

# AHMAD B. ALBADARIN

## ASSISTANT PROFESSOR

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### EDUCATION

- **PhD in Chemical Engineering** | Queen's University Belfast (QUB), United Kingdom, 2008 – 2012.
- **Master of Business Administration** | University of Limerick (UL), Ireland, 2019 – 2021.
- **BSc in Analytical Chemistry** | Al Albayt University, Jordan, 2001 to 2005.

### CAREER HIGHLIGHTS

- Total novel research, industrial collaboration and curriculum development funds to date – more than **€3m since 2015**.
- Full length peer-reviewed research articles focusing on net-zero engineering and sustainable development – **146 Articles, 2 Patents & 2 book chapters since 2011**.
- **7116 Scopus citations & 8772 Google-Scholar citations: Scopus h index: 46; G-Scholar h index: 51**.
- Direct supervision of **15 MSc students, 7 PhD Students and 5 Postdocs**, thus far.

### PROFESSIONAL EXPERIENCE

#### Assistant Professor – Pharmaceutical and Chemical Engineering

##### German Jordanian University (GJU) | 2024 – Present

- Research initiatives in net-zero engineering and sustainable development for pharmaceutical applications, securing national and international funding.
- Lectured in several engineering modules, employing innovative teaching methods and receiving excellent student feedback.
- Devise and supervise Final Year Projects with industrial relevance.

#### Associate Research Professor – Chemical Engineering and Advanced Energy

##### American University of Beirut (AUB) | 2022 – 2024

- Leading curriculum development and research initiatives in net-zero engineering, GMP and sustainable development, securing national and international funding.
- Developed and delivered courses on Process Safety and Sustainable Energy using blended learning techniques, resulting in a 4.3/5 average instructor evaluation score.
- Developed an online MSc degree on Sustainable Design in collaboration with the Ghurair foundation.

#### Principal Investigator & Project Leader – Chemical and Bioprocess Engineering – Bernal Institute

##### University of Limerick (UL) | 2020 – 2021

- Secured significant funding and managed multiple innovation partnerships with industry for research and development projects.
- Lectured in Process Design and Thermodynamics, employing innovative teaching methods and receiving excellent student feedback.
- Led an Erasmus+ program collaboration to design and implement a curriculum focused on sustainable manufacturing, enhancing student competencies.

#### Lecturer of Chemical and Bioprocess Engineering – University of Limerick (UL) | 2018 – 2019

- Developed and taught modules such as, Thermodynamics, Process Engineering and Sustainable Energy Processes, employing a research-led teaching strategy to enhance student competencies and employability.
- Secured €6 million in funding for the PMTC (Interim Director) by creating a comprehensive business plan, providing leadership, and improving financial management e.g., increased industrial membership by 27%.
- Achieved high student engagement and positive feedback through effective curriculum development and regular performance reviews. Organized community outreach programs promoting STEM education.

#### Senior Research Fellow – Process Optimization and Design for Sustainability

##### University of Limerick (UL) | 2014 – 2017

- Initiated and secured independent funding for sustainable natural resources projects.
- Developed sustainable manufacturing processes, adopted by industry partners, enhancing their production efficiency and reducing their carbon footprint.

- Mentored junior faculty members and PhD students, supporting their professional development and research activities within the SSPC/ Bernal Institute. Coordinating industry-based projects for students, enhancing their practical skills and employability.

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### **Postdoctoral Researcher: Industrial Project – Process and Product Design**

#### **Queen’s University Belfast (QUB) | 2013– 2014**

- Led a collaborative research project with industry partners, resulting in a patented controlled-release fertilizer that significantly reduces environmental impact.
- Gained extensive project management experience, overseeing projects from conception to completion, and exceeded company expectations.

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### **Lecturer of Chemical Engineering & Coordinator of the International Foundation Program for Science & Engineering | INTO College, Queen’s University Belfast (QUB) | 2011– 2013**

- Lecturing and curriculum development for the International Diploma in Science and Engineering.
- Conducted regular meetings with students and analysed their feedback in order to maximize their engagement. Achieved a high pass rate and received highly positive feedback.
- Scheduled regular meetings with lecturers to discuss and support teaching and learning for the courses.

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### **Teaching Assistant and Laboratory Manager**

#### **Queen’s University Belfast (QUB) | 2008 – 2011**

- Worked with a faculty of teaching staff to assist and lead the delivery of laboratory classes to undergraduate students. Devised and supervised Final Year Projects with industrial relevance.
- Coordinated all research activities in the lab, co-supervised final year projects, organized regular discussions with academics and fellow researchers.

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### **Teacher of Science**

#### **Al Etihad Secondary School – Jordan | 2005 – 2008**

- Worked as part of the teaching team to ensure smooth delivery of classes in a busy Secondary School.
- Engaged young students to improve their confidence and future potential.

