

UNIVERSITATEA PETROL–GAZE DIN PLOIEȘTI

Facultatea de Ingineria Petrolului și Gazelor

Nr. 2627bis /31.01. 2025

RAPORT DE ACTIVITATE – 2024

Centrul de Cercetare „Tehnologii moderne și ecologice în foraj–extracție”

În anul 2024, activitatea centrului s-a concentrat asupra direcției strategice privind tranziția energetică și dezvoltarea tehnologiilor sustenabile. Cercetările desfășurate au urmărit dezvoltarea unor soluții tehnice moderne, creșterea eficienței operaționale, îmbunătățirea siguranței proceselor și reducerea impactului activităților petroliere asupra mediului.

Obiectivele principale urmărite în perioada de raportare au fost:

- evaluarea potențialului energetic al resurselor geotermale
- analiza tehnologiilor cu emisii reduse de carbon
- dezvoltarea direcțiilor de cercetare privind economia circulară
- promovarea parteneriatelor interdisciplinare

Pe parcursul anului 2024 au fost realizate activități de documentare științifică, analiză tehnică, elaborare de studii și participare la manifestări academice de specialitate.

Rezultatele obținute au contribuit la consolidarea activității de cercetare a centrului, la dezvoltarea colaborărilor cu mediul economic și la susținerea procesului didactic din cadrul Facultății de Ingineria Petrolului și Gazelor.

Activitatea științifică a fost valorificată prin publicații, aspecte detaliate în anexele corespunzătoare perioadei de raportare.

Centru de cercetare Tehnologii moderne și ecologice în foraj-extracție are în subordine următoarele laboratoare din cadrul Facultății de Ingineria Petrolului și Gazelor:

1. Laborator Forajul sondelor

(https://ipg.upg-ploiesti.ro/images/Laborator_Forajul_Sondelor.pdf)

2. Laborator Extracția Petrolului

(https://ipg.upg-ploiesti.ro/images/Laborator_Extractie.pdf)

3. Laborator Termotehnică și Mașini Termice

(https://ipg.upg-ploiesti.ro/images/Laborator_Termotehnica.pdf)

4. Laborator Transportul Produselor Petroliere

(https://ipg.upg-ploiesti.ro/images/Laborator_Transport.pdf)

În anul 2024, activitatea Centrului de Cercetare „Ingineria Zăcămintelor de Hidrocarburi” s-a concretizat prin obținerea unor rezultate relevante în domeniul cercetării științifice, materializate prin publicarea a:

- 50 articole în reviste cotate ISI;
- 11 articole în baze de date internaționale (BDI);
- 1 cărți de specialitate/cursuri universitare;

Aceste realizări au contribuit la creșterea vizibilității activității științifice a centrului, la consolidarea colaborărilor cu mediul academic și economic și la dezvoltarea direcțiilor de cercetare specifice domeniului geologiei și ingineriei de zăcământ.

Rezultatele obținute au fost valorificate atât prin diseminarea acestora în cadrul manifestărilor științifice de specialitate, cât și prin integrarea lor în activitățile didactice și de cercetare desfășurate în cadrul Facultății de Ingineria Petrolului și Gazelor.

Atasat se află lista publicațiilor pe anul 2024.

Responsabil centru de cercetare,
Șef lucrări univ. dr. ing. Stoica Monica Manuela

Listă de lucrări – Raport 2024

Centru de cercetare – Tehnologii moderne și ecologice în foraj-extracție

Articole publicate:

- 1) Prundurel Alina, Stan Gabriela Ioana, Pana Ion, Eparu Cristian, Stoica Doru Bogdan, Ghetiu Iuliana - Production Forecasting at Natural Gas Wells, Processes
- 2) Eparu Cristian, Stoica Doru Bogdan, Neacsu Adrian, Radulescu Renata, Chiritescu Dragos, Prundurel Alina, Ionete Bogdan - Dynamic of H₂NG in Distribution Systems, Energies
- 3) Eparu Cristian, Prundurel Alina, Doukeh Rami, Stoica Doru Bogdan, Ghetiu Iuliana, Suditu Silvian, Stan Gabriela Ioana, Radulescu Renata - Optimizing Underground Natural Gas Storage Capacity through Numerical Modeling and Strategic Well Placement, Processes
- 4) Eparu Cristian, Suditu Silvian, Doukeh Rami, Stoica Doru Bogdan, Ghetiu Iuliana, Prundurel Alina, Stan Gabriela Ioana, Dumitrache Liviu - Software for CO₂ Storage in Natural Gas Reservoirs, Energies
- 5) Chis Timur Vasile, Doicin Bogdan, Mihaela NICOLAE (TITA), Ion ONUTU, Daniel TITA - Contributions to Assessment and Remediation of Acid Tars Lagoons, Studia Universitatis Babes-Bolyai Chemia
- 6) Chis Timur Vasile, Doru Costin Darabont, Lucian-Ionel Cioca, Costică Bejinariu, Oana Roxana Chivu - Impact of Personal Protective Equipment Use on Stress and Psychological Well-Being Among Firefighters: Systematic Review and Meta-Analysis, Sustainability
- 7) Suditu Silvian, Dumitrache Liviu, Branoiu Gheorghe-Adrian, Prundurel Alina, Ghetiu Iuliana - Carbon Capture and Storage Subsurface Study for a Natural Gas-Burning Power Plant in Oltenia, Processes

