

## Dr. Ezzat Marzouk

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### QUALIFICATIONS

2008–2012	NOTTINGHAM UNIVERSITY /	PhD, Environmental Science. “Using multi-element stable isotope dilution to quantify metal reactivity in soil”.
2000- 2003	SUEZ CANAL UNIVERSITY/	MSc (Soil Sciences) Module included using organic wastes to reduce the environmental risk and solubilise P in calcareous soils.
1993-1996	SUEZ CANAL UNIVERSITY/	BSc (Hons), in Environmental Agricultural Sciences.

### WORK HISTORY

present	General Manger of University Development Centre, Arish University.
03/20- 11/20	Dean of institute of Environmental Studies, Arish University
09/17- 03/2020	Associate professor and Vice Dean of Post-Studies and Research and Head of the department of soil and water Sciences, Faculty of Environmental Agricultural Sciences, Arish University.
07/15- 09 /17	Lecturer and General Manager of Open Education program (Full Time). University of Suez Canal (currently Arish University), Faculty of Environmental Agricultural Sciences, Soil and Water Department, (Egypt).
07/13 - 06/15	Research Associate (Full Time) University of South Australia, CERAR. Working in an Australian Research Council (ARC) funded project titled "Functional characterisation of contaminant-nanoparticle associations".
04/12- 06/13	LECTURER(Full Time) University of Suez Canal University, Faculty of Environmental Agricultural Sciences, Soil and Water Department, (Egypt).
09/09 –12/09	PART TIME: STUDENT DEMONSTRATOR (UK) Acting as a demonstrator on BSc module (Year 3; Environmental Science department) ‘Environmental Measurements’. This involved chairing discussions, giving critical feedback and supervising the students during the lab works. (University of Nottingham)

07/08–05/11	<b>PART TIME: ASSISTANT TECHNICIAN (UK)</b> Work in the chemistry laboratory and responsible for pipette calibrations, organising lab staff, chemical preparation, isotopic ratio analysis using ICP-MS and dealing with different analyzing instruments. Also, I was responsible as a first aider for HF digestion process. (University of Nottingham)
04/03-01/08	<b>ASSISTANT LECTURER (Egypt)</b> Teaching practical courses of Analytical Chemistry, Microbiology, Physics & Meteorology, Geology and field studies to the undergraduate students (Arish University) - Studying my PhD during the last 4 years (01/2008-01/2012) at University of Nottingham.
03/99- 03/03	<b>DEMONSTRATOR (Egypt)</b> Teaching practical courses of Analytical Chemistry to the undergraduate students (Arish University) – taking my MSc.
08/97-02/99	<b>SOIL CHEMISTRY LABORATORY TECHNICIAN (Egypt)</b> Determine some physical and chemical properties of cultivated soils in NADECO Organic Farm.

## RESEARCH ACTIVITIES

### Recent works:

- Working in MSc and PhD projects as main and co-supervisors including: (i) assessment of underground water for drinking and irrigation purposes, (ii) impact of ZnO nanoparticles on plant growth, (iii) effect of Biochar on soil physicochemical properties, (iv) wheat root motivation and seed yield improvement using metal oxide nanoparticles and (v) environmental impact of using Cu nanoparticles in agricultural system.
- Working in a funded Australian Research Council (ARC) project, titled "Functional characterisation of contaminant-nanoparticle associations". Nanoparticles present in the environment modify the movement and toxicity of contaminants. The project targets key gaps that hinder our ability to predict the fate and behaviour of environmental contaminants; this will lead to the optimisation of legislative framework and the management/remediation of contaminated sites (e.g. minesites, landfills).
- I was also involved in developing methods to characterize nanoparticle materials. These include developing single particle ICP-MS protocol using ICP-QQQ (Agilent ICP-MS 8800) and synthetic nanoscale ZVI for the remediation of contaminated soils.
- Deputy Radiation Safety Officer at the Centre for Environmental Risk Assessment and Remediation.
- General Manager of central laboratories at Faculty of Environmental Agricultural Sciences, Arish University.
- The manger of Nanotechnology laboratory at Faculty of Environmental Agricultural Sciences, Arish University, I am responsible for establishing this new laboratory.

### The PhD Thesis:

- Developing a multi-element stable isotope dilution method using ICP-MS for simultaneous measurement of Fe, Zn, Cd, Ni, Cu and Pb lability in soils

- Isotopically labile metal pool was used as input to predict metal solubility, emphasising in the role of Fe under reducing conditions in this regard.
- Using the ferrous iron isotope to study anaerobic systems. Incorporating the isotopically exchangeable Fe as input variable to WHAM to model trace metal solubility under fluctuating redox condition.
- Using DGT in combination with stable isotope to investigate a straightforward measurement of labile metal concentration in the Chelex-100 layer of the DGT device, beside the ordinary measurement of the time-integrated concentrations of labile metal species provided by DGT.

