

Ahmad A. L. Ahmad, Ph.D. Chemistry

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Google Scholar: <https://scholar.google.com/citations?user=RxRIK0kAAAAJ&hl>

EDUCATION

Ph.D. in Chemistry, University of Maine, USA **2022**

Thesis Title: Synthesis and evaluation of water-dispersed aryl-gold nanoparticles and applications in catalysis

Co-Advisor: Prof. Mitchell R. M. Bruce, Co-Advisor: Prof. Alice E. Bruce.

M.Sc. In Applied Chemistry, Jordan University of Science and Technology, Jordan **2011**

Thesis Title: "Synthesis and Characterization of Novel Composites Based on Porous Silicon interpenetrated with polyaniline /Cu-Sn Sulfides and their Application in Photovoltaic Solar Cell".

Advisor: Prof. Isam M. Arafa, Co-Advisor: Prof. Hasan M. El Ghanem

B.Sc. In Applied Chemistry, Jordan University of Science and Technology, Jordan **2007**

PROFESSIONAL EXPERIENCE

Vice Dean, Technical College, Jadara University, Irbid, Jordan. **Oct. 2025 - Present**

Assistant Professor, Chemistry and Pharmaceutical Manufacturing Department, Technical College, Jadara University, Irbid, Jordan. **Oct. 2025 - Present**

Postdoctoral Research Associate, Advanced Structures and Composites Center, University of Maine, Orono, Maine, USA. **2022 - 2025**

Part-Time General Chemistry Instructor, Department of Chemistry, University of Maine, Orono, Maine, USA. **2025**

Part-Time PFAS Quality Assurance Chemist II, Department of Health and Human Services, Maine Center for Disease Control and Prevention, Augusta, Maine, USA. **2024 - 2025**

Research Assistant, Bruce's Research Group, University of Maine, Orono, Maine, USA. **2021–2022**

Part-Time General Chemistry Instructor, Department of Chemistry, University of Maine, Orono, Maine, USA. **2022–2022**

Teaching Assistant, Department of Chemistry, University of Maine, Orono, Maine, USA. **2017–2021**

Chemistry Lecturer in Department of Chemistry, University of Sharjah, United Arab Emirates. **2014 –2017**

Research Assistant, Scientific Research Center, Knowledge Sector / Royal Scientific Society (RSS), Amman-Jordan.	2011–2014
Part Time Teacher, Chemistry Department, Jordan University of Science and Technology (JUST), Irbid-Jordan.	2011–2011
Part Time Teacher, Basic Science Department, Jordan Academy for Maritime Studies (JAMS), Amman-Jordan.	2010–2011
Teaching Assistant, Chemistry Department, Jordan University of Science and Technology (JUST), Irbid-Jordan.	2008-2010
Quality Control Manager in Quality and Development Section, The Arab Company for Manufacturing Veterinary & Agricultural Products Ltd. (ARVET), Irbid-Jordan.	2007– 2008