- 8) Doina Prodan, Marioara Moldovan, Stanca Cuc, Codruta Sarosi, Ioan Petean, Miuta Filip, Rahela Carpa, Rami Doukeh, Ioana-Codruta Mirica - Advanced Dentistry Biomaterials Containing Graphene Oxide, Polymers.
- 9) Rami Doukeh, Daniela Craciun, Maria Lehene, Adrian M. V. Branzanic, Alexandru Lupan, Radu Silaghi-Dumitrescu - An iron-free nitrogenase? Computational estimation of the ability to bind/activate N₂ in manganese and cobalt complexes, JOURNAL OF COORDINATION CHEMISTRY.
- 10) Chis Timur Vasile, Daniel Onut Badea, Doru Costin Darabont, Alina Trifu - The transformative impact of E-learning on workplace safety and health training in the industry: A comprehensive analysis of effectiveness, implementation, and future opportunities, International Journal of Education and Information Technologies.
- 11) Chis Timur Vasile, Darabont Doru, Iordache R.M, Daniel Onut Badea, Cioca V.R. - Ontology-based Occupational Safety and Health management for Workers with Disabilities, Polish Journal of Management Studies.
- 12) Anca Elena Eliza Sterpu, Bianca Georgiana Simedrea, Chis Timur Vasile, Olga Valerica Săpunaru - Corrosion Effect of Biodiesel-Diesel Blend on Different Metals/Alloy as Automotive Components Materials, Fuels.
- 13) Marcu Maria - Approximation methods used to build the gas-lift performance curve based on reduced datasets: a comprehensive statistical comparison, Petroleum Science and Technology, DOI: 10.1080/10916466.2020.2404625.
- 14) Lixandru Matei Lavinia Ioana, Sava Alexandru Bogdan, Sarosi Codruta, Dutescu - Vasile Cristina Maria, Popovici Daniela, Ionescu Iuliana Andreea, Bombos Dorin, Bajan Marian, Doukeh Rami - The Influence of PEG 4000 on the Physical and Microstructural Properties of 58S Bioactive Glasses, Nanomaterials.
- 15) Portoaca (Gheorghe) Ileana Alexandra, Dinita Alin, Tanase Maria, Savulescu Alexandru, Sirbu (Oprescu) Elena Emilia, Calin Catalina, Branoiu Gheorghe-Adrian - Analyzing Sustainable 3D Printing Processes: Mechanical, Thermal, and Crystallographic Insights, Polymers.
- 16) Calin Catalina, Dinita Alin, Branoiu Gheorghe-Adrian, Popovici Daniela, Tanase Maria, Sirbu (Oprescu) Elena Emilia, Portoaca (Gheorghe) Ileana Alexandra, Mihai

Sonia - Assessment of Environmental Impact of Glass-Fiber-Reinforced Polymer Pipes
Mechanical and Thermal Properties, Polymers

17) Tanase Maria, Portoaca (Gheorghe) Ileana Alexandra ,Dinita Alin, Branoiu Gheorghe-Adrian, Sirbu (Oprescu) Elena Emilia, Calin Catalina, Zamfir Florin Stefan - Optimizing Mechanical Properties of Recycled 3D-Printed PLA Parts for Sustainable Packaging Solutions Using Experimental Analysis and Machine Learning, Polymers

18) Nguyen Phan Anh, Cam-Tu Hoang-Ngoc, S. V. Prabhakar Vattikuti, Van Kiet Nguyen, To Hoai Nguyen, Nam Nguyen Dang, Panaitescu Casen - An Investigation on the Improved Corrosion Resistance of Die Casting Mg-5Al-8Sn-1Sr-xCa Alloys, JOURNAL OF MATERIALS ENGINEERING AND PERFORMANCE

19) Thi-Bich-Ngoc Dao, Thanh Liem Huynh, Ngoc Quyen Tran, Van Kieu Nguyen, Trung T. Pham, Nguyen To Hoai, Nam Nguyen Dang, Panaitescu Casen - Self-forming barrier layer for carbon dioxide corrosion protection of mild steel in NaCl solution containing hydroxychavicol isolated from Piper betle L. leaf, Chemical Engineering Journal

20) Nhon Pham Van, Ngoc Cam Tu Hoang, Tran Dinh Manh, Le Thuy Dung, Nguyen Si Hoai Vu, S. V. Prabhakar Vattikuti, Trung T. Pham, Nam Nguyen Dang, Panaitescu Casen - Enhancing corrosion resistance of mild steel in hydrochloric acid with Chiquita banana sap extract, RSC Advances.