#### **The MSc Thesis:**

- Study the effect of some organic residues on available phosphorus on calcareous sandy soils.

**BSc:** Studied Agricultural, Environmental and biological sciences.

<b>Teaching Experiences</b>		
<b>Institution</b>	<b>Courses</b>	<b>Level</b>
Arish University (02/12-06/13) and 2015 – present	Analytical chemistry	Year 1 Undergraduates
	Land reclamation	Year 3 Undergraduates
	Soil Science	Year 2 Undergraduates
	Case Study	Year 1&2 Undergraduates
	Fundamental Organic chemistry	Year 1 Undergraduates
	Environmental Health	Year 1 Undergraduates
	Environmental Challenges and solutions	Year 3 Undergraduates
University of South Australia (2013-2015)	Soil Science	Year 2 Undergraduates
University of Nottingham (from 09/2009 till 12/2009)	Environmental measurements	Year 3 Undergraduates
Suez Canal and Arish University (02/12-06/13) 2015-present	Soil chemistry (A & B)	
	Soil colloids	
	Land reclamation	Postgraduates (PhD & MSc)
	Plant nutrients	Postgraduates (MSc)
	Using radioactive isotopes	Postgraduates (PhD)
	Desertification	Postgraduates (PhD)
	Soil and water pollution	Postgraduates (PhD)
	Soil and water analysis	Postgraduates (MSc)
	Land reclamation	Year 3 Open University
	Secure disposal of toxic wastes	Year 3 Open University
		Year 2 Open University
		Year 2 Open University

#### **HIGHLIGHTED SKILLS AND OTHER ACITIVITIES**

### **Research and academic experiences and training courses:**

- Very good experience in using ICP-MS for measuring multi-element and isotopic ratio under different instrument conditions. I was responsible for providing a training session to the ICP-MS' new users. I have a good experience in the quadruple ICP-MS (Thermo Scientific X Series<sup>II</sup>, Agilent 7500c, Agilent 7500ce and Agilent QQQ 8800) troubleshoots and maintenances such as changing and cleaning nebulizer, sampler and skimmer cones, torch and lenses.
- Good knowledge in using ICP-MS coupled with HPLC for metal speciation including Size Exclusion Chromatography (SEC-ICP-MS).
- Good experience in using Ion Chromatograph, Spectrophotometer, TOC and DOC analyzers
- Good experience in metal speciation in soils and natural water using DGT, nano-DGT and DGT combined with multi-element stable isotope.
- Good experience in the field work including collecting environmental samples.
- Good experience in using geochemical speciation models such as WHAM(VI and VII) and in using statistical software such as Minitab.
- Contribute to the development and implementation of safe laboratory practices and SOP as required time to time for OHSW policies at the University of South Australia and Arish University.
- Certified Reviewer for Journal of Environmental Quality, Chemosphere and science of The Total Environment.
- Basic background in Australian Synchrotron XAS beamline operation procedures.
- Basic radiation protection course, South Australia Pathology, Adelaide, Australia, 17 April, 2014.
- Soft Skills training courses at University of Nottingham (UK), Suez Canal University (Egypt) and University of South Australia (Australia)..
- Supervision of student projects on BSc Environmental Agricultural Science.
- Co-supervisor for five PhD students ( two at University of South Australia and one PhD student at University of Nottingham and two at Arish University) 8 MSc students (Arish University).

### **International Collaboration**

- Research activities with professor **Enzo Lombi** group, Future Industry institute, University of South Australia, Australia; resulting in several international publications.
- Research activities with Professor **Scott Young** group, Faculty of Sciences, University of Nottingham, UK; resulting in several international publications.
- International Scientific network with different colleagues in Centre for Ecology and Hydrology Wallingford, UK; British geological survey, UK; Belgian Nuclear Research Centre, Belgium, University of Shanghai for Science and Technology, China; Jiangsu University, China and University of Manitoba, Canada.
- For more information, please visit [www.researchgate.net/profile/Ezzat\\_Marzouk](http://www.researchgate.net/profile/Ezzat_Marzouk)

### **Licences:**

- International Computer Driving Licence (ICDL, UNISCO, 2007)
- Handle and use unsealed radioactive substances (EPA, Australia, 2014& 2015)
- Clean driving licence (UK, and Egypt).

