Curriculum vitae

Afnan Al-Hunaiti

Associate Professor

University of Jordan, School of Science, Department of Chemistry, Amman, Jordan
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Personal Information

Full name: Afnan Al-Hunaiti
Nationality: Jordanian / Finnish
Gender: Female
Spoken languages: Arabic, English, and Finnish
ORCID ID: 0000-0002-0241-6435
Scopus: h-index = 14 (ID: 36655347500), about 550 citations.
Scholar.Google: h-index = 15; i10-index = 21, about 637 citations
https://scholar.google.com/citations?hl=en&user=biG2ZAkAAAAJ
Researchgate: https://www.researchgate.net/profile/Afnan-Al-Hunaiti

Research interests: Catalysis (inorganic complexes) and organocatalyst, Development of new oxidation catalysts, Biomemic metabolic enzymes, machine learning catalysis applications, Anti-cancer drug delivery system, Environmental inorganic chemistry and atmospheric catalysis.

Academic Qualifications (*earned degrees were based on English language*)

Degree	Years	Field / Subject	Institution	Title of Thesis
Ph.D.	2008 – 2015	Catalysis oxidation-reduction (Inorganic Chemistry)	University of Helsinki, Department of Chemistry, Laboratory of Inorganic Chemistry, Helsinki, Finland	*Oxidation of Fine Chemicals by Iron Based and Metal-Free Catalysis*
M.Sc.	2007 – 2008	Organic Chemistry	University of Helsinki, Department of Chemistry, Laboratory of Organic Chemistry, Helsinki, Finland	*5,6-Disubstituted Pyrimidine Nucleosides synthesis*
B.Sc.	2003 – 2007	Chemistry	University of Helsinki, Department of Chemistry, Laboratory of Organic Chemistry, Helsinki, Finland	

Scientific Training

Period	Course / Workshop	Organizer	Location
2015 Oct 10	*In-situ* UV-vis	Agilant and University of Helsinki	Helsinki, Finland
2015 Feb 12 – 13	*In-situ* FT-IR	Agilant and University of Helsinki	Helsinki, Finland
2010 Sep 23 – 44	Agilant Company, HPLC Training Course	Agilant and University of Helsinki	Helsinki, Finland
2008 Oct 13 – 14	Perch software training course (NMR Data analysis software), CSC	CSC – IT Center for Science	Helsinki, Finland
2007 Mar 31 – Apr 1	Agilant Company,GC_MS Training Course	Agilant and University of Helsinki	Helsinki, Finland

Posts, Titles and Experience

	Title / Position	Institution	Duties
Since 2020	Associate Professor	University of Jordan School of Science Department of Chemistry Amman, Jordan	*Teaching* *Research* *Student supervision*
2018 Feb – 2020 Jan	Assistant Professor	University of Jordan School of Science Department of Chemistry Amman, Jordan	*Teaching* *Research* *Student supervision*
2016 Feb – 2018 Jan	Assistant Professor	University of Petra Faculty of Art and Sciences Department of Chemistry Amman, Jordan	*Teaching* *Research* *Student supervision*
2008 Jun – 2015 Dec	Research Assistant	University of Helsinki, Department of Chemistry, Laboratory of Inorganic Chemistry, Helsinki, Finland	*Research Projects*
2007 Jun – 2008 May	Research Assistant	University of Helsinki, Department of Chemistry, Laboratory of Organic Chemistry, Helsinki, Finland	*M.Sc. research*
2001 May – Sep	Research Assistant	University of Hashemite, Department of Allied Health Science Zarqa, Jordan	*Preparing laboratory samples, research projects*
2000 May – Sep	Research Assistant	University of Hashemite, Department of Allied Health Science Zarqa, Jordan	*Preparing laboratory samples, research projects*