REFEREED PUBLICATIONS

- 1) Ahmed Hijazi, Qusa-i Al-Sarayrah, Abdelrahman Malkawi, Hassan Abul-Futouh, Ziyad Taha, Deeb Taher, Osama Abusara, Ahmad Daraosheh, **Ahmad A. L. Ahmad**, Waleed Al-Momani. Improved Syntheses, Crystal Structures Analysis, DFT Calculation, Anticancer and Antibacterial Properties of Some 4-(Benzylamino)benzoic Acid Derivatives. *ACS Omega*, **2025**, 10, 38, 43719–43734. (Q1)
DOI: [10.1021/acsomega.5c03898](https://doi.org/10.1021/acsomega.5c03898)
- 2) Peter V Kelly, S. Shams Es-haghi, **Ahmad A. L. Ahmad**, Meghan E Lamm, Katie Copenhaver, Elif Alyamac-Seydibeyoglu, Soydan Ozcan, Douglas J Gardner, William M Gramlich. High-Strength 3D Printed Poly(lactic acid) Composites Reinforced by Shear-Aligned Polymer-Grafted Cellulose Nanofibrils. *RSC Appl. Polym.*, **2025**, 3, 111-124.
DOI: [10.1039/D4LP00283K](https://doi.org/10.1039/D4LP00283K)
- 3) **Ahmad A. L. Ahmad**, Siamak Shams Es-haghi, William M. Gramlich. Enhancing Poly(lactic acid) Composites with Polymer-Modified Bleached Softwood Kraft Pulp Before and After Fibrillation. *ACS Appl. Polym. Mater.* **2024**, 6, 20, 12575-12584. (Q1)
DOI: [10.1021/acsapm.4c02149](https://doi.org/10.1021/acsapm.4c02149)
- 4) **Ahmad A. L. Ahmad**, William M. Gramlich. Methacrylate and Polymer Grafting Pulp Pretreatments Reduce Refining Energy to Produce Modified Cellulose Nanofibrils. *Cellulose*, **2024**, 31, 2865-2880. (Q1)
DOI: [10.1007/s10570-024-05796-x](https://doi.org/10.1007/s10570-024-05796-x)
- 5) Hathaithep Senkum, Peter V. Kelly, **Ahmad A. L. Ahmad**, Siamak Shams Es-haghi, William M. Gramlich. Strengthening polylactic acid (PLA) composites with poly(methyl methacrylate)-functionalized cellulose nanofibrils created through grafting-through emulsion polymerization. *RSC Appl. Polym.*, **2024**, 2, 224-237.
DOI: [10.1039/D3LP00248A](https://doi.org/10.1039/D3LP00248A)
- 6) Mitchell R. M. Bruce, Alice E. Bruce, Sarah E. Bernard, Andrew N. Bergeron, **Ahmad A. L. Ahmad**, Timothy A. Bruce, Duwage C. Perera, Shyam Pokhrel, Sfoog Saleh, Anna Tyrina, and Sudheera Yaparathne. Designing a Remote, Synchronous, Hands-On General Chemistry Lab Course. *J. Chem. Educ.* **2021**, 98, 10, 3131–3142. (Q2)
DOI: [10.1021/acs.jchemed.1c00559](https://doi.org/10.1021/acs.jchemed.1c00559)
- 7) **Ahmad A. L. Ahmad**, Javad Basil Marutheri Parambath, Pavel S. Postnikov, Olga Guselnikova, Mohamed Mehdi Chehimi, Mitchell R. M. Bruce, Alice E. Bruce, and Ahmed A. Mohamed. Conceptual Developments of Aryldiazonium Salts as Modifiers for Gold Colloids and Surfaces. *Langmuir* **2021**, 37, 30, 8897-8907. (Q1)
DOI: [10.1021/acs.langmuir.1c00884](https://doi.org/10.1021/acs.langmuir.1c00884)

