

Roaa Mogharbel
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Department of Chemistry, Northern Border University
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Education

- Doctor of Philosophy (Industrial and Environment Chemistry): Dec 2018, University of Central Florida, Orlando FL., USA, Research Advisor: Cherie L. Yestrebky.
- Master of Science in Chemistry, Dec 2013, Florida Institute of Technology, Melbourne, USA
- Bachelor of Chemistry, May 2008, Taibah University, Madinah, KSA. Graduated with First-Class Honors, GPA 3.8/4.0

Employment History

- Associate Professor of Analytical Chemistry, Northern Border University (Jun 2024 – Present)
- Vice Dean of College of Engineering (Female Section), Northern Border University (Mar 2023 – Present)
- Head of Chemistry Department (Department Chair), Northern Border University (Aug 2021 – May 2024)
- Associate Chair of Chemistry Department, Northern Border University (Aug 2019 – Jul 2021)
- Assistant Professor of Analytical Chemistry, Northern Border University (May 2019 – Present)
- Lecturer, Northern Border University (Jan 2019 – May 2019)
- Chemistry Teacher, 35th High School, Madinah, Saudi Arabia, (Feb 2007 – Apr 2007)
- General Science Teacher, Al-Abnaa Secondary School, Tabuk, Saudi Arabia, (Sep 2006 – Dec 2006)

Research Interests

Combining chemical and engineering approaches for the remediation of groundwater, surface water, soil, and sediments. Studying the fate and transport of metals and organic/inorganic chemical species in aqueous and sedimentary environments. Exploring nanomaterials and nanoparticles with a focus on their properties, characterization, and environmental applications in pollution control and remediation.

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Publications:

Mogharbel, R. T., Alaysuy, O., S Alatawi, I. S., Alshammari, N. M., Sallam, S., Almutairi, A. M., ... & El-Metwaly, N. M. (2025). Fabrication of Cerium Metal–Organic Frameworks Functionalized with Glutamic Acid for Adsorption of Basic Red 46 from Aqueous Solutions: Kinetics, Thermodynamics, and Optimization. *ACS omega*, 10(15), 15096-15115.

Tahar, L. B., **Mogharbel, R.**, Hameed, Y., Noubigh, A., Abualreish, M. J. A. A. E., Alanazi, A. H., & Hatshan, M. R. (2025). Enhanced removal of the crystal violet dye from aqueous medium using tripolyphosphate–functionalized Zn–substituted magnetite nanoparticles. *Results in Chemistry*, 14, 102152.

Guetat, A., Selmi, S., Abdelwahab, A. T., Abdelfattah, M. A., Elhaj, A. E. M., **Mogharbel, R. T.**, ... & Boulila, A. (2025). *Salvia deserti* Decne., an endemic and rare subshrub from Arabian desert: antidiabetic and antihyperlipidemic effects of leaf hydroethanolic extracts. *Frontiers in Pharmacology*, 16, 1537071

Alkhatib, F., Al-Ghamdi, S. A., Alatawi, N. M., Munshi, A. M., Almotairy, A. R., **Mogharbel, R. T.**, ... & El-Metwaly, N. M. (2025). Technical viscose textiles treated with Ln-metal organic framework: photochromic/UV-Protective/Antimicrobial potentiality. *Fibers and Polymers*, 26(2), 621-637.

Mogharbel, R., Tahar, L. B., Hameed, Y., Almutairi, A. M., Aldossari, S. A., & Hatshan, M. R. (2024). Microwave-Assisted Synthesis of SDS-Functionalized Maghemite Nanoparticles with Enhanced Efficiency for the Adsorptive Removal of Methylene Blue Dye. *Chemistry Africa*, 7(10), 5429-5459.

Alghasham, H. A., Alzahrani, S. O., Alfi, A. A., Alkhamis, K. M., Alaysuy, O., **Mogharbel, R. T.**, ... & El-Metwaly, N. M. (2024). TiO₂-MWCNTs/PVDF: Photophysical properties, photocatalytic activity, and recycling in industrial effluent wastewater treatment by different photocatalytic sources. *Journal of Water Process Engineering*, 65, 105905.