Research and Scientific Visits

Period	Host	Financial Support
2024 Feb – Current	Aalto University, School of Chemical Technology, Department of Inorganic Materials Chemistry, Nanochemistry and Nanoengineering, Otaniemi Campus, Espoo, Finland	University of Jordan
2010 Jul 19 – Aug 13	Technical University of Munich, Inorganic laboratory, Munich, Germany	DAAD
2010 Jun 6 – 11	University of Jyväskylä, Department of Chemistry, Laboratory of Organic Chemistry, Jyväskylä, Finland	University of Helsinki
2009 Apr 10 – 20	University of Jyväskylä, Department of Chemistry, Laboratory of Organic Chemistry, Jyväskylä, Finland	University of Helsinki

Instrumentations

I have gained long-term experience and attended training courses on:

- NMR maintenance, user and analyst.
- SPR user and analyst
- Microfluidics user
- Electron spinning coating user.
- Spin coating user.
- GC-MS maintenance, user and analyst.
- ESI-MS user and analyst.
- HPLC maintenance, user and analyst.
- P-XRD user and analysis.

Funded Research Projects

2022-2024: "*Photocatalytic water splitting using magnetic nanoparticles coated by SBA-15 and graphene oxide*". Funded by the Deanship of Scientific Research, the University of Jordan (total amount **20200 kJD (27 k€)**).

2021-2023: "*Rosmarinic acid and doxorubicine drug delivery and antitumor effect*". Funded by the Scientific Research Fund Support, Ministry of Higher Education, Jordan (PI, total amount **~54 kJD (74 k€)**).

2021-2023: "siRNA drug delivery and antitumor effect". Funded by the Scientific Research Fund Support, Ministry of Higher Education, Jordan (Co-PI, total amount **~35 kJD (47 k€)**).

2020–2022: "Synthesis and development of iron oxide nanoparticles for oxidation of alkanes". Funded by the Deanship of Scientific Research, the University of Jordan (total amount **5 kJD (7 k€)**).

2019–2022: "Photocatalytic synthesis and development of MFe_2O_4 nanoparticles for VOC oxidation". Funded by the Deanship of Scientific Research, the University of Jordan (total amount **19 kJD (26 k€)**).

2016–2018: "An oxido acetate bridge mixed valent iron complexes as model of catechol dioxygenase and its aspects toward C-H activation". Funded by the University of Petra (total amount **5 kJD (7 k€)**).

2016–2018: "Extraction, identification, characterization and biological activity of calotrpis procera". Funded by the University of Petra (total amount **2.2 kJD (3 k€)**).

1.1.Students supervision

Student	Degree	Period	Institution	Role
Miss Shatha Qudsi	M.Sc.	2022 – 2023	University of Jordan School of Medicine Department of Toxicology and Forensic Sciences	Co-Supervisor
Miss Juman Hiasat	M.Sc.	2021 – 2022	University of Jordan School of Pharmacy Department of Pharmacology	Co-Supervisor
Miss Isra Alidwan	M.Sc.	2021 – current	University of Jordan School of Engineering Department of Chemical Engineering	Co-Supervisor
Miss Afnan Hijazi	M.Sc.	2022 – 2023	University of Jordan School of Science Department of Physics	Co-Supervisor
Miss Aseel Bakkar		2022 – 2023		Co-Supervisor
Miss Sumaiah Bader		2022 – current		Co-Supervisor
Miss Wa'ad Owais		2022 – 2023		Co-Supervisor
Mr. Safwan Okeili		2021 – 2022		Co-Supervisor
Mr. Ibrahim Daraghmeh		2021 – 2022		Co-Supervisor
Miss. Asma Abu Salek		2020 – 2022		Co-Supervisor
Miss Raneen Mohammad	M.Sc.	2022 – 2023	University of Jordan School of Science Department of Biology	Co-Supervisor
Miss Asma Zuben		2020 – 2021		Co-Supervisor
Mrs. Lina Halawani	M.Sc.	2018 – 2019	Jordan University of Science and Technology Faculty of Science and Arts Department of Chemistry	Co-Supervisor

