Professor Al-Shannag Resume

Mohammad Al-Shannag الاستاذ الدكتور محمد يوسف الشناق
Professor of Chemical Engineering

Google Scholar

Citation indices	All	Since 2014
Citations	1403	1072
h-index	25	18
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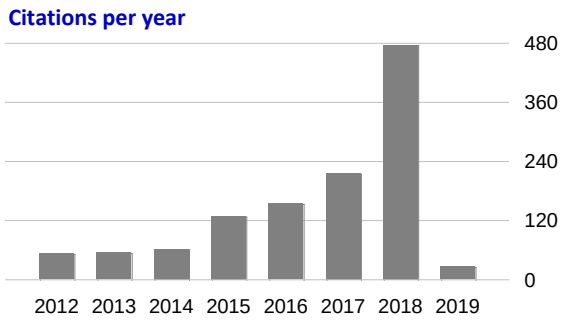

Personal Information

Place of birth: Irbid, Jordan.
Date of birth: 14, January, 1972.
Marital status: Married with two sons and one daughter.
Nationality: Jordanian.
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ملخص السيرة الذاتية بالعربية

يعمل الاستاذ الدكتور محمد يوسف الشناق حاليا في قسم الهندسة الكيميائية /كلية الهندسة في الجامعة الاردنية، و قد حصل الاستاذ الدكتور الشناق على درجة الدكتوراه في الهندسة الكيميائية من جامعة روفيرا و فيرجيلي الاسبانية عام 2002 م بتقدير ممتاز مع مرتبة الشرف . علما بأن اللغة التدريسية لبرنامج الدكتوراه هي الانجليزية و تضمن البرنامج دراسة مساقات متقدمة في مجال الهندسة الكيميائية إضافة إلى أطروحة الدكتوراه. و قد حصل الاستاذ الدكتور الشناق على درجتي البكالوريوس و الماجستير في الهندسة الكيميائية من جامعة العلوم و التكنولوجيا الأردنية، و قام بزيارة بحثية لمدة ستة أشهر خلال دراسة الدكتوراه الى كلية الهندسة والعلوم التطبيقية-جامعة فيرجينيا-أمريكا من اجل تبادل الخبرات في موضوع أطروحة الدكتوراه مع فريق ميكانيكا الموائع البحثي هناك في قسم هندسة الميكانيك والفضاء، إضافة إلى ذلك قام الاستاذ الدكتور الشناق بزيارة بحثيه إلى معهد الديناميكا الحرارية و الموائع-جامعة هامبورغ-ألمانيا لانجاز بعض القياسات العملية بأساليب تصويرية متقدمة لبعض أنماط الجريان ذات الحقول معقدة الشكل.

من ناحية أخرى عمل الاستاذ الدكتور الشناق رئيسا لقسم الهندسة الكيميائية في الجامعة الاردنية للعام الجامعي 2017-2018 و رئيسا لقسم الهندسة الكيميائية في جامعة الملك خالد-السعودية للعامين الجامعيين 2009-2010 و 2010-2011 حيث ساهم في تأسيس القسم من حيث وضع الخطة الدراسية لتخصص الهندسة الكيميائية و تجهيز المختبرات العملية و ذلك خلال قضاء إجازة التفرغ العلمي و إجازة بدون راتب، و قد كلف بان يكون رئيسا لقسم الهندسة الكيميائية في جامعة البلقاء التطبيقية لثلاثة أعوام (2004-2006 م و 2011-2012) و مساعدا لعميد كلية الهندسة لعامين آخرين 2006-2008 م.