21) Nhung Thi Nguyen, Tran Dinh Manh, Panaitescu Casen, Trung T. Pham, Nguyen Si Hoai Vu, Nguyen To Hoai, Nhon Pham Van, Nam Nguyen Dang - Self-formation of the protective film on mild steel surface in hydrochloric acid medium containing Papaya resin extract, COLLOIDS AND SURFACES A-PHYSICOCHEMICAL AND ENGINEERING ASPECTS.

22) Nguyen PhUONG Thi Hong, Thi Hoai Phuong Nguyen, Mai Huu Thuan, Panaitescu Casen, La Duong Duc, Nguyen Duy Khiem - Green Synthesis of Biogenic Nano Zerovalent Iron Using Cleistocalyx nervosum Leaf Extract for Enhancing Peanut Seed Germination and Basella alba Growth, ACS Omega

23) Bondarev Andreea, Mihai Sonia, Usman Abubakar Katsina, Cursaru Diana, Matei Danuta, Satulu Veronica, Gheorghe Catalina Gabriela, Branoiu Gheorghe-Adrian, Somoghi Raluca - A Facile Microwave-Promoted Formation of Highly Photoresponsive

Au-Decorated TiO₂ nanorods for the Enhanced Photo-Degradation of Methylene Blue, Nanomaterials.

24) Mihaela Helstern, Chis Timur Vasile, Stoianovici Doru - A new model to oil rocks-polyacrylamide contact, International Journal of Engineering and Science Invention (IJESI) 13(7) 5

25) Mihaela Helstern, Chis Timur Vasile, Stoianovici Doru - A new simulation model to polymer-oil interaction, IOSR Journal of Engineering (IOSRJEN), 14(6) 5.

26) Ana-Maria Neculai, Alina-Maria Gligor (Fădălau), Chis Timur Vasile, Barsan Doru - A PBL Application in Biochemistry- Big Data to Student Learning, International Journal of Innovative Science and Research Technology 9(12) 5.

27) Barsan Doru, Chis Timur Vasile, Laurențiu Prodea - Analysis of supersonic techniques for separating water from extracted natural gas, The International Journal of Engineering and Science (IJES) 13(10) .

28) Mihaela Helstern, Stoianovici Doru, Chis Timur Vasile - Analysis of the Effects of Partially Hydrolyzed Polyamide on Oil Reservoir Rocks, Journal of Engineering Research and Reports 26(8) 9

29) Laura Sfiriac, Chis Timur Vasile, Stoianovici Doru, Stoicescu Maria - Characterization of flow behaviour in a crude oil production well, Journal of Energy Research and Reviews 16(6) 12

30) Anca Elena Eliza Sterpu, Bianca Georgiana Simedrea, Timur Vasile Chis, Olga Valerica Săpunaru - Corrosion Effect of Biodiesel-Diesel Blend on Different Metals/Alloy as Automotive Components Materials, Fuels 5 MDPI 16

31) Ana Maria Neculai, Laurentiu Prodea, Andrei Barbulescu, Chis Timur Vasile - Determination Of The Spectrum Of Soils Polluted With Hydrocarbons, Soil And Water Depollution Methodologies Based On Spectrophotometric Analysis, IOSR Journal of Environmental Science, Toxicology and Food Technology 18(12) 6.

32) Helstern Mihaela, Chis Timur Vasile, Stoianovici Doru - Effect of polyamide on reservoir rocks in crude oil fields, Quest Journals Journal of Research in Environmental and Earth Sciences 10(7) 11