- 8) Saeed Almheiri, **Ahmad A. L. Ahmad**, Benjamin Le Droumaguet, Rémy Pires, Mohamed M. Chehimi, Ahmed A. Mohamed. Spontaneous redox route for gold-aryl film development of latent fingerprints on nickel coins. *Surf. Interface Anal.* **2021**, 53, 543-549. (Q2)
DOI: [10.1002/sia.6941](https://doi.org/10.1002/sia.6941)
- 9) Ayoub M. Ghrair, Adi J. Said, Naela Aldaoud, Riham Miqdadi, **Ahmad A. L. Ahmad**. Characterisation and Reverse Engineering of Eco-friendly Historical Mortar: Qasr Tuba, Desert Castles in Jordan. *J. Ecol. Eng.* **2021**, 22(3), 121–134.
DOI: [10.12911/22998993/132608](https://doi.org/10.12911/22998993/132608)
- 10) **Ahmad A. L. Ahmad**, Bizuneh Workie and Ahmed A. Mohamed. Diazonium Gold Salts as Novel Surface Modifiers: What Have We Learned So Far?. *Surfaces* **2020**, 3(2), 182-196.
DOI: [10.3390/surfaces3020014](https://doi.org/10.3390/surfaces3020014)
- 11) Saeed Almheiri, **Ahmad A. L. Ahmad**, Benjamin Le Droumaguet, Rémy Pires, Ahmed Mohamed and Mohamed Mehdi Chehimi. Developed Latent Fingerprints via Aryldiazonium Tetrachloroaurate Salts on Copper Surfaces: An XPS Study. *Langmuir* **2020**, 36, 1, 74-83. (Q1)
DOI: [10.1021/acs.langmuir.9b03390](https://doi.org/10.1021/acs.langmuir.9b03390)
- 12) **Ahmad A. L. Ahmad**, Seema Panicker, Mohamed M. Chehimi, Miguel Monge, Jose M. Lopez-de-Luzuriaga, Ahmed A. Mohamed, Alice E. Bruce and Mitchell R. M. Bruce. Synthesis of water-soluble gold–aryl nanoparticles with distinct catalytic performance in the reduction of the environmental pollutant 4-nitrophenol. *Catal. Sci. Technol.*, **2019**, 9, 6059-6071. (Q2)
DOI: [10.1039/C9CY01402K](https://doi.org/10.1039/C9CY01402K)
- 13) **Ahmad A. L. Ahmad**, Ali H. Alawadhi, Jason Park, Hanan E. Abdou, and Ahmed A. Mohamed. Evaluation of diazonium gold(III) salts in forensic chemistry: Latent fingerprint development on metal surfaces. *Forensic Chemistry*, **2019**, 13, 100144. (Q1)
DOI: [10.1016/j.forc.2019.100144](https://doi.org/10.1016/j.forc.2019.100144)
- 14) **Ahmad Lafi**, Ihsan Shehadi, Mohamed El Naggar, Hussain Alawadhi, Hanan E. Abdou, and Ahmed A. Mohamed. Forensic nanotechnology: engineering polyaniline nanocomposites for latent fingerprints development. *Journal of Nanoscience and Nanotechnology*. **2017**, 17(5): 2865–2872.
DOI: [10.1166/jnn.2017.13971](https://doi.org/10.1166/jnn.2017.13971)
- 15) Da'san M.M. Jaradat, Ayoub M. Ghrair, Jameel S.A. Alhesan, **Ahmad L. Ahmad**, Mahmoud S.O. Alia, Abdalhadi F. Lafi. An efficient sorbent for phosphate removal from wastewater: a new application of phosphate mine wastes from Ruseifa City—Jordan. *Desalination and Water Treatment*, **2016**, 57(21): 9914-9924. (Q3)
DOI: [10.1080/19443994.2015.1033472](https://doi.org/10.1080/19443994.2015.1033472)
- 16) Akl M. Awwad, Borhan Albiss, **Ahmad L. Ahmad**. Green synthesis, characterization and optical properties of zinc oxide nanosheets using Oleaeuropea leaf extract. *Advanced Materials Letters*. **2014**, 5(9): 520-524.
DOI: [10.5185/amlett.2014.5575](https://doi.org/10.5185/amlett.2014.5575)
- 17) Akl M. Awwad, **Ahmad L. Ahmad**. Biosynthesis, characterization, and optical properties of magnesium hydroxide and oxide nanoflakes using *Citrus limon* leaf extract. *Arab Journal of Physical Chemistry*. **2014**, 1(2): 65-70.
- 18) Akl M. Awwad, **Ahmad L. Ahmad**. Kinetic and thermodynamics of biosorption Ni(II) ions from electroplating wastewater onto *Sophora Japonica* seeds powder. *Arab Journal of Physical Chemistry*. **2014**, 1(2): 24-31.
- 19) Ayoub M. Ghrair, Adi J. Said, Nailah Al-Dawood, Riham Miqdadi, **Ahmad L. Ahmad**, Amer Souleman. Characterization and reverse engineering of historical original mortar of Qaser Tuba, Jordan Desert Castles. *Conference: 11th SESAME Users' Meeting*, **2013**, Amman-Jordan.

- 20) Isam M. Arafa, Hassan M. El-Ghanem, **Ahmad Lafi Ahmad**. Photoconductivity and photovoltaic properties of polyaniline immobilized onto metallurgical porous silicon powder. *Polymer International*, **2013**, 62(9): 1283-1292. (Q2)
DOI: [10.1002/pi.4418](https://doi.org/10.1002/pi.4418)
- 21) Nidá M. Salem, **Ahmad L. Ahmad**, Akl M. Awwad. New route for synthesis magnetite nanoparticles from ferrous ions and *Pistachio* leaf extract. *Nanoscience and Nanotechnology*, **2013**, 3(3): 48-51.
DOI: [10.5923/j.nn.20130303.03](https://doi.org/10.5923/j.nn.20130303.03)
- 22) Ahlam M. Farhan, Nidá M. Salem, **Ahmad L. Ahmad**, Akl M. Awwad. Kinetic, equilibrium and thermodynamic studies of the biosorption of heavy metals by *Ceratonia siliqua* bark. *American Journal of Chemistry*, **2012**; 2(6): 335-342.
DOI: [10.5923/j.chemistry.20120206.07](https://doi.org/10.5923/j.chemistry.20120206.07)