List of Publications

Theses & Monographs

Ph.D. Thesis, 2015 (expected): "*Oxidation of Fine Chemicals by Iron Based and Metal-Free Catalysis.*" *University of Helsinki, Department of Chemistry, Laboratory of Inorganic Chemistry, Helsinki, Finland.*

M.Sc. Thesis, 2008: "*5,6-Disubstituted Pyrimidine Nucleosides synthesis.*" *University of Helsinki, Department of Chemistry, Laboratory of Organic Chemistry, Helsinki, Finland.*

Curriculum vitae

Articles Published in Peer Reviewed Journals

In submission

[1] Al-Hunaiti A, Ghazzy A, Abu-Thiab T, Saeed R, Taha M, Hwaitat E, Imraish A. Bio Inspired Chitosan-Based Trimetallic Cu0.5Zn0.5FeO4 Nanoparticles: Preparation, Characterization and Anti-Cancer Activity.

[2] Al-Hunaiti A, Hamaydah M, Al-Shawabkeh R. Green Synthesis of Magnetic TiO2-NiFe2O4-Chitosan Nanoparticles for the Applications in Photocatalytic Degradation of Methyl Blue Dye in Wastew

[3] Al-Hunaiti A, Zihlif M, Abu Thiab T, Al-Awaida W, Al-Ameer HJ, Imraish A. Novel magnetic nanoparticle-based combination therapy: chromium iron oxide - rosmarinic acid nano particles (CrFe2O4-RA) Synthesis, Characterization, anti-inflammatory, antioxidant: an in vitro proof of concept.

[4] Amrish A, Zihlif M, Diab T, Al-Hunaiti A. Anti-inflammatory Effect of Trimetallic Copper Zinc Ferrite (Cu0.5Zn0.5Fe2O4) Magnetic Nanoparticles: Synthesis Using Rosmarinic Acid/PEG in Murine Macrophages Cells, and Antioxidant Activity.

[5] Zihlif M, Hiasat J, Al-Abdallat K, Mraish A, Al-Hunaiti A, Telfah A. Synergistic Anticancer Effects of Bimetallic Nanoparticles Derived from Urginea maritima Bulb in Combination with Paclitaxel against MDA-231 and MCF-7 Breast Cancer Cell Lines.

[6] Zihlif M, Qudsi S, Al-Abdallat K, Mraish A, Al-Hunaiti A. Inhibition of CYP1A1 and CYP1A2 inside HEPG2 cell line while using doxorubicin by using nature origin chemical.

2024

[7] Aqel H, Sannan N, Al-Hunaiti A, Fodah R. Integrated water quality dynamics in Wadi Hanifah: Physical, chemical, and biological perspectives. PLoS ONE 2024, 19, e0298200.

[8] Al-Zabin A, Abu Thiab T, Zihlif M, Al-Hunaiti A, Al-Ameer HJ, Al-Awaida W, Imraish A. Anti-angiogenic and cytotoxic evaluation of green-synthesized Fe2ZnO4 nanoparticles against MCF-7 cell line. Biomedical Reports 2024, 20, 36.

[9] Ghazzy A, Nsairat H, Said R, Sibai O, AbuRuman A, Shraim A, Al-Hunaiti A. Magnetic iron oxide-based nanozymes: from synthesis to application. Nanoscale Advances 2024, 6 1611–1642.

2023

[10] Aqel H, Sannan N, Foudah R, Al-Hunaiti A. Enzyme Production and Inhibitory Potential of Pseudomonas aeruginosa: Contrasting Clinical and Environmental Isolates. Antibiotics 2023, 12, 1354.

[11] Ishtaiwi Z, Taher D, Korb M, Helal W, Juwhari HK, Al-Hunaiti A, Amarne H, Assaf K, Alrawashdeh L, Amer MW, Yousef YA, Lang H. Luminescent materials based on N-(3-nitrophenyl)-N'-(4-R-C6H4)oxamato zincate(II) complexes. Journal of Molecular 2023, 1288, 135747.

2022

[12] Al-Hunaiti A, Abu-Radaha B, Wraith D, Repo T. Catalytic behaviour of the Cu(I)/L/TEMPO system for aerobic oxidation of alcohols - a kinetic and predictive model. RSC Advances 2022, 12, 7864–7871.