و على مستوى البحث العلمي فان الاهتمامات العلمية للدكتور الشناق تتضمن الموضوعات التالية: ظواهر الانتقال، و عمليات الفصل، و تحسين الخلط في العمليات الكيميائية، و معالجة المياه ، و الطاقة. وقد نشر منفردا أو مع آخرين ضمن هذه الموضوعات ابحاثا عملية و نظرية عديدة في مؤتمرات عالمية و مجلات علمية معروفة جيدا في مجال الهندسة الكيميائية، و قد كان رئيس اللجنة العملية في مؤتمر الاردن الدولي السابع للهندسة الكيميائي، إضافة إلى تحكيمه لعدد كبير من الأبحاث في مجلات متخصصة في مجال الهندسة الكيميائية. و على المستوى الأكاديمي يدرس الاستاذ الدكتور الشناق مساقات متنوعة في تخصص الهندسة الكيمائية كمساق ميكانيكا الموائع و التحليل العددي التطبيقي و بحوث العمليات و الديناميكا الحرارية و انتقال الكتلة و أسس الهندسة الكيميائية و التحكم بالعمليات. إضافة لذلك فقد شارك الاستاذ الدكتور الشناق بعضوية عدة لجان علمية و ادارية في جميع الجامعات التي عمل بها، وقد كان عضوا في لجنة مناقشة اطروحة دكتوراة في الهندسة الكيميائية في جامعة روفيرا و فيرجيلي الاسبانية و عضوا في لجان مناقشة سبع رسائل ماجستير في الجامعة الاردنية و جامعة العلوم و التكنولوجيا الأردنية.

و مما يجدر ذكره بان تعدد الجامعات و المدارس الهندسية التي درسها بها الاستاذ الدكتور الشناق أو عمل بها منحتنه و بحمد الله خبرة واسعة في مجال الهندسة الكيميائية، إضافة إلى مهارات الاتصال متعددة اللغات.

Biography

Currently, Professor Mohammad Al-Shannag works at the Chemical Engineering Department/The University of Jordan (UJ)/Jordan. In 2002, Prof. Al-Shannag got his PhD degree, by excellence with honors, in chemical Engineering from Universitat Rovira i Virgili (URV)/Spain. Part of his doctorate study was carried out at Mechanical and Aerospace Engineering Department; University of Virginia (UVA)/USA through a six months scientific visit. Earlier, professor Al-Shannag obtained both B.Sc. and M.Sc. degrees from Jordan University of Science and Technology in 1995 and 1998; respectively.

Professor Al-Shannag worked as assistant professor at the Department of Chemical Engineering/ Al-Balqa Applied University (BAU)/Jordan from 2003 to 2008. He occupied the department chairman position at BAU for two years and as dean assistant for other two years. In 2007, he joined Thermo-Fluid-Dynamic Institute at Technische Unversitat Hamburg-Harbug (TUHH)/ Germany to accomplish some Particle Image Velocimetry (PIV) measurements for incompressible flow regimes in complex fields.

In 2008, Prof. Al-Shannag was promoted to the associate professor rank. He had his sabbatical leave as the chairman of the Chemical Engineering Department/King Khalid University (KKU)/Saudi Arabia from 2009 to 2011. In this period, Prof. Al-Shannag contributed largely in establishing the B.Sc. study plan the required laboratories.

The aforementioned schools of engineering (JUST, URV, UVA, BAU, TUHH, and JU), he learned at and worked for, gave him a wide experience in both Chemical Engineering career and multi-language communication skills. His native language is Arabic and he speaks both English and Spanish.

The research interests of Prof. Al-Shannag are in the fields of Computational Fluid Dynamics (CFD); Transport Phenomena; Separation Processes; Mixing Enhancement for Reactive/Noncreative Systems, Energy, and Water Treatment. He has published, as a single author or with other researchers many articles in international journals and conferences that are well-known in the fields of chemical engineering. Indeed, Prof. Al-Shannag is a reviewer for many chemical engineering journals of high impact factors.

Professor Al-Shannag teaches various courses in chemical engineering such as Fluid Mechanics, Process Dynamics and Control, Numerical Analysis, Chemical Engineering Principles, Chemical Engineering Thermodynamics, Mass Transfer, Process Optimization, and Advanced Transport Phenomena. Furthermore, Prof. Al-Shannag was a member in many scientific committees of the universities he worked. For example, he was an external member of examination committees for one PhD dissertation at URV and seven master dissertations at JUST and JU.

University Education

- **Ph.D. Degree in Chemical Engineering:**

University: University of Rovira i Virgili (URV), Tarragona, Catalonia, Spain and University of Virginia, Virginia, USA.

