

1. Name and Academic Rank: Dr. Rami Harkouss



Chairman
Chemical and Petroleum Engineering Department
Beirut Arab University
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2. Education: Degrees, Discipline, Institution and Date:

- Ph.D., Process Chemical Engineering from INRA-UBP, France, 2013
- M.Sc., Chemical Engineering from ENSCCF, France, 2010
- B.Sc., Petroleum Drilling Engineering - (minor Production) from PUT, Iran, 2008

3. Work experience

- Beirut Arab University, 2015 – present, full time
- USEK (Université Saint-Esprit Kaslik – Lebanon), 2015
- LIU (Lebanese International University, Beirut), 2015
- Lebanese University (Faculty of Engineering – Hadath - Lebanon), 2015
- ENSIC (Ecole Nationale Supérieure d'Industries Chimiques, France), 2014
- LRGP-IUT Nancy, France, 2013 – 2014 (Chemical Engineering)
- INRA, Clermont-Ferrand, France, 2010 – 2013 (Process Chemical Engineering)
- Sanofi-Aventis, Aramon, France, 2009 – 2010 (Pharmaceutical)
- LRGB, France, 2008 – 2009 (Food Processing)
- National Iranian Oil Drilling Company, 2007 – 2008 (Petroleum Industry)

4. Honors and Awards:

- **2022 Student Chapter Excellence Award as Faculty Advisor:** Society of Petroleum Engineers (Top 20% around the world)
- **ADIPEC2021** university program in Abu Dhabi: “Hydrogen Energy as an Enabler for a Net Zero Carbon Target”. Winner of the **2nd place out of 30 projects**
- **ADIPEC2020** university program in Abu Dhabi: “Resilient Oil and Gas Companies in the Long Term beyond Covid-19”. Winner of the **2nd place out of 24 projects**
- **2019 Student Chapter Excellence Award as Faculty Advisor:** Society of Petroleum Engineers (Top 20% around the world)
- **ADIPEC2017** university program in Abu Dhabi: “Digitalization in Oil and Gas Industry-The Dawn of a New Era”. Winner of the **1st place out of 16 projects.**
- **Engineering Projects Day 2015** at BAU: “Environmental Impacts of Upstream Petroleum Industry: Drilling Operation and Solutions”. Winner of the **1st place out of 48 projects.**
- PhD scholarship from INRA, France (3 years)
- M.Sc. and BE scholarships in France

5. Competences

A. Industrial skills (Research and Development):

1. Petroleum – Petrochemical Engineering

✓ National Iranian Oil Drilling Company (Ahwaz and Abadan, Iran)

A. Upstream: Drilling and Production

- Working on two « onshore » drilling platforms (Kelly and Top drive).
- Studying the effect of temperature and pressure on bottles performance of a Blow Out Preventer (well control, safety)
- Analyzing various cuttings obtained while drilling operations (porosity, permeability).
- Enhancement of the production engineering skills by monitoring pumpjack, PCP and separators equipment, as well as assisting in analysis of real well data for well testing purposes

B. Downstream

- Working on different petroleum products in refineries by studying their physical properties:
 - Skills in a distillation unit:
 - Evaluation of effluents of a desalter unit
 - Studying the rheological properties of these effluents (density and viscosity)
- CO₂ capture and storage

2. Process Chemical Engineering

✓ Laboratoire Réactions et Génie des Procédés (Nancy, France)

- Valuations of the gaseous effluents of coke and advanced furnaces industries towards products such as methanol and DME (Process Retrofit, Process Intensification...)

3. Food Industrial Chemical Engineering

✓ Institut National de la Recherche Agronomique (Theix, France)

- Effect of Na⁺ reduction on salts diffusions and final quality in dry-cured ham
- Simulation in 3D combining mass, heat transfers and other models
- Development of a new technique to measure proteolysis index
- Modelization of structural, biological and textural phenomena

✓ Laboratoire de Génie Chimique et Biochimique (Clermont-Ferrand, France)

- Optimization of foaming process in Batch and reactor in continu:
Geometrical conception of an agitator and its effect on the air diffusion in a binghamien solution containing carbopol 90, to improve the fabrication of several food products

4. Pharmaceutical Industry

✓ Sanofi-Aventis (Aramon, France)

- Extraction of heparins by adsorption (chromatography, ultrafiltration...)
- Evaluation of losses at different stages of Lovenox fabrication
- Selective precipitation and purification processes

B. Academic skills (Teaching for more than 9 years in France and Lebanon):

- ✓ Chemical Engineering program
 - Introduction to Chemical Engineering
 - Process Control
 - Refining Operations
 - Separation Processes
 - Operation Units
 - Crude Oil Processing
- ✓ Petroleum Engineering program
 - Drilling Technologies
 - Production Engineering
 - Well Testing
 - Natural Gas Engineering
 - Reservoir Fluids
 - Rock Properties
 - Well Control
 - Geophysical Techniques