BOOK CHAPTERS

S.Z. Mukhtar, S.S. Sayyar, **A. A. L. Ahmad** & A. A. Mohamed. Nanotechnology in Food Packaging. In *Advances in Biopolymers for Food Science and Technology*; K. Pal, P. Sarkar, M. Cerqueira; Elsevier, **2024**; 371-390.
DOI: [10.1016/B978-0-443-19005-6.00015-3](https://doi.org/10.1016/B978-0-443-19005-6.00015-3)

Ahmad A. L. Ahmad & Ahmed A. Mohamed. Artificial Intelligence and Machine Learning Techniques in the Diagnosis of Type I Diabetes: Case Studies. In *Artificial Intelligence and Autoimmune Diseases*; Khalid Raza, Surender Singh; Springer, Singapore, **2024**; 289-302.
DOI: [10.1007/978-981-99-9029-0_14](https://doi.org/10.1007/978-981-99-9029-0_14)

Ahmad A. L. Ahmad, Javad B. M. Parambath, & Ahmed A. Mohamed. Chapter 17 - Green Synthesis of Microbial Nanoparticles. In *Microbial products for future industrialization*; Angana Sarkar, Idris A. Ahmed; Springer, Singapore, **2023**.
DOI: [10.1007/978-981-99-1737-2_17](https://doi.org/10.1007/978-981-99-1737-2_17)

Parambath, J. B. M.; Abila, F.; **Ahmad, A. A. L.**; Kanan, S. M. & Mohamed, A. A. Chapter 19 - Biocatalysts for Biofuels Production. In *Bioenergy Engineering*; Shadangi, K. P., Sarangi, P. K., Mohanty, K., Deniz, I., Kiran Gollakota, A. R., Eds.; Woodhead Publishing, **2023**; 409-425.
DOI: [10.1016/B978-0-323-98363-1.00005-3](https://doi.org/10.1016/B978-0-323-98363-1.00005-3)

RESEARCH INTEREST

- Cellulose nanofibrils modification and their usage in 3D printing.
- Fabrication of gold-aryl nanoparticles via aryldiazonium gold salts.
- Gold materials modification for energy applications.
- Forensic nanotechnology in fingerprint detection and development.
- X-ray crystallography of small molecules.

RESEARCH PROJECTS

- *Effects of an Aqueous Surface Modification via a Grafting-Through Polymerization Approach on the Fibrillation and Drying of Bleached Softwood Kraft Pulp*, University of Maine, USA (**2022-2025**).
- *Effect of Synthetic Parameters on Size and Catalytic Activity of Water-Dispersed Gold-Aryl Nanoparticles*, University of Maine, USA (**2021-2022**).
- *Synthesis and Evaluation of Water-Soluble Aryl-Gold Nanoparticles and Applications in Catalysis*, University of Maine, USA (**2018-2021**).

- *Spontaneous Redox Route for Gold-Aryl Film Development of Latent Fingerprints on Copper and Nickel Surfaces*, University of Sharjah, UAE (2017).
- *Latent Fingerprint Development on Metal Surfaces Using Aryl Diazonium Gold(III) Salts*, University of Sharjah, UAE (2017).
- *Synthesis Mortar and Plaster Composites Same as Roman and Islamic Period Building to applied in green Building Structure (The Royal Botanic Garden of Jordan) as Long-Term Building*, Amman, Jordan (2013).
- *Novel and Modified Mixtures of Concrete and Mortar Using Jordanian Bentonite as Waterproofing and Low-Cost Construction Materials*, Amman, Jordan (2012).
- *Using Dams Sediments for Produce Thermal Bricks and Increase the Jordanian Dams Capacity*, Amman, Jordan (2012).
- *Innovation of a Grey Water Filter in Gore-Deir Alla Using Jordanian Natural Resources*, Amman, Jordan (2012).
- *Determine Heavy Metals Concentration in Jordanian Bread*, Amman, Jordan (2011).
- *Consultation for Petroleum samples extracted from Jordanian shale rocks*, Amman, Jordan (2011).
- *Extraction of Heavy Metals from Fly Ash Producing from Burning Fuel in Electrical Stations*, Amman, Jordan (2011).
- *Study the Toxicity of Synthetic and Natural Nanomaterials*, Amman, Jordan (2011).

