

# Mohammad Alrbaihat



## Contact

**Address:**

UAE, Ajman / Jordan- Amman.

**Nationality:**

Jordanian

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**Scopus Author ID:** 57201128989

**Web of Science Researcher ID:**

AAQ-5252-2020

## Languages

Arabic – Native

English – Excellent

French – Beginning

## Hobbies

- Research Writing
- Volleyball
- Chess

## Short Biography

Expert Trainer, Assessor, and Lecturer for chemistry have excellent experience in content development, Exams building, reviewing, and training of pedagogical and scientific topics, being Well-versed in numerous research themes, received my Ph.D. in Chemistry from the University of Jordan -Amman, Jordan, in 2018. Has major author and co-authored more than 20 refereed journal publications, and more than 10 International conferences, besides contributing to producing 4 book chapters. His research interests include materials synthesis, pharmaceuticals, analysis of solid materials, industrial crystallization, and Slow-release fertilizers

## Skill Highlights

- Training Management.
- Scientific Research.
- Video Recording.
- Leadership Skills.
- Content Development.
- Presentation Skills.
- Exams developer.

## Experience

### Chemistry and Science Teacher- 8/2005-8/2009

MOE, Jordan-Amman

- Responsible for teaching science–chemistry topics in MOE/ Jordan.
- Responsible for Designing plans, and preparing, MOE Chemistry Curriculum.
- Responsible for assessing MOE students (Assignments, Exams, Projects).

### Professional Master Trainer - 9/ 2009 till 11/2017

CADER Company, Amman

- Responsible for training teachers to integrate ICT tools with modern pedagogy and implementing them in their classrooms.
- Mentoring MOE teachers in implementing Pedagogical theories.
- Responsible for assessing MOE teachers (Class visits, Exams, Projects).
- Responsible for teaching ICT diploma conducted with Yarmouk University/ Irbid for scholarship teachers to empower their skills for ICT tools employment during teaching integrated with modern pedagogy.

## Experience

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### **Part-time lecturer & TA for chemistry, 2014- 2015**

**The University of Jordan**, Department of Chemistry, Amman

- Responsible for developing 105 General chemistry and Physical chemistry lab materials.
- Responsible for teaching physical chemistry and (105 and 106) general chemistry labs.
- Responsible for Mentoring and Supervising physical and (105, 106) general labs.
- Assessing students' worksheets, assignments, and exams.
- Responsible for preparing chemistry research papers.

### **Chemistry Training Specialist - 12/2017 till November 2020**

**MOE, Dubai**

- Team Leader of the New Teacher Program for designing, preparing, and assessing pedagogical training workshops.
- Team Leader of the Specialized Teacher Program for designing, preparing, and assessing chemistry training workshops.
- Responsible for the needs assessment of teachers and leaders.
- Build Training Framework, Plans, and Impact measuring tools.
- Responsible for Designing, preparing, and assessing training workshops.
- Designing, preparing, and assessing pedagogical training workshops, i.e. New Teacher Program (Lead & Team member).
- Responsible for training teachers on Chemical Topics integrated with modern pedagogical strategies.
- Responsible for preparing Chemical and pedagogical Research.

### **Training & Development Specialist - 12/2020 till 12/ 2023**

**ESE, Dubai**

- Responsible for Gap analysis and training need assessment for teachers and leaders (Team lead).
- Build Training Framework, Plans, and Impact measuring tools (Chemistry Pathway).
- Content Development and assessing pedagogical training workshops (more than 200 workshops).
- Training teachers on specialized topics in chemistry with an average of 50 training workshops.
- Responsible for Coaching and Mentoring of ESE teachers.
- Responsible for training teachers on Chemical Topics integrated with modern pedagogical strategies.
- Designing, preparing, and assessing pedagogical training workshops.