C. Management and Responsibilities

- Head of the Chemical and Petroleum Engineering Department at Beirut Arab University (since 2017): *leadership and managerial tasks related to faculty members and students in both Chemical and Petroleum programs such as: scheduling, course offering, interviews, curriculum, accreditations...*
- Head of the committee in the Lebanese governmental organization LIBNOR for Oil and Gas engineering field: (NL TC #67 Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries): *more than 25 meetings (since 2019) with experts from different disciplines related to the Lebanese Energy industry where international Standards and Norms (ISO and API) are discussed and approved to the local markets.*
- Representative of BAU in GOPELC ERASMUS Plus project (Gas and Oil Processing, European Lebanese Cooperation): *participation in different managerial workshops -5 upstream and downstream petroleum workshops (France, Sweden, Romania)- and in different managerial meetings (Kick-off meeting, PMB meeting, lunching event...)*
- Faculty Advisor for SPE-BAU Student Chapter: *Management of many technical and social events related to Petroleum topics*
- Faculty Advisor for AIChE-BAU Student Chapter: *Management of many technical and social events related to Chemical topics*
- Editorial Board Member in “The Way Ahead” International Petroleum Magazine

6. Service activities

- Member of the Society of Petroleum Engineers (SPE)
- Member of the American Institute of Chemical Engineers (AIChE)
- Member in the Lebanese Ministry of Education and Higher Education Committee for Oil and Gas engineering field
- Member in the Lebanese Civil Service Council Committee for Oil and Gas engineers
- Member of the Lebanese Order of Engineers
- Member in the Lebanese Military Academy Committee for Petroleum Engineers applicants
- Member of different Faculty of Engineering Committees
- Projects Supervisor for many events (Master thesis, Engineering Project Day, Workshops...)

7. Research Interests

- Pipeline modelling to transport hydrocarbon in Lebanese Offshore
- Corrosion Rates of Steel Pipelines in Lebanese Oil & Gas Offshore Environment
- Environmental Impacts in different Natural Resources
- Solid Waste Treatment while drilling operations in Oil and Gas industry
- Improvement of the “drilling operations” concept in petroleum engineering
- Enhancement of different Petro-physical properties of the drilling mud

8. International Scientific Activities and Research Cooperation

- Collaboration with many international chemical, oil and gas companies and universities to provide internships or donations (ZADCO, Baker Hughes, UPG, KAPPA, Schlumberger, Total, Ciment de Sibline, El-SADA ...)
- Erasmus Plus One Week Staff in Ploiesti, Romania, 2018
- Participation in National Oil and Gas Forums (ESA, LNW, LPA...)
- Participation in International and National Oil and Gas Conferences and Symposiums (ADIPEC, BASRA, SPE Workshops...)

9. Principal publications and presentations:

8.1 Journal Publications

1. **Harkouss, Rami.** (2022). Pipeline Modelling for the Lebanese Offshore: Cases in the Oil and Gas Industry. *JORDANIAN JOURNAL OF ENGINEERING AND CHEMICAL INDUSTRIES (JJECI)*. 5. 59-70. 10.48103/jjeci582022.
2. **Harkouss, Rami** (2021) "OVERVIEW ON THE LEBANESE ENVIRONMENTAL GOVERNANCE SYSTEM: MAIN HAZARDS IN THE OIL AND GAZ SECTOR," *BAU Journal - Science and Technology*: Vol. 3 : Iss. 1 , Article 5.
3. Farsakouri R. and **R. Harkouss** "Influence of Temperature on CO₂ and H₂ S Corrosion Rates of Steel Pipelines Using Alloy-Select Software in the Lebanese Oil & Gas Offshore Environment" *Jordanian Journal of Engineering and Chemical Industries*, Vol. 4, No.2, pp:44-51 (2021).
4. **Harkouss, Rami** (2020). Essential control to environmental regulations for oil and gas industry: spotlight on drilling processes in Lebanon. *BAU Journal-Science and Technology*: Vol. 2: Iss. 1, Article 1
5. Abou Alfa, Khaled; **Harkouss, Rami**; and Khatib, Jamal (2019). Siderite as a weighting material in drilling mud. *BAU Journal - Science and Technology*: Vol. 1: Iss. 1, Article 1
6. **Harkouss, R. et al.**, (2018). Development of a multi-physical finite element-based model that predicts water and salt transfers, proteolysis and water activity during the salting and post-salting stages. *Journal of Food Engineering*, 218, 69-79
7. **Harkouss, R. et al.**, (2015). Quantitative study of the relationships among proteolysis, lipid oxidation, structure and texture throughout the dry-cured ham process. *Food Chemistry*, 166, 522-530