[13] Amarne A, Helal W, Taher D, Korb M, Al-Hunaiti A. Crystal structure, Hirshfeld surface analysis and contact enrichment ratios of 5,5-dimethyl-2-(2,4,6-tris(trifluoromethyl)phenyl)-1,3,2-dioxaborinane. Molecular Crystals and Liquid Crystals 2022 (ahead-of-print).

[14] Das B, Al-Hunait A, Carey A, Lidin S, Demeshko S, Repo T, Nordlander E. A di-iron(III) μ-oxido complex as catalyst precursor in the oxidation of alkanes and alkenes. Journal of Inorganic Biochemistry 2022, 231, 111769.

[15] Ghazzy A, Yousef L, Al-Hunaiti A. Visible Light Induced Nano-Photocatalysis Trimetallic Cu0.5Zn0.5-Fe: Synthesis, Characterization and Application as Alcohols Oxidation Catalyst. Catalysts 2022, 12, 611.

[16] Hussein T, Li X, Bakri Z, Alastuey A, Arar S, Al-Hunaiti A, Viana M, Petäjä T. Organic and Elemental Carbon in the Urban Background in an Eastern Mediterranean City. Atmosphere 2022, 13, 197.

[17] Ishtaiwi Z, Taher D, Korb M, Helal W, Al-Hunaiti A, Juwhari HK, Amarne H, Amer MW, Yousef YA, Klaib S, Abu-Orabie ST. Syntheses, crystal structures, DFT calculation and solid-state spectroscopic properties of new zincate(II) complexes with N-(4-substituted phenyl)-N'-(4-nitrophenyl)-oxamate. Arabian Journal of Chemistry 2022, 15, 104349.

2021

[18] Al-Hunaiti A, Ghazzy A, Sweidan N, Mohaidat Q, Bsoul I, Mahmood S, Hussein T. Nano-Magnetic $NiFe_2O_4$ and its Photocatalytic Oxidation of Vanillyl Alcohol – Synthesis, Characterization, and Application in Valorization of Lignin. Nanomaterials 2021, 11, 1010.

[19] Hussein T, Löndahl J, Thuresson S, Alsved M, Al-Hunaiti A, Saksela K, Aqel H, Junninen H, Mahura A, Kulmala M. Indoor Model Simulation for COVID-19 Transport and Exposure. International Journal of Environmental Research and Public Health 2021, 18, 2927.

[20] Imraish A, Abu Thiab T, Al-Awaida W, Al-Ameer HJ, Bustanji Y, Hammad H, Alsharif M, Al-Hunaiti A. In vitro anti-inflammatory and antioxidant activities of $ZnFe_2O_4$ and $CrFe_2O_4$ nanoparticles synthesized using Boswellia carteri resin. Journal of Food Biochemistry 2021, 45, e13730.

[21] Imraish A, Al-Hunaiti A, Abu-Thiab T, Ibrahim AA-Q, Hwaitat E, Omar A. Phyto-Facilitated Bimetallic $ZnFe_2O_4$ Nanoparticles via Boswellia carteri: Synthesis, Characterization, and Anti-Cancer Activity. Anti-Cancer Agents in Medicinal Chemistry 2021, 21, 1767–1772.

2020

[22] Al Bawab A, Al-Hunaiti A, Abu Mallouh S, Bozeya A, Abu-Zurayk R, Hussein T. Contamination of plants, soil, and building stones at a Roman heritage archaeological site in an urban area. Fresenius Environmental Bulletin 2020, 29, 1322-1333.

[23] Al-Hunaiti A, Al-Said N, Halawani L, Abu Haija M, Baqaien R, Taher D. Synthesis of magnetic $CuFe_2O_4$ nanoparticles as green catalyst for toluene oxidation under solvent-free conditions. Arabian Journal of Chemistry 2020, 13: 4945-4953.

