



Nawal Al-Hakawati

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About me

Interdisciplinary Scientific Researcher, skilled in Physical Biochemistry and Environmental Technology and an experienced University Lecturer in Biochemistry and Chemistry Modules.

Core Skills

Biochemistry | Supramolecular Chemistry | Scanning Electron Microscope | Analytical Chemistry | Microbiology | Environmental Science | NMR Spectroscopy | Grant Applications | Analytical Research | Publications | University Teaching | IT Literacy | Bi-lingual | Strong Communication | Team Collaboration | Self-Directed Learning

Digital Skills

Microsoft Office | GraphPad Prism | SPSS | Argus Lab | Molecular Operating Environment | ChemSketch | Chemdraw

Work experience

Full time Associate Professor of Physical Biochemistry | Beirut Arab University | 02/2021 - Current | Tripoli, Lebanon

- Teaching and Coordination of the following courses:

- Bioorganic Chemistry, CHEM346
- Introduction to Medicinal Chemistry, CHEM450
- Advanced Physical Biochemistry, BCHM620
- Clinical Biochemistry, BCHM432
- Metabolic Biochemistry, BCHM336
- Biochemistry, BCHM331
- Biochemical Principles of Nutrition, BCHM445
- Bioinformatics, BIOL451
- Biology I: BIOL231
- General Biology, BIOL121
- Immunology, BIOL236
 - Carrying out departmental duties such as, advising, grant application and supervising PhD, MSc and senior students.

Visiting Researcher in the School of Chemical Engineering and Chemistry. | University of Surrey | 07/2018 until date | Guildford, United Kingdom

- Designed and synthesized a chromogenic macrocyclic probe configured to sense and/or capture carbon dioxide.
- Investigating the anticancer activity of calix[4]arene derivatives on colorectal cancer cell line Caco-2 using Biophysical methods.

Part-time Assistant Professor in Natural Sciences Department | Lebanese American University | 09/2017 - 06/2020 | Beirut, Lebanon

- Teaching Environmental Sciences and Sustainability Module.
- Teaching Organic Chemistry, I (CHM313) and Introduction to Chemistry (CHM101) Modules.
- Carrying out other teaching duties that include, examining, tutoring, field work, organizing seminars and e-learning.

Teaching Assistant in Chemistry and Bio-sciences Departments | University of Surrey | 04/2016 - 06/2017 | Guildford, United Kingdom

- Teaching Assistant in Chemistry and Bio-sciences Departments; teaching and marking the following practical modules:

- CHE2030, Intermediate Analytical Chemistry module
- CHE2025, Intermediate Physical Chemistry module
- BMS1032, Human Physiology module

Part-time Laboratory Instructor in Natural Science Department | Lebanese American University | 03/2009 - 06/2012 | Beirut, Lebanon

- Coordination, manual and syllabi preparation, teaching, tutoring, examining the following practical modules: Microbiology 312, General Biology 201, General Biology 202 and General Biology 101, Ecology 331, and Food Microbiology NUT 378.
- Co-supervised senior biology students in their projects.

Part-time Laboratory Instructor in Biomedical Science Department | Lebanese International University | 03/2010 - 09/2010 | Beirut, Lebanon

- Coordination, syllabus preparation, teaching, examining the following practical modules: General Biology, Microbiology and Plant Physiology.

Part-time Laboratory Instructor | Beirut Arab University | 10/2008 - 01/2012 | Beirut, Lebanon

- Coordination, syllabus and manual preparation, teaching, examining the following practical modules:

Diagnostic Microbiology, General Microbiology, Food Microbiology, Applied Microbiology, Botany I, Botany II, Parasitology, Plant Physiology, Mycology and Plant Ecology (1st to 4th year biology), Medical Microbiology (Nursing) and Oral Microbiology (1st year and Masters Dentistry).

Education & Training

PhD specialized in Physical Biochemistry | University of Surrey | 29/09/2017 | Guildford, United Kingdom from the Faculty of Engineering and Physical Sciences, Department of Chemical Engineering and Chemistry. | **Level in EQF 8** | **Thesis:** Calix-Macrocycles: From synthesis and physico-chemical properties to analytical and biological applications.

PhD in Biology (Courses Stage) | Beirut Arab University | 09/2010-06/2011 | Beirut, Lebanon from the Faculty of Science, Department of Biological Sciences. Completed the courses required for the PhD program in Biology.

Master of Science in Biology specialized in Microbiology | Beirut Arab University | 06/06/2008| Beirut, Lebanon from the Faculty of Science, Department of Biology and Environmental Science. | **Thesis:** Bioaccumulation of heavy metals by microorganisms and its application in Lebanon Environment.