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## **RECENT AWARDS & SELECTED CONFERENCE CONTRIBUTIONS**

- Teaching Honor Award by students in 2024 for dynamic teaching methods and engaging course delivery.
- Winner of the Bernal Research Award from the University of Limerick in 2017, 2018 and 2020.
- PMTC Winner of the Partnership Alliance of the Year – Pharma Industry Awards 2018.
- Second place in the Research Centre of the Year Award and Research & Development Achievement Award – Pharma Industry Awards 2018.
- Winner of the Industrial collaboration award at the FEA conference and invited speaker at the FEA conference at the American University of Beirut (AUB) 2017.
- Lecture presentation: Study of process parameters that enable direct spray drying synthesis of UiO-66-NH<sub>2</sub> – CHISA conference 2024, Czech Republic.
- Oral presentation: Natural biosorbents for efficient elimination of anionic textile dyes from aqueous solutions – ICWEE conference 2022, American University of Sharjah.
- Oral presentation: Activated lignin-chitosan extruded blends for efficient adsorption of methylene blue – AIChE Annual Meeting, Orlando 2019 – USA.

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## **COMPETITIVE FUNDING AWARDS**

<b>Project Title</b>	<b>Funding source</b>	<b>Amount</b>	<b>Role</b>
Synthesis and Engineering of Novel materials for Industrial Advancement – MASRI2024 – BBCHEMAM-3	Vertically Integrated Projects – Masri Institute	\$59,500	Co-Principal Investigator 2023 – 2024
Enhancing European Union Good	Erasmus+ Program	€28,000	Principal Investigator 2023 – 2024

Manufacturing Practice (EUGMP) Knowledge through Interdisciplinary Studies – GAP-101127408			
Seaweed Bioactives Supplemented Animal Feeds (SeaFEED) project – DAERA 14189	DAERA North South Fund	€1,202,289	Co-Principal Investigator 2022 – 2025
GreenPM – ERASMUS- EDU-2021– EMJM-DESIGN – Erasmus Mundus Design Measures 101050785	Erasmus+ Programme	€56,750	Coordinator 2021 – 2022
Engineered Inhalable Antiviral-Composites for Pulmonary Delivery with Optimal Therapeutic Outcomes – 20/COV/0238	Science Foundation Ireland	€285,735	Principal Investigator 2021 – 2022
Pharmaceutical Manufacturing Technology Centre	Enterprise Ireland	€6million	Interim Director
Natural Materials for Advanced Therapeutics (NEAT): Biomaterial Derived Excipients for Improved Bioavailability – 15/SIRG/3552	Science Foundation Ireland (SFI)	€509,000	Principal Investigator 2016 – 2021
Clarochem Ireland Research Contract - Fully funded by Industry	Clarochem Ireland	€19,800	Principal Investigator 2021 (3 months)
Astellas Pharma Research Contract - Fully funded by Industry	Astellas Pharma	€15,950	Principal Investigator 2020 (3 months)
Powder/Particle Modelling for Process Design, Ireland – IP 2018 0727	Enterprise Ireland	€186,230	Principal Investigator 2019 – 2020
Proof of concept and Design of a bespoke twin screw extruder – SSPC-2019-UL-013-1	Science Foundation Ireland via SSPC	€25,000	Principal Investigator 2019 – 2020
Innovation Voucher – IV 2019 1224	Enterprise Ireland	€10,000	Principal Investigator 2019 – 2020
Development of Drug Substance Plant Cleaning Methodologies – Ireland – IP 2018 0727	Enterprise Ireland	€166,130	Principal Investigator 2018 – 2019
The MOMEnTUM Project – Spray Drying of Biopharmaceuticals Theme (14/SP/2750)	Science Foundation Ireland	€315,100	Theme Leader Co-Principal Investigator 2017 – 2019
Partnership in continuous manufacturing for nano-based drug products – NSF/SFI–US-Ireland	US-Ireland R&D Partnership Programme	€143,000	Co- Principal Investigator 2015 – 2019

## PATENTS & INVENTION DISCLOSURES

- Ahmad B. Albadarin, Zeglinski J., Walker G., (2020) A method of processing active pharmaceutical ingredients and apparatus for use in such methods, P34678GB1.
- Walker, G., Mangwandi C., Ahmad B. Albadarin, Allen S. (2011) Controlled release fertilizer. UK Patent number P1113313.9.