[24] Al-Hunaiti A, Mohaidat Q, Bsoul I. Mahmood S, Taher D, Hussein T. Synthesis and Characterization of Novel Phyto-Mediated Catalyst, and its Application for a Selective Oxidation of (VAL) into Vanillin Under Visible Light. Catalysts 2020, 10, 839.

[25] Dey D, Al-Hunaiti A, Vinothini G, Perumalsamy B, Balakrishnan G, Ramasamy T, Dharumadurai D, Biswas B. C-H Functionalization of Alkanes, Bactericidal and Antiproliferative Studies of a Gold(III)-Phenanthroline Complex. Journal of Molecular Structure 2020, 128919 (doi.org/10.1016/j.molstruc.2020.128919).

[26] Hussein T, Alameer A, Jaghbeir O, Albeitshaweesh K, Malkawi M, Boor BE, Koivisto AJ, Löndahl J, Alrifai O, Al-Hunaiti A. Indoor Particle Concentrations, Size Distributions, and Exposures in Middle Eastern Microenvironments. Atmosphere 2020, 11, 41.

[27] Hussein T, Li X, Al-Dulaimi Q, Daour S, Atashi N, Viana M, Alastuey A, Sogacheva L, Arar S, Al-Hunaiti A, Petäjä T. Particulate Matter Concentrations in a Middle Eastern City – an insight to Sand and Dust Storm Episodes. Aerosol and Air Quality Research 2020, 20, 2780–2792.

2019

[28] Arar S, Al-Hunaiti A, Masad MH, Maragkidou A, Wraith D, Hussein T. Elemental Contamination in Indoor Floor Dust and its Correlation with PAHs, Fungi, and Gram+/- Bacteria. International Journal of Environmental Research and Public Health 2019, 16, 3552.

[29] Alghamdi MA, Al-Hunaiti A, Arar S, Khoder M, Abdelmaksoud AS, Al-Jeelani H, Lihavainen H, Hyvärinen A, Shabbaj II, Almehmadi FM, Zaidan MA, Hussein T, Dada L. A predictive model for steady state ozone concentration at an urban-coastal site. International Journal of Environmental Research and Public Health 2019, 16, 256.

[30] Das B, Al-Hunaiti A, Sanchez-Eguia B, Zeglio E, Demeshko S, Meyer S, Haukka M, Dechert S, Repo T, Castillo I, Nordlander E. Di- and Tetrairon(III) μ-oxido complexes of an N3S-donor ligand: catalyst precursors for alkene oxidations. Frontiers in Chemistry 2019, 7, 97.

[31] Dey D, Patra M, Al-Hunaiti A, Yadav HR, Al-mherat A, Arar S, Maji M, Choudhury AR, Biswas B. Synthesis, structural characterization and C–H activation property of a tetra-iron(III) cluster. Journal of Molecular Structure 2019, 1180, 220–226.

2018

[32] Hussein T, Juwhari H, Al Kuisi M, Alkattan H, Lahlouh B, Al-Hunaiti A. Accumulation and Coarse Modes Aerosols Concentrations and Carbonaceous Contents in the Urban Background Atmosphere in Amman – Jordan. Arabian Journal of Geosciences 2018, 11, 617.

2017

[33] Aldamen M, Al-Hunaiti A, Eronen A, Mubarak M, Gerroll B, Peters A. $Na_{14}[(H_2P_4W_6O_{34})_2Co_2Na_2(H_2O)_2]\cdot 26H_2O$: A New, Carbon-Free, Polyoxometalate Catalyst for Water Oxidation. Journal of Cluster Science 2017, 28, 3087-3101.

[34] Al-Hunaiti A, Arar S, Täubel M, Wraith D, Maragkidou A, Hyvärinen A, Hussein T. Floor dust bacteria and fungi and their coexistence with PAHs in Jordanian indoor environments. Science of the Total Environment 2017, 601–602: 940–945.