### **Assessment & Examination Specialist - Jan/2024 till now**

**ESE, Dubai**

- Responsible for the development of National chemistry exam items for Teacher License (TLS).
- Build MOE chemistry and science exams, and assessment plans.
- Assessing chemistry workshops and pedagogical training workshops.
- Responsible for Coaching and Mentoring of ESE teachers and students.

## Education

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- **PH. D in Chemistry-2018, Jordan University.**  
Dissertation title (Mechanochemical synthesis and application of a slow-release fertilizer based on Jordanian Kaolinite and Feldspar)
- **M.S in Chemistry-2009, Mu'tah University.**  
Thesis title (Synthesis and Conductance Study of Ammonium and Metal Ion Complexes with Several Crown Ethers in Acetonitrile)
- **Bachelor of Science: Chemistry – 2005, Mu'tah University.**

## Research Statement

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- I am working on the following research topics: STEM Education, Mechanochemical activation of solid materials, Inorganic Membranes and ceramics, Micro polymers, pharmaceuticals, Environmental Research, Industrial crystallization, Kinetics, Nanoparticles, Fertilizers, and Solid particulates.

## Teaching Statement

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- I can teach in Chemistry, Chemical Eng., Pharmaceutical, Medicine, & Agricultural departments. I can teach the following topics: Chemistry 1 & 2, Physical Chemistry, Organic Chemistry, Natural Materials, Organometallic Chemistry, Nanomaterials, Clinical Chemistry, Computer Applications in Chemistry, Chemical Instrumental Analysis, Pharmaceutical Organic Chemistry, Analytical Chemistry, Inorganic Chemistry, Spectroscopy, Heterocyclic compounds.

## Publications

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1. Ehab AlShamaileh, **Mohammad R. Alrbaihat**, Aiman Eid Al-Rawajfeh, Mechanochemical Synthesis of Slow-Release Fertilizers: A Review (2017), The Open Agriculture Journal, 12, 11-19. (**Scopus Q2**)
2. Ehab AlShamaileh, Bety Al-Saqarat, **Mohammad R. Alrbaihat**, Aiman Eid Al-Rawajfeh, Beatrix Udvardi, An FTIR Spectroscopic Study of a Novel kaolinite NPK Mixtures: (2019), The Journal of Engineering science and Computing, Vol.1.
3. Aiman Eid Al-Rawajfeh, **Mohammad R. Alrbaihat**, Ehab AlShamaileh, Clean and Efficient Synthesis Using Mechanochemistry: Preparation of Kaolinite -  $\text{KH}_2\text{PO}_4$  and Kaolinite- $(\text{NH}_4)_2\text{HPO}_4$  Complexes as Slow Released Fertilizer, (2019), Journal of Industrial and Engineering Chemistry (**Scopus Q1** and Clarivate).
4. Ehab AlShamaileh, **Mohammad R. Alrbaihat**, Aiman Eid Al-Rawajfeh., Solid-state mechanochemical synthesis of Kaolinite-Urea complexes for Application as Slow Released Fertilizer, Journal of Ecological Engineering, (2019) Vol 20.267-276. (Clarivate, **Scopus Q2**).
5. Aiman Eid Al-Rawajfeh, **Mohammad R. Alrbaihat**, Ehab AlShamaileh, Effects of Milling Time and Speed on Nutrient Availability of  $\text{KH}_2\text{PO}_4$  with kaolinite as Physical Type Slow/Controlled Release Fertilizers, Jordan Journal of Chemistry, Volume 15, Number 2, 2020, Pages 51-59. (**Clarivate**)

2021

6. **Mohammad R. Alrbaihat**, Ehab AlShamaileh, Aiman Eid Al-Rawajfeh, A Mechanochemical Preparation, Properties and Kinetic Study of Kaolin-N, P Fertilizers for Agricultural Applications, 2021, Journal of the Mechanical Behavior of Materials. (Clarivate & Scopus Q2).