Mogharbel, R. T., Alkhamis, K., Felaly, R., El-Desouky, M. G., El-Bindary, A. A., El-Metwaly, N. M., & El-Bindary, M. A. (2024). Superior adsorption and removal of industrial dye from aqueous solution via magnetic silver metal-organic framework nanocomposite. *Environmental Technology*, 45(13), 2558-2574.

Snari, R. M., Alessa, H., Alessa, A. H., Alanazi, K. D., **Mogharbel, R. T.**, Al-Ahmed, Z. A., ... & El-Metwaly, N. M. (2024). Novel disposable screen-printed sensors based on copper oxide nanoparticles for sensitive voltammetric assay of antazoline. *Microchemical Journal*, 201, 110702.

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Mogharbel, R. T., Al-Hossainy, A. F., & Ibrahim, S. M. (2024). TD-DFT calculation, equilibrium and kinetic adsorption study of removal of rose bengal dye by poly vinyl alcohol as a synthetic polymer adsorbent hybrid blend. *Journal of Molecular Structure*, 1300, 137261.

Al-Bonayan, A. M., Alrefaee, S. H., Alessa, H., Sayqal, A., Aljuhani, E. H., **Mogharbel, R. T.**, ... & El-Metwaly, N. M. (2024). Inkjet-Printed Sensors Based on Nanoferrite-Doped Manganese Oxide Nanoparticles for the Sensitive Differential Pulse Voltammetric Determination of Brimonidine. *ACS omega*, 9(5), 5386-5394.

Mogharbel, R., Tahar, L. B., Huili, H., & Grindi, B. (2024). Ultrasmall Cu-substituted NiZn ferrite nanoparticles: efficiency for the removal of the alizarin red S dye and reusability. *Arabian Journal for Science and Engineering*, 49(1), 311-337.

Mogharbel, R. T., Alkhamis, K., Sallam, S., Munshi, A. M., Alshareef, M., Alhasani, M., ... & El-Metwaly, N. M. (2023). Preparation of color-tunable electrospun cellulose acetate-polycaprolactone nanofibrous film for information encryption. *Journal of Applied Polymer Science*, 140(44), e54631.

Noubigh, A., Abualreish, M. J., **Mogharbel, R. T.**, Alanazi, A. F., Alanazi, T. S., & Guetat, A. (2023). Solubility measurement of syringic acid, trans-cinnamic acid, p-coumaric acid, and vanillin constituent of Deverra DC. genus in (ethyl acetate+ ethyl alcohol) mixtures: Thermodynamic modeling and preferential solvation. *Journal of Molecular Liquids*, 387, 122710.

Mogharbel, R. T., Al-Hossainy, A. F., Qasim, E. A., Wahman, A. Y., Farhan, N., & Ibrahim, S. M. (2023). Spectroscopic, kinetics and molecular structure investigations of acriflavine hydrochloride dye onto thiobarbituric acid nanoblend TD-DFT calculations: Removal of dyes from wastewater applications. *Journal of Molecular Liquids*, 386, 122491.

Mogharbel, R. T., Aljohani, M. M., Alorabi, A. Q., Al-bonayan, A. M., Abumelha, H. M., Habeebullah, T. M., ... & El-Metwaly, N. M. (2023). Post-synthetic Ln@ modified MIL (Ti) framework in sono-photocatalysis degradation of carbaryl. *Materials Chemistry and Physics*, 305, 127990.

Mogharbel, R. T., Almahri, A., Alaysuy, O., Alzahrani, S. O., Alorabi, A. Q., Al-Qahtani, S. D., & El-Metwaly, N. M. (2023). Preparation of photochromic solution blow spun polycarbonate nanofibers from recycled plastic for optical anticounterfeiting. *Optical Materials*, 141, 113936.