Bachelor of Science in Biology and Environmental Science | Beirut Arab University | 06/2008 | Beirut, Lebanon, from the Faculty of Science, Department of Biology and Environmental Science.

Certifications

Certified Master Trainer in Educational Technology for the Intel Teach to the Future Essentials Course | Intel® Education Teaching Tools and Resources, United States | 09/2006

Honors and Awards

Honorable award | GIST Global Innovation through Science and Technology | 12/2011

Travel Grant | Beirut Arab University and EMUNI University | 06/2010

International BioVision Next Fellowship | BIOVISION | 03/2009

Three Mobility Grants as a Visiting Researcher Fellow to the school of Chemical Engineering and Chemistry | University of Surrey | 2023, 2024, 2025

Intramural Grant | Beirut Arab University | 2025

Patent

Azocalixarene Probe and its Use for Detecting Carbon Dioxide | 27/10/2020

Inventors: Prof. Angela F. Danil de Namor and **Dr. Nawal El Hakawati**

US Application Number: 17/050,915.

Networks and Memberships

Board Member in Women and Inclusion in Supramolecular Chemistry | Current | United Kingdom

University of Surrey Alumni | Current | Guildford, United Kingdom

Member of Lebanon Climate Act | Current | Lebanon

Member of Lebanese Graduates British Universities | Current | Lebanon

Graduate Students Supervised/Supervising

Co-Supervising Three PhD students in the field of Natural Product and Environmental Microbiology | 01/10/2018 - 10/10/2025

- Isolation, Structural Characterization, and Anti-Virulence Activities of *Micromeria barbata* Extracts, *Shiraz Rawas*
- Characterization and Bioremediation Potential of Halophilic Bacteria Isolated from Lebanese Habitats, *Nadine Zmorrod*
- Bioremediation and Biotechnological Applications of Alkaliphilic Bacterial Isolates, *Narmin Zmorrod*

Main Supervision of three Master students in the field of Biochemistry |

01/10/2023 - 10/10/2025

- Synthesis and characterization of azo-cyclodextrin complex and its application as an antimicrobial agent, *Dima El-Masri*
- Encapsulation of Thermosensitive Essential Oils with β -Cyclodextrin and its Application against Wound Infection Bacteria, *Jana Maasarani*
- Synthesis, Characterization and Anticancer Studies of Resorcin[4]arene Receptor and Its Application as Nicotine Filter, *Marwa Abdallah*

Mentoring a master's student from the Chemical Engineering Department at the University of Surrey |

10/2016 - 08/2017

- Synthesis and characterization of functionalized pyrogallol[4]arene for the removal of pharmaceuticals from water

Co-supervised three biology students at the Lebanese American University in their Senior Project |

2011

- Antibiotic-Assembled Silver Nanoparticles and their application on ESBL Bacteria

Co-supervised three biology students in their senior research at the Lebanese American University |

2012

- Antibiotic-Assembled Gold Nanoparticles: New Trend for the Development of Anti-ESBL *Escherichia coli*

Co-supervised a team of three senior biology students at Lebanese American University |

01/01/2011

- Silver Nanoparticles for milk and food preservation project in Global Innovation through Science and Technology (GIST) competition.

Publications

- Angela F. Danil de Namor, **Nawal Al Hakawati**, A Half-Century of Supramolecular Thermodynamics: A Retrospective of Our Multidisciplinary Approach, *Molecules*, **2026**, 31(18), 3197.
- Emad M. Abdallah, Samiah Hamad Al-Mijalli, **Nawal Al Hakawati**, Alissar Al Khatib, Defensins as Natural Antimicrobial Peptide Scaffolds against Antimicrobial resistance (AMR) Pathogens: Mechanisms, Resistance Barriers, and Translational Prospects, *Frontiers in Cellular and Infection Microbiology*, **2026**, Accepted.
- Rima Jaafar, **Nawal Al Hakawati**, Nathalie Hayek, Julnar Usta, Jamilah Borjac, Chemical

composition, Antibacterial, and Antioxidant Activities of *L. angustifolia* Essential Oil against Human Pathogenic Clinical Bacterial Isolates, Bacteria, **2026**, Accepted.