Period: 1998-2002

Dissertation Title: Experimental and Numerical Investigation of the Flow in a Toroidal Cavity.

Supervisors: Prof. Francesc Giralt and Dr. Joan Herrero

- **M.Sc. Degree in Chemical Engineering:**

University: Jordan University of Science and Technology (JUST), Irbid, Jordan.

Period: 1995-1998

Dissertation Title: Theoretical Investigation of Multicomponent Separation Problems by Membrane Distillation.

Supervisors Dr. Fawzi Banat and Dr. Fahmi Abu Al-Rub

- **B.Sc. Degree in Chemical Engineering:**

University: Jordan University of Science and Technology (JUST), Irbid, Jordan.

Period: 1990-1995

Graduation Project: Design of Urea Production Plant

Academic and Administrative Experience

Academic Ranks:

Sep, 2016– Present Full professor, Chemical Engineering Department, Faculty of Engineering and Technology, The University of Jordan, Amman, Jordan.

Sep, 2013– Aug, 2016	Associate Professor, Chemical Engineering Department, School of Engineering, The University of Jordan, Amman, Jordan.
Sep, 2011– Aug, 2013	Associate Professor, Department of Chemical Engineering, Faculty of Engineering Technology, Al-Balqa Applied University, Amman, Jordan.
Oct, 2009– Aug 2011	Associate Professor (SABBATICAL LEAVE), Chemical Engineering Department, Faculty of Engineering, King Khalid University, Abha, Saudia Arabia.
Oct, 2008– Sep, 2009	Associate Professor, Department of Chemical Engineering, Faculty of Engineering Technology, Al-Balqa Applied University, Amman, Jordan.
Feb, 2003– Sep, 2008	Assistant Professor, Department of Chemical Engineering, Faculty of Engineering Technology, Al-Balqa Applied University, Amman, Jordan.
Oct, 1998 – Sep, 2002	Research and Teaching Assistant, Chemical Engineering Department, ETSEQ, Rovira i Virgili University, Tarragona, Catalonia, Spain.
Feb, 2001 – June, 2001	Research visiting PhD-student, Mechanical and Aerospace Engineering Department of University of Virginia, Charlottesville, Virginia, USA.
Sep, 1995 – May, 1998	Teaching Assistant, Chemical Engineering Department, Jordan University of Science and Technology, Irbid, Jordan.

Administrative Positions:

Sep, 2017 – Sep, 2018	Chairman of the Chemical Engineering Department, School of Engineering, The University of Jordan, Amman, Jordan.
Sep, 2011 – Sep, 2012	Chairman of Department of Chemical Engineering, Faculty of Engineering Technology, Al-Balqa Applied University, Amman, Jordan.
Oct, 2009 –Aug, 2011	Chairman of Chemical Engineering Department, Faculty of Engineering, King Khalid University, Abha, Saudia Arabia.
Oct, 2007 –Sep, 2008	Dean assistant for Associate Degree Program, Faculty of Engineering Technology, Al-Balqa Applied University, Amman, Jordan.
Oct, 2006 –Sep, 2007	Dean assistant for Development, Planning, and Community Services, Faculty of Engineering Technology, Al-Balqa Applied University, Amman, Jordan.
Sep, 2004 –Sep, 2006	Chairman of Department of Chemical Engineering, Faculty of Engineering Technology, Al-Balqa Applied University, Amman, Jordan.

Teaching Experience:

- **Undergraduate Courses:** Fluid mechanics; Mass Transfer; Chemical Engineering Principles (1); Chemical Engineering Principles (2); Numerical Analysis; Process Dynamics and Control; Chemical Engineering Thermodynamics I & II; Process Optimization; Industry and Environment; Principles of General Safety; Risk and Hazardous Management, Queuing Theory; Chemical Engineering Thermodynamics Lab.; Fluid Mechanics Lab.; Physical Chemistry Lab.; Chemical Engineering Lab. (1).
- **Graduate Courses:** Advanced Transport Phenomena; Advanced Thermodynamics.

