



**Dr. Sayed Gomaa**

**Professor of Petroleum Reservoir Engineering**

**Mining and Petroleum Engineering Department, Faculty of Engineering**

**Al-Azhar University**

<https://scholar.google.com/citations?user=495PM-kAAAAJ&hl=en&oi=ao>

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### **Contact information**

Mining and Petroleum Engineering Department

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Al-Azhar University

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Date of birth: 31/5/1975

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### **Areas of Interest**

- Petroleum Reservoir Engineering
- Natural Gas Reservoir Engineering
- Gas Condensate Reservoir Engineering
- Reservoir Modelling and Simulation
- Application of Geostatistics in Reservoir Engineering
- Reservoir Management
- Eclipse Software
- Well Test Analysis

- Saphir Software
  - Rock and Fluid Properties of Petroleum Reservoirs
  - PVT Analysis
  - Enhanced Oil Recovery (EOR) Methods
  - Application of nanotechnology in oil and gas industry
  - Application of artificial intelligence in oil and gas industry
  - Computer applications for petroleum engineers using MATLAB and Visual Basic
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## **Education**

Professor of Petroleum Engineering, 2022.

Associate Professor of Petroleum Engineering, 2017.

Ph.D. in Petroleum Engineering, Azerbaijan State Oil Academy, 2010.

M. Sc. in Petroleum Engineering, Al-Azhar University, Cairo, Egypt, 2005.

B. Sc. in Petroleum Engineering, Al-Azhar University, Cairo, Egypt, 1999.

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## **Courses Delivered In Quality Assurance of Education**

- Curriculum maps and description of courses
  - Preparing the self-study of institutions of higher education
  - Systems of examinations and evaluation of students
  - Effective presentation skills
  - Design and preparation of research.
  - Crisis and Disaster Management
  - Administrative and legal skills
  - Recent trends
  - Time and work stress management
  - Strategic Planning
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## **Academic Activities**

**Feb. 2001 – May 2005:** Demonstrator at Al-Azhar University - Faculty of Engineering – Petroleum Engineering Department, Cairo – Egypt for teaching the following courses:

- Rock properties of petroleum reservoir
- Fluid properties of petroleum reservoir,
- Computer programming for petroleum engineers
- Petroleum reservoir engineering
- Oil and gas well drilling technology

**May 2005 – Sep 2006:** Assistant Lecturer at Al-Azhar University - Faculty of Engineering – Petroleum Engineering Department, Cairo – Egypt for teaching the following courses:

- Rock properties of petroleum reservoir
- Fluid properties of petroleum reservoir,
- Computer programming for petroleum engineers
- Petroleum reservoir engineering

**Assistant Lecturer** at the Higher Institute for Computer Science - Cairo – Egypt

For teaching applied mathematics

**Sep 2006 – April. 2010:**

Ph.D. Program – Graduate Research Assistant/Graduate Teaching Assistant  
Azerbaijan State Oil Academy, Oil and Gas Production Faculty, Reservoir and  
Production Engineering Department.

**Sep. 2010 - 2017:**

Assistant Professor at Al-Azhar University - Faculty of Engineering – Petroleum Engineering Department, Cairo – Egypt for teaching the following courses:

- Petroleum reservoir simulation
- Petroleum reservoir engineering
- Rock properties of petroleum reservoir
- Fluid properties of petroleum reservoir
- Petroleum reservoir and production engineering project for B.Sc. year

**Sep. 2012 - 2013:**

Assistant Professor at Future University in Egypt - Faculty of Engineering – Petroleum Engineering Department for teaching the following course:

- Introduction to Petroleum Engineering

**Oct. 2012 – 2017:** Assistant Professor at The British University in Egypt (BUE) - Faculty of Engineering – Department of Petroleum Engineering and Gas Technology for teaching the following courses:

- Reservoir Modeling and Simulation (for 3rd year)
- Reservoir Engineering I (for 3rd year)
- Reservoir Engineering II (for 4th year)
- Well Testing Analysis (for 3rd year)
- Introduction to Petroleum Engineering (for 1st year)