- Angela F. Danil de Namor, Ahmad Jumaa, **Nawal Al Hakawati**, Calix[4]resorcinarene Amide Derivative: Thermodynamics of Cation Complexation Processes and Its Remarkable Properties for the Removal of Calcium (II) from Water, J. of Molecular Sciences, **2025**, 26(16), 8043
- Shiraz Rawas, Dalia El-Badan, **Nawal AL Hakawati**, Phytochemical analysis and antimicrobial activity of *Micromeria barbata* leaf and stem extracts against *Pseudomonas aeruginosa*: insights from molecular docking and in vitro assays, BAU Journal-Science and Technology, **2025**.
- Alissar Al Khatib, Bshayer Alsaleh, Mohammed Almari, Salwa Hassanein, **Nawal Al Hakawati**, Mitigating climate change impacts on health: a comparative analysis of strategies in Saudi Arabia and Lebanon, Frontiers in Public Health, **2025**, 13, 1551559.
- Shiraz Rawas, **Nawal Al Hakawati**, Amale Mcheik, Dalia ES El Badan, *Micromeria barbata* for targeting MRSA virulence: In silico and in vitro studies, Heliyon, **2025**, 11,1.
- Israa Assaf, **Nawal Al Hakawati**, Jamilah Borjac, In-Silico Study of Lebanese Herbal Compounds against Carbapenem-Resistant *Acinetobacter baumannii* Proteins, Informatics in Medicine Unlocked, **2023**, 43, 101409.
- Angela F Danil de Namor and **Nawal Al Hakawati**, Anion Complexation by an Azocalix[4]arene Derivative and the Scope of Its Fluoride Complex Salt to Capture CO₂ from the Air, Molecules, **2023**, 28 (16), 6029.
- Angela F Danil de Namor, Alexandros Cambanis, **Nawal Al Hakawati**, Rasha Khalife, From Solution Studies of Pharmaceuticals (Aspirin and Related Compounds) to the Thermodynamics of Aspirin- β -Cyclodextrin Interaction in water and N, N-Dimethylformamide, International Journal of Molecular Sciences, **2022**, 23(19), 11750.
- Angela F Danil de Namor, **Nawal Al Hakawati**, Sami Y Farhat, Targeting Colorectal Cancer Cells with a Functionalised Calix[4]arene Receptor: Biophysical Studies, Molecules, **2022**, 27(2), 510.
- Zmorrod NG Zmorrod, G Nadine, **Nawal Al Hakawati**, Ranya A Amer, Hoda H Yusef, Lead and cadmium detoxification by halophilic bacteria isolated from solar salterns in Lebanon, BAU Journal-Science and Technology, **2021**
- Nadine Zmorrod, **Nawal Al Hakawati**, Ranya A. Amer, Hoda H. Yusef, Biosorption of Pb (ii) and Cd (ii) by *Halomonas* sp., Asian Jr. of Microbiol. Biotech. Env. Sc. Vol. 23 (3): **2021**: 131-139
- Angela F Danil de Namor, Maan Al Nuaim, Gerard Fairclough, Rasha Khalife, **Nawal Al Hakawati**, Amine modified silica for removing aspirin from water, Journal of Environmental Science and Technology, **2021**, <https://doi.org/10.1007/s13762-021->