Master Degree Theses Supervision:

1. Supervisor of the thesis entitled: "Treatment of Battery Factories Wastewater Using Electrocoagulation: "Kinetic Study and Process Performance ", Student: Mohammad Waleed Al-Hawari, Mechanical/Chemical Engineering Departments, The University of Jordan, Status: Finished, 2015.
2. Supervisor of the thesis entitled: "Treatment of Wastewater from Jordanian Ink Making Factories Using Electrocoagulation Technique", Student: Aseel Yousef Sarhan, Chemical Engineering Departments, The University of Jordan, Status: Finished, 2017.
3. Co-supervisor of the thesis entitled: "Yeast Wastewater Treatment in Jordan Using Effective Physical and Chemical Methods", Student: Feras Mohammad Al-Amayreh, Civil Engineering Department, The University of Jordan, Status: Finished, 2017.
4. Supervisor of the thesis entitled: "Treatment of Desalination Processes Reject Brine Solutions using Electrocoagulation (EC) Process", Student: Heba Mahmoud Talafha, Civil Engineering Department, The University of Jordan, Status: Finished, 2018.
5. Co-supervisor of the thesis entitled: "Enhancement of Mixing in Lid Driven Bio-reactor with Continuous Flow from the Inlet and Outlet Ports", Student: Sahar Nasrallah, Chemical Engineering Department, Jordan University of Science and Technology, Status: Finished, 2018.

Scientific Committees Memberships

1. Member of Engineering Scientific Committee, Jordan Engineers Association, 2015-Present.
2. Member of conference organization committee, 7th Jordan International Chemical Engineering Conference (JIChE 07), 4-6 Nov, 2014.
3. Chairman of conference scientific committee, 7th Jordan International Chemical Engineering Conference (JIChE 07), 4-6 Nov, 2014.
4. Member of examination committees for four master degree theses in chemical engineering, Jordan University of Science and Technology, 2004-2007.
5. Member of examination committees for three master degree theses in chemical engineering, University of Jordan, 2013.
6. Member of examination committee for doctorate degree thesis in chemical engineering, Rovira i Virgili University, Spain, 2013.

7. Member of Chemical Engineering Graduation Project Prize, Jordan Engineers Association, 2014 and 2017.
8. Member of Chemical Engineering Scientific Committee, Professional Qualification and Accreditation Council (PQAC), Jordan Engineers Association, 2013-present.

Professional Memberships

1. Member of Jordan Engineers Association (JEA), Amman, Jordan.
2. Member of Jordanian Chemical Association (JCA), Amman, Jordan.
3. Member in American Institute of Chemical Engineers (AICHE), USA.
4. The Jordan Anti Drugs Society, Amman, Jordan
5. Jordan Environment Society, Amman, Jordan
6. Sum Charity Association, Irbid, Jordan

Professional Certifications

1. Consultant Engineer in Engineering Education, Professional Qualification and Accreditation Council (PQAC) Jordan Engineers Association, 2013.
2. Management of Training, National Training of Trainers Institute, Jordan, 2005.
3. Working Toward Program Accreditation, Prince Naif Institute for Research and Consulting Services, Saudi Arabia, 2009.
4. Equipment for Engineering Education, G.U.N.T Company, Germany, 2010.

Honors and Award

1. Supervisor of Chemical Engineering Graduation Project of the second prize, Jordan Engineers Association, 2013.
2. Research scholarship, German Research Agency (DFG), Institute of ThermoFluidDynamic, Technical University of Hamburg, Germany, 2007.
3. Prized of the top ten students in Irbid Secondary Schools with the highest score in chemistry course of Al-Tawjihi Level, Jordanian Chemical Association (JCA), Jordan, 1990.

Language Ability

Arabic:	Mother-tongue language		
	Writing	Reading	Speaking
English:	Excellent	Excellent	Excellent
Spanish:	Very Good	Very good	Very good

Training Courses

- Chemical Engineering for Non-chemical Engineers organized by EcoMan Consultancy, Solutions and Training Company; Kuala Lumpur; Malaysia; 2011.

Research Experience

Research interests: Transport Phenomena; Thermodynamics; Wastewater treatment; Energy.