**Oct. 2014 - 2015:** Assistant Professor at Cairo University (Credit Hours System) for teaching the following courses:

- Reservoir Simulation
- Gas Reservoir Engineering
- Petroleum Reservoir Rock and Fluid Properties

**Sep. 2016 - 2017:** Assistant Professor at Future University in Egypt - Faculty of Engineering – Petroleum Engineering Department for teaching the following course:

- Fundamentals of Reservoir Simulation

**June 2017-2022:** Associate Professor at The British University in Egypt (BUE) - Faculty of Engineering – Department of Petroleum Engineering and Gas Technology for teaching the following courses:

- Reservoir Modeling and Simulation (for 3rd year)
- Reservoir Engineering 1 (for 3rd year)
- Reservoir Engineering 2 (for 4th year)
- Well Testing Analysis (for 3rd year)
- Introduction to Petroleum Engineering (for 1st year)

## **Selected Publications**

1. Hamid Khattab, Ahmed A Gawish, **Sayed Gomaa**, Abdelnaser Hamdy, AN El-Hoshoudy, Assessment of modified chitosan composite in acidic reservoirs through pilot and field-scale simulation studies, Journal of Scientific Reports (Nature), Vol, 14, Issue 1, 2024.  
<https://www.nature.com/articles/s41598-024-60559-9>
2. Khalaf G Salem, Mahmoud A Tantawy, Ahmed A Gawish, Adel Salem, **Sayed Gomaa**, AN El-Hoshoudy, Key aspects of polymeric nanofluids as a new enhanced oil recovery

approach: A comprehensive review, FUEL Journal, Elsevier, volume 368, 2024, <https://doi.org/10.1016/j.fuel.2024.131515>

3. Ahmed Ashraf Soliman, **Sayed Gomaa**, John S. Shahat, Fares Ashraf El Salamony, Attia Mahmoud Attia, New models for estimating minimum miscibility pressure of pure and impure carbon dioxide using artificial intelligence techniques, FUEL Journal, Elsevier, volume 366, 2024, <https://doi.org/10.1016/j.fuel.2024.131374>.
4. Hamid Khattab, Ahmed A Gawish, Abdelnaser Hamdy, **Sayed Gomaa**, AN El-Hoshoudy, Assessment of a Novel Xanthan Gum-based Composite for Oil Recovery Improvement at Reservoir Conditions; Assisted with Simulation and Economic Studies, Journal of Polymers and the Environment, 2024, <https://link.springer.com/article/10.1007/s10924-023-03153-w>
5. **Sayed Gomaa**, Mohamed Mongy, Ramadan Emara, Ashraf Fahmy, Attia Attia, Evaluating Medium Decision Tree Model, Support Vector Machine Rational Quadratic Gaussian Process Regression to Estimate the Total Organic Carbon of Shale Gas Reservoirs, Petroleum and Coal Journal, vol. 66 Issue 1, 2024, [https://www.vurup.sk/wp-content/uploads/2024/01/PC-X\\_Amer\\_2022\\_115.pdf](https://www.vurup.sk/wp-content/uploads/2024/01/PC-X_Amer_2022_115.pdf).
6. Abdelrahem Khalefa Embaby, Ashraf Ismael, Faissal Ali, Hussin Farag, Bahaa Mousa, **Sayed Gomaa**, Mohamed Elwageeh, Prediction of Iron Ore Grade using Artificial Neural Network, Computational Method, and Geostatistical Techniques at El-Gezera Area, Western Desert, Egypt, Journal of Mining and Environment, 2024, <https://doi.org/10.22044/jme.2024.13879.2581>.
7. Abdelrahem Khalefa Embaby, **Sayed Gomaa**, Yehia Darwish, Samir Selim, Predicting Gabal Gattar Uranium Content as a Function of Total Gamma-ray and Thorium Contents using an Artificial Neural Network in Northeastern Desert, Egypt, Journal of Mining and Environment, 2024, <https://doi.org/10.22044/jme.2023.13651.2524>.
8. Hamid Khattab, Abdelnaser Hamdy, **Sayed Gomaa**, A. N. El-Hoshoudy, Assessment of Biopolymers Rheological Properties and Flooding Results Under Reservoir Conditions for Enhanced Oil Recovery Processes, Egyptian Journal of Chemistry, 2024, DOI: [10.21608/EJCHEM.2024.258404.9090](https://doi.org/10.21608/EJCHEM.2024.258404.9090)