### **Professional memberships:**

- Australian Synchrotron.
- British Society of Soil Sciences

- Egyptian Society of Soil Sciences.
- Member of documents reviewers for promotion of associated professors (2018-2022)

#### **Awards:**

- Awarded 6 months academic visit to University of Nottingham starting on October 2019.
- Awarded as recognition reviewer for Chemosphere and Science of the total environment journals, October, 2017. Elsevier, Amsterdam.
- Awarded Associate professorship position with 95% of required points, Ministry of Higher Education and Scientific Research, (2017) Egypt.
- International scientific publication prize (2015 and 2016). Suez Canal University.
- Postdoctoral position for two years at University of South Australia funded by Australian Research Centre (2013 -2015).
- PhD scholarship from Egyptian government at University of Nottingham (2008 -2011)
- Award for best poster “Measuring the isotopically-exchangeable pool of Zn, Cd and Pb in contaminated soils using multi-element stable isotope dilution”, (Lancaster, UK, 7th – 8th Sep. 2010).

#### **Conferences, symposiums and workshop attendance:**

- Sports, nation culture. Physical Education's 4<sup>th</sup> international conference, Arish University. 11<sup>th</sup> to 13<sup>th</sup> April 2019. El-Ain El-Sokhna, Suez, Egypt.
- Building the Environmental Knowledge System and the Activation of the Awareness Strategy and the Response to Rural Environmental Hazards. 10<sup>th</sup> Conference for Agricultural Extension and Rural Development, 27<sup>th</sup> to 28<sup>th</sup> November 2018. Faculty of Agriculture Mansoura University, Egypt
- Development of Water and Soil Resources: Challenges and Solutions. The 12<sup>th</sup> International Conference of ESSS, 7-9 March **2016**, Ismailia, Egypt.
- Nanosafety workshop, 27<sup>th</sup> – 28<sup>th</sup> April **2015**, Jeffery Smart Building, University of South Australia, Adelaide, Australia.
- Nitrogen in Agriculture, 13<sup>th</sup> April, **2015**. Soil Science Australia. University of South Australia, Mawson Lakes Campus, Australia.
- Single particle ICP-MS workshop, School of Chemical and Physical Sciences, Flinders University and Perkin Elmer, 11th February 2015.
- Nanochemistry for life symposium, 3rd October **2014**, Hawke Building, University of South Australia, Australia.
- Soil contamination and remediation, SA branch symposium, Soil Science Australia, July 1<sup>st</sup>, **2014**, University of South Australia, Australia.
- Workshop on Nuclear Safety and Security in Academia and University Hospitals, New Central Library, Cairo University November 6 & 7, **2012**
- DGT and the Environment conference, 7th - 9th October, **2009**, Santa Margherita di Pula, Sardinia, Italy.
- Practical applications of Medical Geology conference, 19<sup>th</sup> -20<sup>th</sup> March **2009** British Geological Survey, UK.
- Impact of Analytical Innovation on Geochemical, Environmental, Exploration and Food Science. Geological Society, 15<sup>th</sup> July **2008**. Burlington House, London, UK
- The National Symposium on Biological Nitrogen Fixation in Mediterranean Basin (FABAMED) 10<sup>th</sup> -14<sup>th</sup> November **1999** North Sinai, Egypt