## LIST OF SELECTED PUBLICATIONS

- [1] A.B. Albadarin, C. Mangwandi, A.H. Al-Muhtaseb, G.M. Walker, S.J. Allen, M.N.M. Ahmad, Kinetic and thermodynamics of chromium ions adsorption onto low-cost dolomite adsorbent, *Chemical Engineering Journal* 179 (2012) 193-202. <https://doi.org/10.1016/j.cej.2011.10.080>.
- [2] A.B. Albadarin, M.N. Collins, M. Naushad, S. Shirazian, G. Walker, C. Mangwandi, Activated lignin-chitosan extruded blends for efficient adsorption of methylene blue, *Chemical Engineering Journal* 307 (2017) 264-272. <https://doi.org/10.1016/j.cej.2016.08.089>.
- [3] A.B. Albadarin, Y. Glocheux, M.N.M. Ahmad, G.M. Walker, C. Mangwandi, Novel comparison of kinetic models for the adsorption-coupled reduction of Cr(VI) using untreated date pit biomaterial, *Ecological Engineering* 70 (2014) 200-205. <https://doi.org/10.1016/j.ecoleng.2014.05.002>.
- [4] A.B. Albadarin, T.D. Lewis, G.M. Walker, Granulated polyhalite fertilizer caking propensity, *Powder Technology* 308 (2017) 193-199. <https://doi.org/10.1016/j.powtec.2016.12.004>.
- [5] A.B. Albadarin, A. Metawea, M. Hammoud, M.N. Ahmad, G. Walker, Study of process parameters that enable direct spray drying synthesis of UiO-66-NH<sub>2</sub>, *Microporous and Mesoporous Materials* 372 (2024). <https://doi.org/10.1016/j.micromeso.2024.113114>.
- [6] A.B. Albadarin, C.B. Potter, M.T. Davis, J. Iqbal, S. Korde, S. Pagire, A. Paradkar, G. Walker, Development of stability-enhanced ternary solid dispersions via combinations of HPMCP and Soluplus® processed by hot melt extrusion, *International Journal of Pharmaceutics* 532(1) (2017) 603-611. <https://doi.org/10.1016/j.ijpharm.2017.09.035>.
- [7] N.M.A. Al Lagtah, S.A. Onaizi, A.B. Albadarin, F.A. Ghaith, M.I. Nour, Techno-economic analysis of the effects of heat integration and different carbon capture technologies on the performance of coal-based IGCC power plants, *Journal of Environmental Chemical Engineering* 7(6) (2019). <https://doi.org/10.1016/j.jece.2019.103471>.
- [8] S.N.H. Arifin, R.M.S. Radin Mohamed, A.A. Al-Gheethi, L.C. Wei, G. Yashni, N. Fitriani, M. Naushad, A.B. Albadarin, Modified TiO<sub>2</sub> nanotubes-zeolite composite photocatalyst: Characteristics, microstructure and applicability for degrading triclocarban, *Chemosphere* 287 (2022). <https://doi.org/10.1016/j.chemosphere.2021.132278>.
- [9] Y.N. Baghdadi, R.K. Shah, A.B. Albadarin, C. Mangwandi, Growth kinetics of nuclei formed from different binders and powders in vertical cylindrical mixing devices, *Chemical Engineering Research and Design* 132 (2018) 1070-1081. <https://doi.org/10.1016/j.cherd.2017.12.045>.
- [10] Y. Cao, A. Khan, M. Javan, M.T. Baei, E. Tazikeh-Lemeski, Z. Azmoodeh, A. Soltani, F. Heidari, M. Pishnamazi, A.B. Albadarin, Adsorption behavior of uracil on external surface of MgO nanotubes: A new class of hybrid nano-bio materials, *Journal of Molecular Liquids* 339 (2021). <https://doi.org/10.1016/j.molliq.2021.116732>.
- [11] Y. Cao, A. Khan, S. Sarkar, A.B. Albadarin, Extraction of penicillin G from aqueous solution using a membrane contactor: Numerical investigation, *Arabian Journal of Chemistry* 14(7) (2021). <https://doi.org/10.1016/j.arabjc.2021.103230>.
- [12] D.E. Crawford, C.K.G. Miskimmin, A.B. Albadarin, G. Walker, S.L. James, Organic synthesis by Twin Screw Extrusion (TSE): Continuous, scalable and solvent-free, *Green Chemistry* 19(6) (2017) 1507-1518. <https://doi.org/10.1039/c6gc03413f>.
- [13] M.T. Davis, D.P. Egan, M. Kuhs, A.B. Albadarin, C.S. Griffin, J.A. Collins, G.M. Walker, Amorphous solid dispersions of BCS class II drugs: A rational approach to solvent and polymer selection, *Chemical Engineering Research and Design* 110 (2016) 192-199. <https://doi.org/10.1016/j.cherd.2016.04.008>.
- [14] M.H. Dehghani, M. Mostofi, M. Alimohammadi, G. McKay, K. Yetilmezsoy, A.B. Albadarin, B. Heibati, M. AlGhouthi, N.M. Mubarak, J.N. Sahu, High-performance removal of toxic phenol by single-walled and multi-walled carbon nanotubes: Kinetics, adsorption, mechanism and optimization studies, *Journal of Industrial and Engineering Chemistry* 35 (2016) 63-74. <https://doi.org/10.1016/j.jiec.2015.12.010>.
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- [18] H.Y. Ismail, A.B. Albadarin, J. Iqbal, G.M. Walker, Image processing for detecting complete two-dimensional properties' distribution of granules produced in twin screw granulation, *International Journal of Pharmaceutics* 600 (2021). <https://doi.org/10.1016/j.ijpharm.2021.120472>.
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- [32] S. Solomon, J. Iqbal, A.B. Albadarin, Insights into the ameliorating ability of mesoporous silica in modulating drug release in ternary amorphous solid dispersion prepared by hot melt extrusion, *European Journal of Pharmaceutics and Biopharmaceutics* 165 (2021) 244-258. <https://doi.org/10.1016/j.ejpb.2021.04.017>.
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