2022

7. **Mohammad R. Alrbaihat**, Feras Al-Zeidaneen, Qusay Abu-Afifeh, Reviews of Kinetics of Mechanochemistry: Theoretical and Modeling Aspects, *Materials Today: Proceedings*, 2022. <https://doi.org/10.1016/j.matpr.2022.06.195>. (Scopus Q3).
8. **Mohammad R. Alrbaihat**, 2022, A Review of Size Reduction Techniques Using Mechanochemistry Approach. *Egyptian Journal of Chemistry*, DOI: [10.21608/ejchem.2021.105136.4848](https://doi.org/10.21608/ejchem.2021.105136.4848). (Clarivate & Scopus Q3).
9. **Mohammad R. Alrbaihat**, Agricultural Nano Fertilizers: Macronutrient Types and Applications Review. In: Karkush, M., Choudhury, D., Han, J. (eds) Current Trends in Geotechnical Engineering and Construction. ICGECI 2022. Springer, Singapore. [https://doi.org/10.1007/978-981-19-7358-1\\_26](https://doi.org/10.1007/978-981-19-7358-1_26).
10. **Mohammad R. Alrbaihat**, Ehab AlShamaileh, 2022, Mechanochemistry's role in Nonsteroidal Anti-inflammatory Drugs Development: A review, BOHR International Journal of General and Internal Medicine, [https://bohrpub.com/journals/BIJGIM/BIJGIM\\_20221105](https://bohrpub.com/journals/BIJGIM/BIJGIM_20221105).
11. **Mohammad R. Alrbaihat**, 2022, Ehab AlShamaileh, Aiman Eid Al-Rawajfeh, Environmentally friendly synthesis of Feldspar-KH<sub>2</sub>PO<sub>4</sub> complexes by mechanochemical reaction, BOHR International Journal of Material Sciences and Engineering, [https://www.bohrpub.com/journals/BIJMSE/BIJMSE\\_20221101](https://www.bohrpub.com/journals/BIJMSE/BIJMSE_20221101).
12. AlShamaileh, E.; **Alrbaihat, M.**; Moosa, I.; Abu-Afifeh, Q.; Al-Fayyad, H.; Hamadneh, I.; Al-Rawajfeh, A. Preparation of K<sub>2</sub>SO<sub>4</sub>-Kaolinite slow-release fertilizer via mechanochemistry. *Agronomy* 2022, 12, 3016. <https://doi.org/10.3390/agronomy12123016>. (Scopus Q1 and Clarivate)
13. **Mohammad R. Alrbaihat**, Aiman Eid Al-Rawajfeh, Ehab AlShamaileh. (2022). Physio-Chemical Preparation of Slow-Release Potassium Fertilizers. *Journal of Biotechnology Research Center*, 16(02), 31-38. <http://doi.org/10.24126/10.1234/jbrc.633>.

