Bashir M. Ghanim

Tripoli, Libya

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https://orcid.org/0000-0003-1179-7476

Education

- August 2014 to August 2018: **PhD in Chemistry**, Chemical Sciences Department, University of Limerick, Limerick, Ireland.
  PhD's thesis: Investigation of the effects of hydrothermal carbonisation process parameters on hydrochar properties and its applications, Supervisors: Prof. J.J. Leahy and Dr. Witold Kwapinski.

- August 2004 to August 2008: **MSc in Chemistry**, Libyan Academy, Tripoli, Libya.
  Master's thesis: Heavy metals in soil and vegetables produced in Ghaser ben Ghasher farms, Tripoli, Libya, Supervisor: Prof. Mohamed Almahabes.

- August 1990 to August 1994: **BSc in Chemistry**, Chemical Sciences Department, University of Tripoli, Tripoli, Libya.

Area of Interest

Thermochemical Conversion of Organic Materials (Biomass) to produce materials that can be used as:

- Fuel (Hydrochar, Biochar, Bio-Oil, Syngas).
- Absorbent (adsorption process).
- A source of some chemical and medical materials (aqueous phase).
- Organic Compost.
- Substrate for Microbial Production.

Area of Experience

- Thermal processes, hydrothermal carbonisation, Torrefaction and pyrolysis.
- Biomass, Biowaste and their products characterization.
- Nutrient measurement and recovery.
- Adsorption process, Generation of hydrochar and Biochar to use as adsorbent material.

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Analytical Techniques Experience

- Proximate and Ultimate Chemical analysis.
- Scanning Electron Microscopy.
- Fourier-Transform Infrared Spectroscopy.
- Surface Area and Porosimetry analysis.
- Elemental Analyser.
- Calorimeter Instrument.
- X-ray diffraction.
- Energy Dispersal X-ray analysis.
- Inductively Coupled Plasma metal analysis.
- X-ray Photoelectron Spectroscopy.

Publications

1. **B.M. Ghanim**, D.S. Pandey, W. Kwapinski, J.J. Leahy, Hydrothermal carbonisation of poultry litter: Effects of treatment temperature and residence time on yields and chemical properties of hydrochars, Bioresour. Technol. 216 (2016) 373–380. https://doi.org/10.1016/j.biortech.2016.05.087.

2. **B.M. Ghanim,** W. Kwapinski, J.J. Leahy, Hydrothermal carbonisation of poultry litter: Effects of initial pH on yields and chemical properties of hydrochars, Bioresour. Technol. 238 (2017) 78–85. https://doi.org/10.1016/j.biortech.2017.04.025.

3. **B.M. Ghanim,** W. Kwapinski, J.J. Leahy, Speciation of Nutrients in Hydrochar Produced from Hydrothermal Carbonization of Poultry Litter under Different Treatment Conditions, ACS Sustain. Chem. Eng. 6 (2018) 11265–11272. https://doi.org/10.1021/acssuschemeng.7b04768

4. H.Y. Ismail, S. Shirazian, I. Skoretska, O. Mynko, **B.M. Ghanim**, J.J. Leahy, G.M. Walker, W. Kwapinski, ANN-Kriging hybrid model for predicting carbon and inorganic phosphorus recovery in hydrothermal carbonization, Waste Manag. 85 (2019) 242–252. https://doi.org/10.1016/j.wasman.2018.12.044.

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5. J.G. Murnane, **B.M. Ghanim**, L. O'Donoghue, R. Courtney, T.F. O'Dwyer, J.T. Pembroke, Advances in Metal Recovery from Wastewaters Using Selected Biosorbent Materials and Constructed Wetland Systems, in: Wastewater Treat., IntechOpen, 2019. https://doi.org/10.5772/intechopen.84335

6. Willquist, K., J Murnane, S Reichel, E, Lönntoft, K Broberg, **B.M. Ghanim**, T.F O'Dwyer, R Kermer, S Pawar, J.T Pembroke (2019). Biomimic innovations for effective and selective metal recovery from complex waste matrixes. International Bio-hydrometalurgy Symposium Proceedings, Conference paper, iBS2019 Conference, Fukuoka, Japan Oct 22-23rd 2019.

7. **B.M. Ghanim**, J.G. Murnane, L. O'Donoghue, R. Courtney, J.T. Pembroke, T.F. O'Dwyer, Removal of vanadium from aqueous solution using a red mud modified saw dust biochar, J. Water Process Eng. 33 (2020) 101076. https://doi.org/10.1016/j.jwpe.2019.101076.

8. **B.M. Ghanim**, T.F. O'Dwyer, J.J. Leahy, K. Willquist, R. Courtney, J.T. Pembroke, J.G. Murnane, Application of KOH modified seaweed hydrochar as a biosorbent of Vanadium from aqueous solution: Characterisations, mechanisms and regeneration capacity, J. Environ. Chem. Eng. 8 (2020) 104176. https://doi.org/10.1016/j.jece.2020.104176.