8. **Harkouss, R. et al.**, (2014). Building phenomenological models that relate proteolysis in pork muscles to temperature, water and salt content. *Food Chemistry*, 151, 7-14
9. **Harkouss, R. et al.**, (2014). Development of a "Numerical ham" model that couples water and salt transfers to proteolysis during the dry-cured ham process
10. **Harkouss, R. et al.**, (2012). Development of a rapid, specific and efficient procedure for the determination of proteolytic activity in dry-cured ham: Definition of a new proteolysis index. *Meat Science*, 92, 84–88

8.2 Conference Proceedings

1. **Harkouss, Rami** (2021). Risks in Oil and Gas Industry: Walkthrough Environmental Governance System in Lebanon. *Proceedings of the First Jordanian International Chemical Process Safety Virtual Conference (JCPSC2021)*, Amman, Jordan. March 30-31, 2021. **(8 pages + oral)**
2. **Harkouss et al.**, (2015). Primary guidance to environmental legislations for upstream petroleum industry: focus on drilling operations. *Proceedings of the Mediterranean Gas and Oil International Conference 2015 (MedGO'15)*, Beirut, Lebanon, pp. 21-24. April 16-18, 2015. **(4 pages + oral)**
3. Bou Hamdan, k., **Harkouss, R.**, Abou Chakra, H. (2015). An overview of extended reach drilling: focus on design considerations and drag analysis. *Proceedings of the Mediterranean Gas and Oil International Conference 2015 (MedGO'15)*, Beirut, Lebanon. April 16-18, 2015. **(4 pages + oral)**
4. **Harkouss et al.**, (2012). A new method and index for quantifying proteolysis intensity in dry-cured ham. In *58th International Congress of Meat Science and Technology*, Montreal, Canada, 12-17 August 2012 **(4 pages + oral)**.
5. **Harkouss et al.**, (2012). Evolution of proteolysis in pork muscles as a function of temperature and water and sodium chloride contents. In *14èmes Journées des Sciences du Muscle et Technologies des Viandes*, Caen, France, 13-14 Novembre 2012 **(2 pages + oral)**.
6. **Harkouss et al.**, (2012). Effect of temperature, salt and water content on the proteolysis activity in small laboratory pork meat samples. In *2012 European Federation of Food Science and Technology (EFFoST) Annual Meeting*, Montpellier, France, 20-23 November 2012 **(2 pages + oral)**.
7. **Harkouss et al.**, (2013). Towards building of a “numerical ham” for simulating proteolysis and salt and water transfers during the dry-cured ham elaboration process. In *59th International Congress of Meat Science and Technology*, Izmir, Turkey, 18-24 August 2013 **(4 pages + oral)**.
8. **Harkouss et al.**, (2013). Phenomenological models relating proteolytic evolution of small pork meat samples to temperature and water and salt contents. In *59th International Congress of Meat Science and Technology*, Izmir, Turkey, 18-24 August 2013 **(4 pages + poster)**.
9. **Harkouss et al.**, (2013). Time-course evolution of protein degradation velocity in pork meat samples: integration in a model simulating dry-cured ham manufacture. In *14ème Congrès de la Société Française de Génie des Procédés*, Lyon, France, 8-10 Octobre 2013 **(8 pages + oral)**.

8.3 Submitted papers

- **Harkouss** et al. (2022). Effect of H₂S, CO₂ and Temperature on corrosion rates in the Lebanese Offshore Region. (Submitted)
- **Harkouss** et al. (2022). Rate of Penetration prediction by Statistical Package for the Social Sciences (SPSS) and artificial neural network (ANN). (Under preparation)

10. Peer-reviewer

1. « Accurate Prediction of Gas Compressibility Factor using Kernel Ridge Regression », Fourth International Conference on Advances in Computational Tools for Engineering Applications (ACTEA'19)
2. « Oil and Gas in Lebanon: History, Prospects and Implementation Challenges », Architecture & Planning Journal, Beirut Arab University 2019
3. « Computer Applications in the Oil and Gas Industry », Fourth International Conference on Advances in Computational Tools for Engineering Applications (ACTEA'19)
4. “Analysis of Complex Deep-well’s Drill-string Stick-slip Vibration and Its Soft-torque Control”, Second International Conference on Mechanical, Electric and Industrial Engineering, China MIE2019, May 25-27, 2019.
5. « A Systemic Risk Management Model to Manage the Equipment Maintenance System in Oil and Gas Companies », first International Conference of Engineering Risk 2019, Lebanese University, Lebanon, April 3-5, 2019.

11. Simulation skills

DrillSim20 (Instructor of many workshops)	Saphir
AspenHysys	Prosper

12. Interviews and Media

- Lebanese TV: interviews on direct at **MTV, OTV and Future** televisions
- International and National Journals: **Al-Ahram (Egypt), Al-Iktissad wal-Aamal, L’Orient-le-Jour**

13. Languages

Arabic, English, French, Persian

14. Nationalities

Lebanese, French