[35] Maragkidou A, Arar S, Al-Hunaiti A, Ma Y, Harrad S, Jaghbeir O, Faouri D, Hämeri K, Hussein T. Occupational Health Risk Assessment and Exposure to Floor Dust PAHs inside an Educational Building. Science of the Total Environment 2017, 579: 1050-1056.

[36] Odeh I, Arar S, Al-Hunaiti A, Sa'aydeh H, Hammad G, Duplissy J, Vuollekoski H, Korpela A, Petäjä T, Kulmala M, Hussein T. Chemical Investigation and Quality of Urban Dew Collections with Dust Precipitates. Environmental Science and Pollution Research 2017, 24: 12312–12318.

2016

[37] Al-Hunaiti A, Räisänen M, Repo T, Nordlander E. From DNA to catalysis: Thymine-acetate ligated non-heme iron(III) catalyst for oxidative activation of aliphatic C-H bonds. Chemical Communications 2016, 52: 2043-2046.

[38] Maragkidou A, Ma Y, Jaghbeir O, Faouri D, Harrad S, Al-Hunaiti A, Arar S, Hameri K, Hussein T. PAHs in Household Floor Dust Collected in Amman, Jordan. Journal of Chemical Engineering and Process Technology 2016, 7: 292.

2015

[39] Das B, Al-Hunaiti A, Haukka M, Demshko S, Meyer S, Shteinman AA, Meyer F, Repo T, Nordlander E. Catalytic oxidation of alkanes and alkenes by H2O2 with a μ-oxido Diiron(III) complex as catalyst/catalyst precursor. European Journal of Inorganic Chemistry 2015, 21: 3590–3601.

2014

[40] Al-Hunaiti A, Räisänen M, Pihko P, Leskelä M, Repo T. Organocatalytic oxidation of secondary alcohols using 1,2-di(1-naphthyl)-1,2-ethanediamine (NEDA). European Journal of Organic Chemistry 2014, 28: 6141–6144. (*Cover Page*).

[41] Räisänen M T, Al-Hunaiti A, Atosuo E, Kemell M, Leskelä M, Repo T. Mn(ii) acetate: An efficient and versatile oxidation catalyst for alcohols. Catalysis Science and Technology 2014, 4: 2564–2573.

2012

[42] Biswas B, Al-Hunaiti A, Räisänen M T, Ansalone A, Leskelä M, Repo T, Chen Y-T, Tsai H-L, Naik A D, Railliet A P, Garcia Y, Ghosh R, Kole N. Efficient and Selective Oxidation of Primary and Secondary Alcohols Using an Iron(III)/Phenanthroline Complex: Structural Studies and Catalytic Activity. European Journal of Inorganic Chemistry 2012, 28: 4479–4485.

2011

[43] Guo H, Kemell M, Al-Hunaiti A, Rautiainen S, Leskelä M, Repo T. Gold-palladium supported on porous steel fiber matrices: structured catalyst for benzyl alcohol oxidation and benzyl amine oxidation. Catalysis Communications 2011, 12: 1260–1264.

[44] Guo H, Kemell M, Al-Hunaiti A, Rautiainen S, Leskeläa M, Repo T. Gold Catalysis Outside Nanoscale: Bulk Gold Catalyzes the Aerobic Oxidation of p-Activated Alcohols. ChemCatChem 2011, 3: 1872–1875.

2010

[45] Al-Hunaiti A, Niemi T, Sibaouih A, Pihko P, Leskelä M, Repo T. Solvent Free Oxidation of primary Alcohols and Diols Using Thymine Iron(III) Catalyst. Journal of the Chemical Society, Chemical Communications 2010, 46: 9050-9052.

2006

[46] Akel H, Hunaity A. Growth, swarming and production of halo zone of different Proteus mirabilis strains isolated from Jordanian clinical specimens. Journal of Medical Sciences 2006, 6: 440-444.

[47] Akel H, Hunaity A, Abdullah I, Doker N. Effect of high concentrations of sodium azide on the isolated thermophilic Bacillus phages in different temperatures and pH-values. Journal of Biological Sciences 2006, 6: 347-350.