14. **Mohammad R. Alrbaihat**, 2023, Mechanochemical Synthesis of Dendrimers as Drug Delivery Nanocarriers: A Review, *Advanced Materials Research*, Vol. 1175, pp 37-46. <https://doi.org/10.4028/p-a610b7>.
15. Muhammad Ashram, Shehadeh A. Mized, Abdel Monem Rawashdeh, **Mohammad R. Al-Rbaihat**., Synthesis of thiadiamidocrown ethers and a thermodynamic study of their complexation with some transition metal ions using DFT calculations and conductometric method in acetonitrile., *Journal of Sulfur Chemistry*, <https://doi.org/10.1080/17415993.2023.2202797> (**Scopus Q2**)
16. **Mohammad R. Alrbaihat**, FT-IR Spectroscopy Key Features for Characterization of 1:1 layer silicate mineral: A Review, 2023. *AIP Conference Proceedings* 2806, 030002 (2023) <https://doi.org/10.1063/5.0162801>, (**Scopus Q3**).
17. **Mohammad R. Alrbaihat**, Qusay Abu-Afifeh, Eco-friendly Microplastic Removal Through Physical and Chemical Techniques: A Review., *Ann Adv Chem.* 2023; 7: 014-024. [DOI: 10.29328/journal.aac.1001038](https://doi.org/10.29328/journal.aac.1001038).
18. **Mohammad R. Alrbaihat**, (Dec-2023), A Review of Solid State Mechanochemistry for Drug Synthesis and Modification, *AIP proceedings*, DOI: [10.1063/5.0161815](https://doi.org/10.1063/5.0161815), (**Scopus Q3**).
19. **Alrbaihat, Mohammad**; Abu-Afifeh, Qusay; and Al-Zeidaneen, Firas (2023) "Chemically Responsive Hydrogels, Properties, Pharmaceuticals, and Agricultural Applications: A Review," *Al-Bahir Journal for Engineering and Pure Sciences*: Vol. 2: Iss. 2, Article 6. Available at: <https://doi.org/10.55810/2312-5721.1023>.
20. **Alrbaihat, M. R.** (2023). Mechanochemical Synthesis of Host-Guest Inclusion Complexes of Cyclodextrin: A Review. *Biomedicine and Chemical Sciences*, 2(2), 102–108. <https://doi.org/10.48112/bcs.v2i2.287>.
21. **Alrbaihat, M. R.**, Al-Rawajfeh, A. E., & Al Shamaileh, E. (2023, September). Physico-chemical preparation of slow-release potassium fertilizers. In *AIP Conference Proceedings* (Vol. 2845, No. 1). (**Scopus Q3**).
22. **Mohammad R. Alrbaihat**, Agricultural Applications of Nanocomposites Superabsorbent Polymers: A Review, (2023), *Journal of Physical & Chemical Research*. DOI: <https://doi.org/10.58452/jpcr.v2i2.166>.

**2024**

23. **Mohammad R. Alrbaihat, Ehab AlShamaileh., 2024, Structural** study of the chemically synthesized lead sulfide nanoparticles in comparison with the natural Galena, *geosciences* (**Accepted-Scopus Q1**).
24. **Mohammad R. Alrbaihat, 2024, Carbon Capture by Carbonaceous Materials and Nanomaterials., Elsevier** book, *Reference Module in Earth Systems and Environmental Sciences*. <https://doi.org/10.1016/B978-0-323-93940-9.00223-1>.

## Manuscripts in preparation/submitted for review.

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- Mohammad R. Alrbaihat, Catalytic transformations based on a Continuous flow mechanochemistry: Future Prospective (Submitted).
- Mohammad R. Alrbaihat, Agricultural Applications of Nanocomposites Superabsorbent Polymers: A Review (Submitted).
- Mohammad R. Alrbaihat, Feras Al-Zeidaneen, Green solid-state Mechanochemical synthesis of silver nanoparticles: and their antimicrobial activities: A Mini Review (Submitted).
- Mohammad R. Alrbaihat, Mechanochemically Based Solid-State Diels-Alder reaction: A Mini Review (Submitted).
- Mohammad R. Alrbaihat, using biochar for stabilization and solidification in a green and sustainable manner (Submitted).

## Book Chapters

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- F.B Lewu Tatiana Volova Sabu Thomas K R Rakhimol., **Mohammad. Al-rbaihat.**, Ehab AlShamaileh., Aiman Eid Al-Rawajfeh; *Controlled Release Fertilizers for Sustainable Agriculture 1<sup>st</sup> Edition*, (2020) **Paperback ISBN: 9780128195550.**
- Ghada A.Al Bazed, Aiman Eid Al-Rawajfeh, Mona A. Abdel-Fatah, **Mohammad R. Alrbaihat**, Ehab AlShamaileh, (2021), Synthesis of nanomaterials by mechanochemistry. In *Handbook of Greener Synthesis of Nanomaterials and Compounds* (pp. 405-418). Elsevier, 1st Edition, **ISBN: 978-0-12-821938-6.**
- **Mohammad R. Alrbaihat**, Qusay Abu-Afifeh, Hazardous Effects of Heavy Metals Contaminated in Water on Humans: Toxicity and Remediation Review, (Proceedings of the II International Biology Congress 2022, ISBN: 9786057169907).
- **Mohammad R. Alrbaihat, 2023**, Release of Toxic Substances in Disasters of Oil, Gas, and Petrochemical Units, Elsevier book, *Crises in Oil, Gas and Petrochemical Industries*. <https://doi.org/10.1016/B978-0-323-95154-8.00018-9>.
- **Mohammad R. Alrbaihat, 2024**, Carbon Capture by Carbonaceous Materials and Nanomaterials., Elsevier book, *Reference Module in Earth Systems and Environmental Sciences*. <https://doi.org/10.1016/B978-0-323-93940-9.00223-1>.