9. Khalaf G Salem, Mahmoud A Tantawy, Ahmed A Gawish, **Sayed Gomaa**, AN El-hoshoudy, Nanoparticles assisted polymer flooding: Comprehensive assessment and empirical correlation, Journal of Geoenergy Science and Engineering, **2023**.  
<https://doi.org/10.1016/j.geoen.2023.211753>
10. Sayed Gomaa, Khalaf G Salem, AN El-hoshoudy, Recovery of Heavy Oil and Extra Heavy Oil; Current Status, New Trends, and Enhancement Techniques, PETROLEUM Journal, 2023. <https://doi.org/10.1016/j.petlm.2023.10.001>.
11. John S Shahat, Ahmed Ashraf Soliman, **Sayed Gomaa**, Attia Mahmoud Attia, Electrical Tortuosity Index: A New Approach for Identifying Rock Typing to Enhance Reservoir Characterization Using Well-Log Data of Uncored Wells, ACS omega **2023**.  
<https://pubs.acs.org/doi/full/10.1021/acsomega.3c00904>
12. Karim Nasr, Samir Khaled, **Sayed Gomaa**, Mohamed Elwageeh, Salah Badr, database, Journal of Petroleum Science and Technology, **2023**.  
<https://scholar.google.com/scholar?cluster=9216875147044111002&hl=en&oi=scholar>
13. Abdelrahem Embaby, Ashraf Ismael, Faisal A Ali, HA Farag, BG Mousa, **Sayed Gomaa**, Mohamed Elwageeh, An approach based on Machine Learning Algorithms, Geostatistical Technique, and GIS analysis to estimate phosphate ore grade at the Abu Tartur Mine, Western Desert, Egypt, Journal of Mining of Mineral Deposits Journal, Volume 17 (2023), Issue 1, 108-119, <https://doi.org/10.33271/mining17.01.108>.
14. Samir Khaled, Ahmed Ashraf Soliman, Abdulrahman Mohamed, **Sayed Gomaa**, Attia Mahmoud Attia, New Models for Predicting Pore Pressure and Fracture Pressure while Drilling in Mixed Lithologies Using Artificial Neural Networks, ACS Omega, 2022.  
<https://pubs.acs.org/doi/10.1021/acsomega.2c01602>
15. **Sayed Gomaa** et al., New Correlation for Calculating Water Saturation Based on Permeability, Porosity, and Resistivity Index in Carbonate Reservoirs, ACS Omega, 2022. <https://pubs.acs.org/doi/10.1021/acsomega.1c06044>
16. **Sayed Gomaa** et al., Development of artificial neural network models to calculate the areal sweep efficiency for direct line, staggered line drive, five-spot, and nine-spot injection patterns, Fuel, 2022.  
<https://www.sciencedirect.com/science/article/abs/pii/S001623612200429X>