- 33) Reem Sabah MOHAMMED,Chis Timur Vasile,Dumitru CHISĂLIȚĂ - Laboratory analysis of oilfield water extraction from emulsions, Bulletin of Romanian Chemical Engineering Society 2(2024) 11
- 34) Doru Bârsan,Laurențiu Prodea,Timur Chis - Modeling of carbon dioxide separation processes from natural gases, IOSR Journal of Engineering 14(10) IOSRJEN 29-35
- 35) Laura Sfiriac,Stoianovici Doru,Stoicescu Maria,Chis Timur Vasile,Laurentiu Prodea - Modeling of the processes associated with the oil extraction system through, depth pumping, International Journal of Innovation Scientific Research and Review 6(8) 11
- 36) Doru Bârsan,Timur Chiș,Laurențiu Prodea- Modeling the flow of gases impure with water, International Journal Of Modern Engineering 14(5) IJMER 34-43
- 37) Mihaela Helstern,Chis Timur Vasile,Stoianovici Doru - Numerical modeling of reservoir rock treatment processes with polyacrylamide, Engineering and Technology Journal 9(7) 6
- 38) Doru Bârsan,Timur Chiș,Laurențiu Prodea - Numerical model for the separation of carbon dioxide from natural gases, International Journal Of Engineering Research And Development 20(10) IJERD 47-54
- 39) Ana Maria Neculai,chis ,Alina-Maria Gligor,Gaspar Razvan-Mihai - Numerical modeling of oil gas adsorption on activated carbon, International Journal of Research in Engineering and Science (IJRES)
- 40) Doru Bârsan,Timur Chiș,Laurențiu Prodea - Numerical Modeling of the Fluids Petroleum Flow Through the Supersonic Separator, International Journal Of Mathematics And Computer Research 12(10) IJMCR 4454-4458
- 41) Laura Sfiriac,Stoianovici Doru,Stoicescu Maria,Chis Timur Vasile,Laurențiu Prodea - Numerical modeling of the operation of oil wells in deep pumping, International Journal of Engineering and Science Invention (IJESI) 13(8)
- 42) Iuliana Cristea,Beghenci Silapov,Nistor Iulian,Chis Timur Vasile - Numerical modeling of two-phase liquid-solid movement through pipes, Journal of Advances in Mathematics and Computer Science 39(4) 10
- 43) Eghbal Motaei ,Seyed Mehdi Tabatabai ,Tarek Ganat ,Ahmad Khanifar ,chis ,Sulaiman Dzaiy - Physics-driven feature creation to improve machine learning models

performance for oil production rate prediction, Romanian Journal of Petroleum & Gas Technology V (LXXVI) 15

44) Doru Bârsan, Timur Chiș - Separation of water from natural gases, CHIMIA 2024, 30th of May – 1st of June 2024, Constanta, Romania OVIDIUS UNIVERSITY PRESS, CONSTANȚA

45) Ana-Maria Neculai, Chis Timur Vasile, Cristea Iuliana - Structures with Indole Rings Present in Natural Products, Engineering and Technology Journal ETJ 9(12) 6

46) Safta Cristina Georgiana, Suditu Silvian - Study on Vulnerability to Maladjustment and Addictions in the Early Years of Student Life, Student Well-Being in Higher Education Institutions IGI Global IGI Global 22

47) Alla ZEINAB, Chis Timur Vasile, Sulaiman Khasro Hamza DZAIY, Prodea Laurentiu - The effect of acid to natural gas storage rocks, Bulletin of Romanian Chemical Engineering Society 2(2024) 13

48) Bârsan D., Cirjan D.O., Stoicescu M. - Treatment of hydrocarbon-polluted waters through oxygen and ozone nanobubble technology, CHIMIA 2024, 30th of May – 1st of June 2024, Constanta, Romania OVIDIUS UNIVERSITY PRESS

49) Cristea Iuliana, Chis Timur Vasile, Prodea Laurentiu - Use of hydrogen mixed with natural gas in industrial and local networks, Bulletin of Romanian Chemical Engineering Society 2(2024) 9

50) Doru Bârsan, Timur Chiș, Laurențiu Prodea - Water separation in natural gas pipelines, SICHEM 2024, Bucharest, 11-12.04.2024 80-81

51) Doukeh, Rami, Craciun, Daniela, Lehene, Maria, Branzanic, Adrian M. V., Lupan, Alexandru, Silaghi-Dumitrescu, Radu - An iron-free nitrogenase? Computational estimation of the ability to bind/activate N₂ in manganese and cobalt complexes, Journal of Coordination Chemistry, 77.

52) Prodan, Doina, Marioara Moldovan, Stanca Cuc, Codruța Sarosi, Ioan Petean, Miuța Filip, Rahela Carpa, Rami Doukeh, and Ioana-Codruta Mirica - Advanced Dentistry Biomaterials Containing Graphene Oxide, Polymers 16, no. 12: 1743.

Cărți publicate:

1) Suditu, S., - Termotehnică și echipamente termice, Editura Universității Petrol-Gaze din Ploiești, ISBN 978-973-719-911-9, Ploiești, 2024.

Manifestări științifice:

1) Aprilie 2024 – UPG Ploiești – Black Sea Student Symposium (Organizator)