## Awards and Honors

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- 1st prize as the Best Paper Context "Chemistry from Khalil Al Salim for Scientific Research Corporation in "Applied Chemistry on Plant Production, nutrition, and Food Processing Field, on 21 December 2019, Jordan.

## Professional Development

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- NEPOSH certificate in Managing system, IIRSM, 2023.
- Highfields Level 4 International Award in HACCP Management for Catering, 2023.
- KPI Training Course, King Suad University, November 2022.
- Strategies for Proficiency in English, University of Samarra, November 2022.
- A Guide to Published, Emerald Publishing, Online workshop, April 2022.
- Measuring research performance for researchers and universities, Online - Feb. 2022.
- Conference skills for researchers, Elsevier, Online course- Jan 2022.
- Charisma and Acoustic Engineering, Online course- May 2022.

- Mobile Learning. Strategies and applications, Saudi Electronic University, 12 April 2021.
- Certified-Peer-Reviewer-Course-Certificate, Elsevier, Online course- March 2021.
- Certified -Peer-Reviewed Course, Publons Academy, Web of Science-July 2020.
- Designing Scientific Content for The Digital Curriculum, Online workshop, Aug-2020.
- Academic writing and publishing, King Khaled University, Online Training, KSA, June 2020.
- Wellbeing And Resilience at Work, University of Leeds and Institute of Coding, May 2020.
- Writing and Publishing research paper, Udemy, Online course- May 2020.
- E-Learning & USA Accreditation, MIDWAY University, Online workshop- May 2020.
- Learning Assessor (Level 3), November 2019, ACTVET Corporation, Abu Dhabi- UAE.
- TOT-Composite Award in facilitating learning and Development (Level 4), ACTVET, UAE, 2019.
- CYBER C3 certificate, MOE/Teacher Training Institute, Ajman- UAE, June 2019.
- Certified Trainer and Assessor for STReaM Program, MOE & STEM Academy, Ajman- UAE, Dec 2018.
- Instruction and Facilitating Techniques, MOE/Teacher Training Institute, Ajman- UAE, December 2017.
- Training in Netherland - Inholland University on time management, (TOT), Dec 2009-Feb 2010.
- Certificate in International Computer Driving License (ICDL), Amman, Jordan, April 2009.
- Certificate in Analytical Chromatography – Chemistry Lab/Mu'tah University, July 2008.

## **Memberships to Learning Societies**

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- American Chemical Society, (ACS).
- Jordanian Chemical Society, (JCS).
- UAE Chemical Society (UCA).
- Society of Chemical Industry, <https://www.soci.org/>.

## **Prepared Courses and Programs**

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- Pedagogical Courses - **Consultant / Trainer**
  - Training of Trainers (T.O.T).
  - Teacher Licensed Materials.
  - Modern Teaching and Assessment Strategies.
  - Education Quality and excellence.
- Chemistry Courses - **Consultant / Lecturer**
  - General Chem., 101 &102.
  - Organic Chemistry 1 &2
  - Inorganic chemistry.
  - Physical chemistry
  - Analytical chemistry.
  - HPLC, GC, MS, NMR, Oil Crude Courses.
- Pharmaceutical Courses- **Lecturer**
  - Pharmaceutical Chemistry
  - Organic pharmaceutical
  - Pharma- Kinetics.