17. Mahmoud Shokr, Mohamed S. Farhat, Said Kamel, Mohamed Nour, Sayed Gomaa, Casing Drilling Technique to optimize Drilling operations in Qarun Petroleum Fields, Western Desert, Egypt, Journal of Petroleum and Coal, 2022. [https://www.vurup.sk/wp-content/uploads/2022/05/PC-X\\_Gomaa\\_124.pdf](https://www.vurup.sk/wp-content/uploads/2022/05/PC-X_Gomaa_124.pdf)
18. **Sayed Gomaa** et al., Investigating the Effect of Copper Oxides and Alumina Nanoparticles on Enhanced Oil Recovery in Carbonate Reservoirs, Petroleum and Coal Journal, Volume 63, Issue 2, 2021. [https://www.vurup.sk/wp-content/uploads/2021/03/PC-X\\_Gomaa\\_220\\_rev1.pdf](https://www.vurup.sk/wp-content/uploads/2021/03/PC-X_Gomaa_220_rev1.pdf)
19. Abdelnaser Hamdy and **Sayed Gomaa**, Optimized development increases mature Egyptian field recovery, Oil and Gas Journal, USA, Volume (119), Issue (2), 2021. <https://www.ogj.com/exploration-development/article/14196898/optimized-development-increases-mature-egyptian-field-recovery>
20. Mohamed Abdelnaser, Abdelwahab Bayoumi and **Sayed Gomaa**, Western Egyptian desert reservoir shows a high degree of heterogeneity, Oil & Gas Journal, USA, Volume (119), Issue (3b) pp 22-28, 2021. [https://scholar.google.com/scholar?hl=ar&as\\_sdt=0%2C5&q=Western+Egyptian+desert+reservoir+shows+high+degree+of+heterogeneity%2C+Oil+%26+Gas+Journal&btnG=](https://scholar.google.com/scholar?hl=ar&as_sdt=0%2C5&q=Western+Egyptian+desert+reservoir+shows+high+degree+of+heterogeneity%2C+Oil+%26+Gas+Journal&btnG=)
21. **Sayed Gomaa** et al., New correlations to calculate waterflood vertical sweep efficiency in oil reservoirs using nonlinear regression analysis and artificial neural network, Journal of King Saud University–Engineering Sciences, 2021. <https://www.sciencedirect.com/science/article/pii/S1018363921001094>
22. Abdelrahman Gouda, **Sayed Gomaa**, Development of an artificial neural network model for predicting the dew point pressure of retrograde gas condensate, Journal of Petroleum Science and Engineering, 2021. <https://www.sciencedirect.com/science/article/abs/pii/S0920410521009372>
23. A. N. El-hoshoudy, Abdelrahman Ahmed, **Sayed Gomaa**, Atef Abdelhady, An Artificial Neural Network Model for Predicting the Hydrate Formation Temperature, Arabian Journal for Science and Engineering, 2021. <https://www.springerprofessional.de/en/an-artificial-neural-network-model-for-predicting-the-hydrate-fo/19868910>

24. Abdelrahman Gouda, Samir Khaled, **Sayed Gomaa**, Attia M. Attia, Prediction of the Rheological Properties of Invert Emulsion Mud Using an Artificial Neural Network, Journal of American Chemical Society (ACS Omega), 2021.  
<https://pubs.acs.org/doi/abs/10.1021/acsomega.1c04937>
25. **Sayed Gomaa** et al., Electrical Submersible Pump Design in Vertical Oil Wells, Petroleum & Petrochemical Engineering Journal, 2020.  
<https://www.medwinpublishers.com/PPEJ/electrical-submersible-pump-design-in-vertical-oil-wells.pdf>
26. **Sayed Gomaa** et al., Well Testing Analysis of Unconventional Gas Reservoirs: Real Case Study of Tight Gas Carbonate Reservoir, Apollonia Formation, Western Desert, Egypt, Petroleum & Petrochemical Engineering Journal, Volume 5, Issue 1, March 2019.  
<https://www.arcjournals.org/international-journal-of-petroleum-and-petrochemical-engineering/volume-5-issue-1/1>
27. **Sayed Gomaa**, A.N. El-hoshoudy, S.M. Desouky, Application of Acrylates in Enhanced Oil Recovery, Journal of new development in Chemistry, Volume 2, Issue 3, 2019.  
<https://openaccesspub.org/jndc/article/1065>
28. **Sayed Gomaa**, Maged Alaa, and A. El-hoshoudy, Improving Oil Recovery using Zeolite Nanoparticles Flooding, Petroleum & Petrochemical Engineering Journal, Volume 3, Issue 1, 2019. <https://medwinpublishers.com/PPEJ/PPEJ16000186.pdf>
29. Abd el Wahab Bayoumi, **Sayed Gomaa**, Saher Adel, Well Test Analysis in Egyptian Naturally Fractured Oil Reservoirs, Petroleum and Coal Journal, Volume 61, Issue 3, 2019. [https://www.vurup.sk/wp-content/uploads/2019/05/PC-X-2019\\_Adel\\_34\\_rev3.pdf](https://www.vurup.sk/wp-content/uploads/2019/05/PC-X-2019_Adel_34_rev3.pdf)
30. AN El-hoshoudy, R Hosny, M Fathy, OH Abdelraheem, **S Gomaa**, SM Desouky, Enhanced oil recovery using polyacrylates/ACTF crosslinked composite: Preparation, characterization and core flood investigation, Journal of Petroleum Science and Engineering, volume 181, 2019.  
<https://www.sciencedirect.com/science/article/abs/pii/S0920410519306485>
31. AN El-hoshoudy, **S Gomaa**, M Taha. Improving oil recovery using fe<sub>2</sub>o<sub>3</sub> nanoparticles flooding, Petroleum and Coal Journal, Volume 61, Issue 4, 2019.  
[https://www.vurup.sk/wp-content/uploads/2019/07/PC-X-2019\\_El-Houshody\\_68\\_rev1.pdf](https://www.vurup.sk/wp-content/uploads/2019/07/PC-X-2019_El-Houshody_68_rev1.pdf)