TEACHING, MENTORING AND CURRICULAR CONTRIBUTIONS

- | | |
|---|---|
| - University of Maine | <ul style="list-style-type: none"> ▪ General Chemistry I (CHY121) ▪ General Chemistry Laboratory I (CHY123) ▪ General Chemistry Laboratory II (CHY124) ▪ Chemistry for Civil, Electrical and Mechanical Engineers Lab (CHY133) |
| - University of Sharjah | <ul style="list-style-type: none"> ▪ General Chemistry 1 Lab (1420102) ▪ General Chemistry 2 Lab (1420104) ▪ General Chemistry Lab for Medical Students (1427118) ▪ General Chemistry Lab for Health Sciences Students (1426115) ▪ Analytical Chemistry Lab (1420222) ▪ Inorganic Chemistry Lab (1420333) |
| - Jordan Academy for Maritime Studies | <ul style="list-style-type: none"> ▪ Fundamental Chemistry Course. ▪ General Chemistry Course. ▪ Engineering Chemistry Course. |
| - Jordan University of Science and Technology | <ul style="list-style-type: none"> ▪ Chemical Laboratory Technique (Chem. 107) |

TEACHING SYSTEMS AND SOFTWARE

- The FIG-MLA Program (strengthening instruction and learning outcomes in undergraduate STEM courses by using more active learning and learning assistants).
- Brightspace site.
- Mastering Chemistry and Pearson e-text (general chemistry course).

INSTRUMENTS AND TECHNICAL SKILLS

- Single crystal x-ray crystallography; crystallization, mounting, measurement, and structure refinement by SHELX and OLEX software for publication quality.
- Spectroscopic characterization; XRD, XPS, TGA, DSC, SEM, TEM, NMR, FTIR, Raman, UV-Vis, Morfi.
- Analysis and separation: HPLC-MS, GC-MS, inverse gas chromatography (iGC), Particle Size Analysis, Zetasizer, SEC.

TRAINING COURSES

- *X-Ray and Sealed Source Refresher, Safety and Environmental Management*, University of Maine, Orono, Maine – USA. **Sep. 2021.**
- *Identifying Non-Conformities, Root Cause Analysis & Implementing Corrective/Preventive actions*, Royal Scientific Society - Jordan. **Dec. 2012.**
- *Quality Management Systems Requirements of ISO 9001:2008 Standard*, Royal Scientific Society - Jordan. **Nov. 2012.**
- *Interpretation of the Management and Technical Requirements of ISO/IEC 17025:2005 Standard*, Royal Scientific Society – Jordan. **Oct. 2012.**
- *Chemical Safety and Security Workshop*, Jordan University of Science and Technology - Jordan. **Apr. 2009.**
- *Training in Analytical Research Department /Al Hikma Company for Pharmaceuticals* - Jordan. **Feb.-Apr. 2007.**

CONFERENCE AND PRESENTATIONS

Presentation: Fibrillated bleached softwood kraft pulp modified via grafting-through polymerization, *ACS Spring 2023*, Indianapolis, IN, USA, **March 26th, 2023.**

Poster: Effect of synthetic parameters on size and catalytic activity of water-dispersed gold-aryl nanoparticles, *University of Maine Student Symposium*, Orono, Maine, USA, **Apr. 15th, 2022.**

Poster: Synthesis, characterization, and electrochemical interaction of phosphine gold (I) thiolate compounds with ferrocene, *the ACS spring 2021 National Meeting*, USA, **Mar. 2021.**

Poster- INOR 462: Robust water-soluble gold-carbon nanoparticles as a catalyst for the reduction of 4-nitrophenol, *the 256th ACS National Meeting in Boston*, Massachusetts, USA, **Aug. 19th, 2018.**

Poster- 721: Robust water-soluble gold-carbon nanoparticles as a catalyst for the reduction of 4-nitrophenol, *University of Maine Student Symposium*, Bangor, Maine, USA, **Apr. 17th, 2018.**

AWARDS

Outstanding Graduating Student in College of Liberal Arts and Sciences, University of Maine, Orono, Maine, USA, **Academic Year 2021 -2022.**

Outstanding Graduating Student award, Graduate Student Government, University of Maine, Orono, Maine, USA, **Year 2022.**

The Outstanding Teaching Assistant in General Chemistry Award, Department of Chemistry, University of Maine, Orono, Maine, USA, **Academic Year 2018 -2019.**