Mogharbel, R. T., Almahri, A., Alaysuy, O., Alzahrani, S. O., Alorabi, A. Q., Al-Qahtani, S. D., & El-Metwaly, N. M. (2023). Preparation of photochromic solution blow spun polycarbonate nanofibers from recycled plastic for optical anticounterfeiting. *Optical Materials*, 141, 113936.

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El-Rayyes, A., **Mogharbel, R. T.**, Abdel-Rhman, M. H., Ismail, M. A., & Abdel-Latif, E. (2023). Molecular geometry and biological activity of 2-(4-substituted-phenylimino) thiazolidin-4-one compounds. *Bulletin of the Chemical Society of Ethiopia*, 37(5), 1275-1286.

Abd El-Aal, M., **Mogharbel, R. T.**, Ibrahim, A., Almutlaq, N., Zoromba, M. S., Al-Hossainy, A. F., & Ibrahim, S. M. (2022). Synthesis, characterization, and photosensitizer applications for dye-based on ZrO₂-acri flavine nanocomposite thin film [ZrO₂+ ACF] C. *Journal of Molecular Structure*, 1250, 131827.

Al-Hossainy, A. A., Ibrahim, A., **Mogharbel, R. T.**, & Ibrahim, S. M. (2021). Synthesis of novel keto-bromothymol blue in different media using oxidation–reduction reactions: combined experimental and DFT-TDDFT computational studies. *Chemical Papers*, 75(7), 3103-3118.

Mogharbel, R., Liu, M., Zou, S., & Yestrebky, C. (2019). Degradation and statistical optimization of 3, 5, 6-trichloro-2-pyridinol by zero valent iron-activated persulfate. *Korean Journal of Chemical Engineering*, 36(4), 540-550.

Conference Presentations:

Alandejani, J., Almadani, F., Alrumih, A., Alruwaili, A., Hamed, A., & **Mogharbel, R.** (2023). Instructors' Experiences of Implementing First-Year Seminars in Saudi Arabia. Paper presented at the Assessment Institute in Indianapolis, Indianapolis, IN, USA.

Mogharbel, R., & Yestrebky, C. (2018). Oxidation of 3,5,6-Trichloro-2-Pyridinol by Zero Valent Iron (ZVI) Activated Persulfate. Sci-mix: Advanced Materials, Technologies, Systems & Processes. The 255th ACS National Meeting & Exposition, New Orleans, LA, United States. ENVR 596.

Mogharbel, R., & Yestrebky, C. (2018). Oxidation of 3,5,6-Trichloro-2-Pyridinol by Zero Valent Iron (ZVI) Activated Persulfate. The 255th ACS National Meeting & Exposition, New Orleans, LA, United States. ENVR 596.

Mogharbel, R., & Yestrebky, C. (2018). Zero Valent Iron (ZVI) Activation of Persulfate (PS) for Oxidation of 3,5,6-Trichloro-2-Pyridinol.” Environmental Chemistry Session. The 94th Florida Annual Meeting and Exposition. Palm Harbor, FL, United States.

Mogharbel, R., Zullo, F., & Yestrebky, C. (2017). Oxidation of 3,5,6-trichloro-2-pyridinol by heat-activated persulfate.” Sci-mix: Advanced Materials, Technologies, Systems & Processes. 253th American Chemical Society National Meeting and Exposition. San Francisco, CA. ENVR 801.

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Mogharbel, R., Zullo. F., & Yestrebsky, C. (2017). Oxidation of 3,5,6-trichloro-2-pyridinol by heat-activated persulfate.” The 253th American Chemical Society National Meeting and Exposition. San Francisco, CA. ENVR 801.

Mogharbel, R., Zullo. F., & Yestrebsky, C. (2017). Heat-activated persulfate oxidation of 3,5,6-trichloro-2-pyridinol. Florida Academy of Sciences Annual Meeting. Lakeland, FL.