32. Attia Attia A. N. El-hoshoudy, **Sayed Gomaa**, Effects of alkaline/polymer/nanofluids on oil recovery at harsh reservoir conditions, Petroleum and Coal Journal, Volume 61, Issue 6, 2019. [https://www.vurup.sk/wp-content/uploads/2019/12/PC-X-2019\\_El-hoshoudy-141\\_rev3.pdf](https://www.vurup.sk/wp-content/uploads/2019/12/PC-X-2019_El-hoshoudy-141_rev3.pdf)
33. A. N. El-hoshoudy, **S Gomaa**, Omar Ahmed Selim, Application of acrylamide polymer grafted with sio2 nanoparticles 2 in enhanced oil recovery-design project, Petroleum and Coal Journal, Volume 61, Issue 6, 2019.
34. [https://www.vurup.sk/wp-content/uploads/2019/12/PC-X-2019\\_El-hoshoudy-130\\_rev1.pdf](https://www.vurup.sk/wp-content/uploads/2019/12/PC-X-2019_El-hoshoudy-130_rev1.pdf)
35. **Sayed Gomaa** and Abdelaziz El-hoshoudy, New Correlation Predicting Molecular Weight of Petroleum Fractions, Petroleum & Petrochemical Engineering Journal, Volume 2, Issue 1, January 2018.  
<https://medwinpublishers.com/PPEJ/PPEJ16000139.pdf>
36. **Sayed Gomaa** and Maged Alaa, Reduction of Crude Oil Viscosity using Nanoparticles in Enhanced Oil Recovery, the 21<sup>st</sup> International Conference on Petroleum, Mineral Resources, and Development, 20-22 February, 2018, Egyptian Petroleum Research Institute, Cairo, Egypt.
37. **Sayed Gomaa**, Adel Salem and Mohammed Hassan, Nanofluids hold EOR potential in Egypt's Western Desert, Oil and Gas Journal, Houston USA, April 2018.  
[https://scholar.google.com/scholar?q=Nanofluids+hold+EOR+potential+in+Egypt%E2%80%99s+Western+Desert,+Oil+and+Gas+Journal&hl=ar&as\\_sdt=0,5](https://scholar.google.com/scholar?q=Nanofluids+hold+EOR+potential+in+Egypt%E2%80%99s+Western+Desert,+Oil+and+Gas+Journal&hl=ar&as_sdt=0,5)
38. El-hoshoudy A.N., Desouky S.M., Attia A.M. and **Gomaa S.**, Synthesis and Evaluation of Xanthan-G-Poly (Acrylamide) CoPolymer for Enhanced Oil Recovery Applications, Petroleum & Petrochemical Engineering Journal, Volume 2, Issue 3, May 2018.  
<https://medwinpublishers.com/PPEJ/PPEJ16000154.pdf>
39. El-hoshoudy A.N., **Gomaa S.M.** and Desouky S.M., Prediction of Dew Point Pressure in Gas Condensate Reservoirs Based On a Combination of Gene Expression Programming (GEP) and Multiple Regression Analysis, Petroleum & Petrochemical Engineering Journal, Volume 2, Issue 5, July 2018.  
<https://medwinpublishers.com/PPEJ/PPEJ16000163.pdf>

