dimensional, Two-Phase Reservoir Simulator Written in MATLAB
- Blowout Contingency Decision-Making Leveraging Pressure Modeling: Cap-and-Restrain or Cap-and-Divert?
- Blowout Contingency Decision-Making Leveraging Reservoir/Wellbore Pressure Modeling: Cap-and-Restrain or Cap-and-Divert?

- Mechanistic Assessments of Wellbore Integrity for Geologic Carbon Sequestration in Deep Saline Aquifers via Bulk-CO_2 Injection
- Using Pre-Spud Worst-Case-Discharge Predictions to Prevent Underground Blowouts After Offshore-Well Capping

LANGUAGES

English (full professional fluency), Greek (native fluency)

REFERENCES

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