9. J G Murnane, **B.M. Ghanim**, R Courtney, J Tony Pembroke, T F O'Dwyer, Quantification and characterization of metals in alkaline leachates and the potential for Vanadium adsorption using biochar and hydrochar, AIP Conf. Proc. 2441, 020003 (2021). https://doi.org/10.1063/5.0073172.

10. **B.M. Ghanim**, James J Leahy, Thomas F O'Dwyer, Witold Kwapinski, J Tony Pembroke and John G Murnane, Removal of hexavalent chromium (Cr(VI)) from aqueous solution using acid-modified poultry litter-derived hydrochar: adsorption, regeneration and reuse, Journal of Chemical Technology & Biotechnology (2022) 01. DOI: 10.1002/jctb.6904.

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11. Thomas F. O'Dwyer, **B.M. Ghanim**, Ronan Courtney, Ashlene Hudson, J. Tony Pembroke and John G. Murnane, Sustainable Treatment of Acidic and Alkaline Leachates from Mining and Industrial Activities: Current Practice and Future Perspectives, in: Wastewater Treat., IntechOpen, 2022. DOI: 10.5772/intechopen.103889

12. Mariana C. Santoro, **B.M. Ghanim**, Witold Kwapinski, James J. Leahy, and Jair C. C. Freitas, Solid-State NMR Study of Hydrochars Produced from Hydrothermal Carbonization of Poultry Litter, ACS Omega (2024). https://doi.org/10.1021/acsomega.4c02876.

Conferences

1. **B.M. Ghanim**, Kwapinski W, Leahy J. J, ***Poster:*** Hydrothermal carbonisation of poultry litter: Effects of treatment temperature and residence time on yields and chemical properties of hydrochars, 6th WasteEng2016 Conference, Albi, France, 23 - 26 May, 2016.

2. **B.M. Ghanim**, Kwapinski W, Leahy J. J, ***Poster:*** Hydrothermal carbonisation of poultry litter, EUBCE 2016 - 24th European Biomass Conference and Exhibition, Amsterdam, Northland, 6 - 9 June, 2016.

3. **B.M. Ghanim**, Kwapinski W, Leahy J. J, ***Poster:*** Hydrothermal carbonisation of poultry litter: Effects of initial pH on yields and chemical properties of Hydrochars, 7th WasteEng2018 Conference, Prague, Czech Republic, 2 - 5 July, 2018.

4. **B.M. Ghanim**, John Murnane, Lisa O'Donoghue, Ronan Courtney, Thomas F. O'Dwyer and J. Tony Pembroke, ***Poster:*** Innovative biotechnological methods for effective mining of secondary material, Geoscience 2018 Conference, Dublin, Ireland, November 6th, 2018.

5. Willquist, K., J Murnane, S Reichel, E, Lönntoft, K Broberg, **B.M. Ghanim**, T.F O'Dwyer, R Kermer, S Pawar, J.T Pembroke, ***Poster:*** Biomimic innovations for effective and selective metal recovery from complex waste matrixes. International Bio-hydrometalurgy Symposium Proceedings, iBS2019 Conference, Fukuoka, Japan Oct 22-23rd 2019.

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6. **B.M. Ghanim**, John Murnane, Ronan Courtney, Thomas F. O'Dwyer and J. Tony Pembroke, ***Poster:*** Vanadium recovery from red mud leachate via selective precipitation and adsorption to modified biochar, Geoscience 2019 Conference, Dublin, Ireland, November 5th, 2019.

7. A Horvat, **B.M. Ghanim,** Leahy J. J, S. Markussen, A. Brunsvik, K.F. Degnes, A. Wentzel, Hydrothermal Carbonisation Liquid by-product as a substrate for Microbial production of Poly Hydroxy Alkenoates (PHAs) 8th international Conference on Engineering for Waste and Biomass Valorisation, Guelph - Canada, 13 - 16 July 2020.

Work Experience

1. 1998 to 2009: **Researcher in Chemistry**, Chemical and Quality Control Laboratory, Alkalla Center of Industry, Tripoli, Libya.

2. February 2008 to September 2008: **Researcher in Chemistry**, Chemical and Quality Control Laboratory, Engineering, Faculty, University of Tripoli, Tripoli, Libya.

3. 2008 to 2009: **Lecturer in Chemistry** (Chemical Separation Methods, Spectrophotometric Methods), Sciences Faculty, Azawia University, Sabrata, Libya.

4. 2009 to 2013: **Lecturer in Chemistry**, The Higher Institute of Medical and Technical Sciences, Alzhra, Tripoli, Libya.

5. June 2018 to May 2020: **Postdoctoral Researcher**, EU Eramin 2 Biomic Project, Department of Chemical Sciences, University of Limerick, Ireland.

6. June 2020 to September 2021: **Postdoctoral Researcher**, EU Funder Project, Department of Chemical Sciences, University of Limerick, Ireland.

7. October 2021 to 2025: **Lecturer in Chemistry**, The Higher Institute of Medical and Technical Sciences, Alzhra, Tripoli, Libya.

Skills: Microsoft Word, PowerPoint, Excel, Origin.

Languages: Arabic (Mother tongue), English.