- Hoda Yusef, **Nawal AL Hakawati**, Narmin Zmorrod, Hala S. Moudallal, Hexavalent chromium detoxification by alkaliphilic bacteria isolated from tannery wastewater in Lebanon, Pollution Research Paper, **2020**, 39, 562-571.
- **Nawal Al Hakawati**, Salman Alharthi, Angela F Danil de Namor, Thermodynamics, a Suitable Reporter in the Design of Mercury (II) Ion Selective Electrodes, Journal of Arabian Chemistry, **2020**, 13(12), 8671-8683.
- Ranya A. Amer, **Nawal Al Hakawati**, Narmin Zmorrod, Hala S. Moudallal, Hoda Yusef, Removal of Lead (ii) ions from aqueous solutions by alkaliphilic bacteria *Halomonas alkalicola* ext, Asian Journal of Microbiology, Biotechnology & Environmental Sciences Paper, **2020**, 22(3), 448-457.
- Angela F Danil de Namor, Salman Alharthi, Brendan Howlin and **Nawal Al Hakawati**, A selective and easily recyclable dimer based on a calix[4]pyrrole derivative for the removal of mercury (II) from water, RSC Advances, **2019**, 10, 3060-3071.
- Jinane K Chaaban, **Nawal Al Hakawati**, Brendan Howlin, Rachida Bance-Soualhi, Angela F Danil de Namor, An Asymmetric N-rim Partially Substituted Calix[4]pyrrole: its Affinity for Ag(I) and its Destruction by Hg(II), Arabian Journal of Chemistry, **2019**, 13, 4824-4834.
- Angela F. Danil de Namor, Salman Alharthi, Abdel Aziz El Gamouz, **Nawal Al Hakawati** and Brian G. Cox, Calix[4] Based Hg(II) Ion Selective Electrodes: A Thermodynamic Protocol to Address the Selectivity versus the Hosting Capacity Paradigm in the Selection of the Carrier, Journal of Electrochemica Acta, **2018**, 290, 686-694.
- Angela. F. Danil de Namor, Weam Abou Hamdan, Oliver Webb, Rachida Soualhi, Brendan Howlin and **Nawal Al Hakawati**, Calix[4]arene urea derivatives: the pathway from fundamental studies to the selective removal of fluorides and phosphates from water, Journal of Hazardous Materials, **2018**, DOI: 10.1016/j.jhazmat.2018.07.025.
- Rasha Khalife, Jinane Chaaban, **Nawal Al Hakawati** and Angela F. Danil de Namor, The Removal of Phosphate and Arsenate from Aqueous Solution using Silica Based Materials, International Journal of Green Technology, **2018**, 4, 29-37.
- Angela F. Danil de Namor, **Nawal Al Hakawati**, Weam Abou Hamdan, Rachida Soualhi, Samira Korfali, Liliana Valiente, Calix[4]pyrrole for the removal of arsenic (III) and arsenic (V) from water, Journal of Hazardous Materials, **2017**, 326, 61-68.
- Angela F. Danil de Namor, Abdelaziz El Gamouz, Salman Alharthi, **Nawal Al Hakawati** and John R. Varcoe, A ditopic calix[4]pyrrole amide derivative: highlighting the importance of fundamental studies and the use of NaPh4B as additive in the design and applications of mercury(II) ion selective electrodes, Journal of Materials Chemistry A, **2015**, 3, 13016-13030.

Book Chapter

- Alissar Al Khatib, Bshayer Alsaleh, Mohammed Almari, Salwa Hassanein, **Nawal Al Hakawati, (2025)**. Science Diplomacy and Neocolonialism: Lessons from the field with a view to the future. In (eds): Rasha Bayoumi, Tania Bosqui, Abdullah Awad, and Rana Dajani, Frontiers Publisher, Lausanne, Switzerland.

Conference Papers

- Anthony Abraham, **Nawal Al Hakawati**, Angela F Danil de Namor, Dr. Maxim Shkunov, Arsenic analyte detection with electrolyte-gated organic field effect transistors, Innovations in large area electronics, **2025**, United Kingdom.
- **Nawal Al Hakawati** and Angela F Danil de Namor, Calix-Based Receptors: From Fundamental Studies to Materials in Action, Solutions in Chemistry **2024**, Zagreb, Croatia.
- Narmin Zmorrod, Hoda Yusef and **Nawal Al Hakawati**, Isolation and Characterization of Lead Tolerant Alkaliphilic Bacteria from Tannery Wastewaters, LAAS First Italian Lebanese Day, **2019**, Beirut, Lebanon.

Nawal Al Hakawati and Angela Danil de Namor, Supramolecular Chemistry: From Fundamental Studies to the Applications, Festival of Research, **2016**, Guildford, United Kingdom.

- Angela Danil de Namor, Weam Abou Hamadan, Oliver Webb, **Nawal Al Hakawati**, Samira Korfali and Liliana Valiente, From Modified Naturally Occurring Materials to The Design of Novel Receptors for The Removal of Arsenic from Water, 5th International Congress on Arsenic in the Environment, Buenos Aires, Argentina, **2014**.
- Samira Korfali, **Nawal Al Hakawati** and Wissam Khadra, Evaluation of Metals and their Potential Hazard in the Awali River Surface Sediments, SEGH2014, Newcastle, England, **2014**.
- **Nawal Al Hakawati** and Zakia Olama, Environmental Conditions Affecting the Single Cell Protein Production from Yeast Using Whey, International Conference on Research Trends in Food Safety and Security: Science, Technology and Policy, Lebanese American University, Beirut, Lebanon, **2011**.
- **Nawal Al Hakawati**, Iman Taleb, Zakia Olama and Hanafy Holail, Bioremediation of Heavy Metals and Crude Oil by Microorganisms, ReSouk 2010, EMUNI Student Research Multi-Conference, Alexandria-Egypt, **2010**.
- **Nawal Al Hakawati**, Zakia Olama and Hanafy Holail, Biovision Forum: The World Life Sciences Forum, Lyon-France, **2009**.