## LIST OF PUBLICATIONS

### International Journal Articles:

1. Shetaya, W. H., **Marzouk, E.R.**, M., Bailey, E. H. and Young, S. D. **2019**. Chemical and Isotopic Fractionation of Lead in the surface soils of Egypt. *Applied Geochemistry*, 106: 7-16. **Impact factor: 3.088**
2. Vasileiadis, V., Brunetti, G., **Marzouk, E.R.**, Wakelin, S., Lombi, E. and Donner, E. **2018**. Silver toxicity thresholds for multiple soil microbial biomarkers. *Environmental Science & Technology*, 2018, 52 (15): 8745–8755. **Impact factor: 6.198**
3. Shetaya, W. H., **Marzouk, E.R.**, Mohamed, E. F., Elkassas, M., Bailey, E. H. and Young, S. D. **2018**. Lead in Egyptian soils: Origin, reactivity and bioavailability measured by stable isotope dilution. *Science of The Total Environment*, 618, 460-468. **Impact factor: 4.90**
4. Sekine, R., **Marzouk, E.R.**, Khaksar, M., Scheckel, K., Stegemeier, J., Lowry, G., Donner, E., and Lombi, E. **2017**. Ageing of dissolved copper and copper-based nanoparticles in five different soils: short term kinetics vs long term fate. *Journal of Environmental Quality*, 46: 1198-1205. **Impact factor: 2.64**
5. Chekli, L., Brunetti, G., **Marzouk, E.R.**, Maoz-Shen, A., Smith, E., Naidu, R., Shon, H.K., Lombi, E. and Donner, E. **2016**. Evaluating the mobility of polymer-stabilised zero-valent iron nanoparticles and their potential to co-transport contaminants in intact soil cores. *Environmental Pollution* 216: 636-645. **Impact factor: 4.84**
6. Ivask, A., Visnapuu, M., Vallotton, P., **Marzouk, E.R.**, Lombi, E., Voelcker, N.H. **2016**. Quantitative multimodal analysis of silver nanoparticle-cell interactions: implications for cytotoxicity. *Nanoimpact*, 1: 29 – 38. **Impact factor: 5.04**
7. Yin, T.W, Sweetman, M.J., **Marzouk, E.R.**, Lombi, E., Fraser, C., Kuchel, T., Voelcker, N.H. **2016**. Towards a subcutaneous optical biosensor based on thermally hydrocarbonised porous silicon, *Biomaterials*, 74, 217-230. **Impact factor: 8.56**
8. Nazif, W., **Marzouk, E.R.**, Perveen, S, Crout, N.M.J., Young, S.D. **2015**. Zinc solubility and fixation in cultivated calcareous soils irrigated with wastewater. *Science of the Total Environment*. 518: 310-319. **Impact factor: 4.10**
9. Malysheva, A., Ivask, A., Hager, C., Brunetti, G., **Marzouk, E.R.**, Lombi, E., Voelcker, N.H. **2015**. Sorption of silver nanoparticles to laboratory plastic during (eco) toxicological testing. *Nanotoxicology*, 1-6. **Impact factor: 6.41**
10. **Marzouk, E.R.**, Chenery, S.R., Young, S.D., **2013**. Predicting the solubility and lability of Zn, Cd, and Pb in soils from a minespoil-contaminated catchment by stable isotopic exchange. *Geochimica et Cosmochimica Acta*, 123: 1-16. **Impact factor: 4.33**
11. **Marzouk, E.R.**, Chenery, S.R., Young, S.D., **2013**. Measuring reactive metal in soil: a comparison of multi-element isotopic dilution and chemical extraction. *European Journal of Soil Sciences*, 64: 526-536. **Impact factor: 3.43**

12. Chenery, S. R., Izquierdo, M., **Marzouk, E.**, Klinck, B., Palumbo, B., Tye, A. M. **2012**. Soil-plant interactions and the uptake of Pb at abandoned mining sites in the Rookhope catchment of the N. Pennines, UK – a Pb isotope study. *Science of the Total Environment*, 433:547-560. **Impact factor: 4.90**
13. **Marzouk E.R.**, Wang, P., Kopittke, P, Donner, E, Lombi, E. The role of soil suspended colloids on toxicity and bioavailability of copper to the plant roots. *In writing*.

### **Local publications (in Egyptian Journals)**

14. Radwan, N.M., **Marzouk, E.R.**, El-Melegy, A.M. and Hassan, M.A., 2020. Improving Soil Properties by Using Biochar Under Drainage Conditions in North Sinai. *Sinai Journal of Applied Sciences*, 9(2), pp.157-168.
15. El-Hameed, A., Hussien, H., Abdelmontaleb, A.A.B., **Marzouk, E.R.** and Abdo, M.R., 2020. Detection of land use/cover change in Ber El-Abd area, North Sinai, Egypt using remote sensing. *Sinai Journal of Applied Sciences*, 9(2), pp.183-190.
16. El-Hameed, A., Hussien, H., **Marzouk, E.R.**, Abdo, M.R. and Abdelmontaleb, A.A.B., 2020. Assessments of Environmental Sensitivity to Desertification in Ber El-Abd area, North Sinai, Egypt Using MEDALUS Model. *Sinai Journal of Applied Sciences*, 9(2), pp.169-182.
17. Ali, A.H., **Marzouk, E.R.** and Hassan, M.A., 2019. Influence Of Mineral Phosphate Fertilization on Accumulation of Cadmium in Soil. *Sinai Journal of Applied Sciences*, 8(2), pp.173-184.
18. **Marzouk, E.R.** **2017**. Soil-less seed germination and root growth of date palm affected by biochar and metal nanoparticles. *J. Soil Sci. and Agric. Eng., Mansoura Univ.*, 8 (2): 77-84.
19. **Marzouk, E.R.** **2017**. Effects of dissolved silver and silver Nanoparticle on soil microorganisms. *J. Soil and Water Sci., Suez Canal Univ.*, 3: 1-5.
20. **Marzouk, E.R.** **2017**. Assessing heavy metals speciation and their concentrations in vegetables grown on peri-urban soils. *J. Soil Sci. and Agric. Eng., Mansoura Univ.*, 8 (3): 93-100.
21. **Marzouk, E.R.** **2017**. Nickel, copper, zinc and cadmium fractionation in Mangrove sediments, Red Sea, Egypt. *Zagazig J. Agric. Res.*, 44 (2): 519-532.
22. El-Said, R., **Marzouk, E.R.**, Mohamed, W.K. and Hassam, M.A., 2017. Selenium status in some north sinai soils 1. Coastal area. *Sinai Journal of Applied Sciences*, 6(2), pp.171-180.
23. El-Said, R., **Marzouk, E.R.**, Mohamed, W.K. and Hassan, M.A., 2017. Selenium status in some north sinai soils 2. Inland area. *Sinai Journal of Applied Sciences*, 6(2), pp.181-192.
24. Hassan, M.A, Rabie,R.Kh., **Marzouk, E.R.** **2002**.Effect of some combination of organic wastes and biofertilizer on phosphorus availability in certain soils of North Sinai. *Zagazig J. Agric. Res.*, 29 (6), 116-129.