40. **Sayed Gomaa**, Maged Alaa, and A. El-hoshoudy, Investigating the Effect of Different Nanoparticles on the Interfacial Tension Reduction, *Petroleum & Petrochemical Engineering Journal*, Volume 2, Issue 7, November 2018.  
<https://medwinpublishers.com/PPEJ/PPEJ16000176.pdf>
41. **Sayed Gomaa**, Maged Alaa, and A. El-hoshoudy, Investigating the Effect of Different Nanofluids on Crude Oil Viscosity, *Petroleum & Petrochemical Engineering Journal*, Volume 2, Issue 7, November 2018.  
<https://medwinpublishers.com/PPEJ/PPEJ16000177.pdf>
42. **Sayed Gomaa**, Adel Salem and Mohammed Hassan, Relative Permeability Curves and Wettability Alterations by Alumina Nano Particles Flooding, *Journal of Al-Azhar University, Engineering Sector (JAUES)*, January 2017.  
[https://jaes.journals.ekb.eg/article\\_19299\\_398534cf5d6198e93d368bb158b3ad6a.pdf](https://jaes.journals.ekb.eg/article_19299_398534cf5d6198e93d368bb158b3ad6a.pdf)
43. **Sayed Gomaa** and Mohammed Hassan, Enhanced Oil Recovery using Silica Nano Particles Flooding, *EPRI*, February 2017.
44. Abdelwahab Bayoumi, **Sayed Gomaa** and Abdelnaser Hamdy, New Study Characterizes Heterogeneity in Egypt's Upper Bahariya Reservoir, *Oil and Gas Journal*, Houston USA, April 2017.  
<https://www.ogj.com/exploration-development/article/17229000/new-study-characterizes-heterogeneity-in-egypts-upper-bahariya-reservoir>
45. **Sayed Gomaa**, A New Relationship for Calculating the Exponential Integral Used for Constant-Terminal-Rate Solution of Diffusivity Equation, *Journal of Research and Development Organization*, 2016. <https://www.ijrdo.org/index.php/m/article/view/1619>
46. **Sayed Gomaa**, New Correlation for Calculating Critical Pressure of Petroleum Fractions, *International Advanced Research Journal in Science, Engineering and Technology*, November, 2016. <https://www.iarjset.com/upload/2016/november-16/IARJSET%205.pdf>
47. **Sayed Gomaa**, New Correlation for Calculating Critical Temperature of Petroleum Fractions, *International Advanced Research Journal in Science, Engineering and Technology*, November, 2016.  
[https://scholar.google.com/scholar?hl=ar&as\\_sdt=0%2C5&q=New+Correlation+for+Calculating+Critical+Temperature+of+Petroleum+Fractions%2C+International+Advanced+Research+Journal+in+Science%2C+Engineering+and+Technology&btnG=](https://scholar.google.com/scholar?hl=ar&as_sdt=0%2C5&q=New+Correlation+for+Calculating+Critical+Temperature+of+Petroleum+Fractions%2C+International+Advanced+Research+Journal+in+Science%2C+Engineering+and+Technology&btnG=)

48. **Sayed Gomaa**, New Bubble Point Pressure Correlation for Middle East Crude Oils, International Advanced Research Journal in Science, Engineering and Technology, November 2016. <https://www.iarjset.com/upload/2015/december-15/IARJSET%2018.pdf>

### **Post Graduate Activities**

- Supervisors on 8 M.Sc. in Petroleum Engineering
- Supervisors on 3 Ph.D. in Enhanced Oil Recovery

### **Other Activities**

- Reviewer for Elsevier
- Reviewer for some other Journals

### **Commercial software skills**

- Eclipse software for reservoir simulation
- KAPPA Saphir software for well-testing analysis

### **Computer Skills**

- Microsoft Office (Word, Excel, PowerPoint)
- Programming using MATLAB and Visual Basic
- Data Analysis
- Artificial Intelligence, Machine learning, Artificial Neural Network (ANN)
- The ability to develop mathematical correlations using any dataset.
- The ability to develop mathematical models using Artificial Intelligence techniques.