## Paper Peer Reviewed for the Following Journals:

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- Journal of the Turkish Chemical Society Section A: Chemistry (Q2).
- **Molecules**, MDPI Journal (Q1)
- **Symmetry**, MDPI Journal (Q1)
- Egyptian Journal of Chemistry (Q3).
- Journal of Tropical Life Science (Q2).
- Scientific.net publisher for materials science and engineering Journals (Q2).
- Reviewer for Special Issue of Academics Syndicate 2nd International Conference for Pure and Applied Sciences (IICPS), Babylon, Iraq on 14-15 November 2021.
- Reviewer for the chemistry section at the 2nd International Conference for Engineering Sciences and Information Technology (ESIT 2022), Alanbar University, Iraq.
- Reviewer for chemistry section in the 2nd International Conference on Advances in Engineering Sciences and Technology AEST 2022), Babylon University, Iraq.

## Conferences

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- **Mohammad R. Alrbaihat**, Green solid-state Mechanochemical synthesis of silver nanoparticles: and their antimicrobial activities: A Mini Review, 6th International Conference of Engineering Sciences, Ankara Yildirim beyazit University, Ankara, Türkiye, 3-4 Feb 2023.
- **Mohammad R. Alrbaihat**, Mechanochemical Synthesis of Dendrimers as Drug Delivery Nanocarriers: A Review, 5th International Conference on Materials Engineering & Science, Istanbul Topkapi University, Istanbul, Türkiye, 22-23 August 2022.
- **Mohammad R. Alrbaihat**, Ehab AlShamaileh, Aiman Eid Al-Rawajfeh, 3<sup>rd</sup> International Virtual Conference” of Biotechnology Research Center / University of Al-Nahrain, Iraq, 26-27 July 2022.
- **Mohammad R. Alrbaihat**, Hazardous Effects of Heavy Metals Contaminated in Water on Humans: Toxicity and Remediation Review, II. International Biology Congress held in Kyrgyz-Turkish Manas University, Turkey, from 18-20, May 2022, Oral presentation.
- **Mohammad R. Alrbaihat**, Feras Al-Zeidaneen, Qusay Abu-Afifeh, Reviews of Kinetics of Mechanochemistry: Theoretical and Modeling Aspects, International Conference on Materials Science and Sustainable Manufacturing Technology (ICMSSMT), India, 20-21, May 2022, Oral presentation.
- **Mohammad R. Alrbaihat**, Agricultural Nano fertilizers: Macronutrient types and applications Review, Third International Conference on Geotechnical Engineering-IRAQ, May 2022. Oral presentation.
- **Mohammad R. Alrbaihat**, A Review of Size Reduction Techniques Using Mechanochemistry Approach, The Hybrid 9th Jordan International Chemical Engineering Conference, Jordan, 2021.
- The 2<sup>nd</sup> international conference Al-Nahrain Nano Renewable Energy Research Center, 12-13 July 2021.
- **Mohammad R. Alrbaihat**, A Review of Solid State Mechanochemistry for Drug Synthesis and Modification, Iraqi Academics Syndicate 2nd International Conference for Pure and Applied Sciences(IICPS), Babylon, Iraq, 2021.
- Nanotechnology, application, and Future Prospects, Samaraa University, 4-5 June 2020.
- First Scientific International Virtual Agricultural Conference” College of Agriculture/ University of Al-Qadisiya, Iraq, May 31 –June 1, 2020.

## References

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- Prof. Ehab M. AlShamaileh - Department of Chemistry, The University of Jordan, Amman 11942, Jordan, Email: ehab@ju.edu.jo., Tel: 00962 795164252.
- Prof. Mansour Almatarneh - Department of Chemistry, The University of Jordan, Amman 11942, Jordan, Email: m.almatarneh@ju.edu.jo, 00962790182748.