## Conference Abstracts

1. **MARZOUK, E.R.**, SHETAYA, W., Sakr, A and Badreldin, N (2016). The isotopic lability of Ni, Cu, Zn and Cd in terrestrial environment of Egypt. *Canadian Society of Soil Sciences, Pacific Regional Society of Soil Science Annual Meeting, 15 – 20 May 2016, British Columbia, Canada.*
2. **MARZOUK, E.R.**, SHETAYA, W., ELKASSAS, M., MOHAMED, E., BAILY, E., YOUNG, S.D. (2016). Bioavailability and source of lead in the terrestrial environment of Egypt. *European Geosciences Union, General Assembly, 17 – 22 April 2016, Vienna, Austria.*
3. **MARZOUK, E.R.**, DONNER, E, LOMBI, E. (2014). Isotopic lability of Cu-nano-particulate organic complexes in natural water. *SETA Asia/Pacific Conference; Advancing Science for a Sustainable Environment. 14 – 17 September 2014. Adelaide, South Australia, Australia.*
4. MAO, L., BAILEY, E.H., **MARZOUK, E.R.**, CHENERY, S.R., ANDER, E.L., YOUNG, S.D. (2014). Factors affecting lability of lead (Pb) in soil: insights from isotopic studies. *30<sup>th</sup> SEGH International Conference, 30 June to 4 July 2014, Northumbria University Newcastle upon Tyne, UK.*
5. **MARZOUK, E.R.**, CHENERY, S.R., YOUNG, S.D. (2011). Using multi-element stable isotope dilution to quantify metal reactivity in contaminated soils. 11th International Conference of Biogeochemistry of Trace Elements. 3-7 July. Florence, Italy.
6. CHENERY, S. R., IZQUIERDO, M., **MARZOUK, E.R.**, KLINCK, B., PALUMBO, B., TYE, A. M. (2010). The bioavailability of Pb, Zn and Cd in contaminated peats. *Geochemical Speciation and Bioavailability of Trace Elements Conference, 7th -8th Sep 2010 Lancaster University, UK.*
7. **MARZOUK, E. R.**, CHENERY, S. R. AND YOUNG, S. D. (2010). Measuring the isotopically-exchangeable pool of Zn, Cd and Pb in contaminated soils using multi-element stable isotope dilution. *Geochemical Speciation and Bioavailability of Trace Elements Conference, 7<sup>th</sup> -8<sup>th</sup> Sep 2010 Lancaster University, UK.*
8. **MARZOUK, E.R.**, CHENERY, S.R., YOUNG, S.D. (2009). Using multi-element stable isotope dilution to quantify metal lability in contaminated soils. Young Scientists meeting, British Society of Soil Sciences, 31<sup>st</sup> March to 1<sup>st</sup> April 2009, Reading University, UK.
9. RABIE, R. KH, HASSAN, M.A., **MARZOUK, E. R.** (2002). Effect of some organic waste mixtures on Barley plant growth and content of some nutrients in calcareous soils. *1<sup>st</sup> International Conference on Olive Cultivation Protection and Processing. 25-27 Sept. El-Arish, EGYPT.*