Chemical Engineering Instrumentations and packages: Particle Image Velocimetry (PIV); Laser Doppler Velocimetry (LDV); Computational Fluid Dynamic (CFD) packages: FLUENT, our CUTEFLOWS code; Chemical Engineering Packages: HYSYS, CHEMCAD; Post-processing Software's: Tecplot, SigmaPlot, etc.

Funded Projects:

1. "Utilization of Sludge in Jordan Paper and Cardboard Factories", funded by Industrial Development Bank, Faculty-For-Factory (FFF) Program, Amman, Jordan, 2009.
2. "Energy Saving in the High Quality Company", funded by Industrial Development Bank, Faculty-For-Factory (FFF) Program, Amman, Jordan, 2008.
3. "Particle Image Velocimetry Measurements in Complex Flow Fields", funded by DFG, the German Research Agency, in collaboration with the institute of ThermoFluidDynamic,Technical University of Hamburg, Hamburg, Germany, 2007.

Refereeing in ISI International Journals:

I have reviewed many articles in ISI Journals with impact factor (I.F.) according to the year 2015 as follows:

1. **Applied Energy**, Elsevier, I.F. = **5.746**
2. **Journal of Hazardous Materials**, Elsevier, I.F. = **4.836**
3. **Desalination**, Elsevier, I.F. = **4.412**
4. **Energy**, Elsevier, I.F. = **4.292**
5. **Journal of Industrial and Engineering Chemistry**, Elsevier, I.F. = **4.179**
6. **Journal of Analytical and Applied Pyrolysis**, Elsevier, I.F. = **3.652**
7. **Arabian Journal of chemistry**, Elsevier, I.F. = **3.613**
8. **Separation and purification Technology**, Elsevier, I.F. = **3.299**
9. **International Journal of Hydrogen Energy**, Elsevier, I.F. = **3.205**
10. **Biochemical Engineering Journal**, Elsevier, I.F. = **2.463**
11. **Process Safety and Environmental Protection**, Elsevier, I.F. = **2.078**
12. **Environmental Engineering Science**, Mary Ann Liebert, I.F. = **1.481**
13. **The Korean Journal of Chemical Engineering**, Springer, I.F. = **1.408**
14. **Desalination and Water Treatment**, Taylor & Francis, I.F. = **1.272**
15. **Separation Science and Technology**, Taylor & Francis, I.F. = **1.083**

Citations and h-index value:

1. Google Scholar: h-index = 25 ; i10-index = 35 ; Total citations = 1403
2. Scopus: h-index = 21 ; Total citations = 1250

Journal Publications:

1. Zakaria Al-Qodah, **Mohammad Al-Shannag**, "On the Performance of Free Radicals Combined Electrocoagulation Treatment Processes", *Separation & Purification Reviews*, DOI: 10.1080/15422119.2018.1459700.

2. Zakaria Al-Qodah, **Mohammad Al-Shannag**, Khalid Bani-Melhem, Eman Assirey, Mohd Adib Yahya, Ali Al-Shawabkeh, "Free radical-assisted electrocoagulation

processes for wastewater treatment", *Environmental Chemistry Letters*, 16, 695-714, 2018.
3. Balsam Mohammad, **Mohammad Al-Shannag**, Mohammad Alnaief, Lakhveer Singh, Eric Singsaas, Malek Alkasrawi, "Production of multiple biofuels from whole camelina material: A renewable energy crop", *BioResources*, 13, 4870-4883, 2018.
4. Zakaria Al-Qodah, **Mohammad Al-Shannag**, Mamdouh Al-Bosoul, Ivan Penchev, Hamed Al-Ahmadi, Khaled Al-Qodah, "On the performance of immobilized cell bioreactors utilizing a magnetic field", *Reviews in Chemical Engineering*, 34, 385–408, 2018.
5. Khalid Bani-Melhem, **Mohammad Al-Shannag**, Dheaya Alrousan, Salman Al-Kofahi, Zakaria Al-Qodah, Muhammad Rasool Al-kilani, "Impact of Soluble COD on Grey water Treatment by Electrocoagulation Technique", Desalination and Water Treatment, 89, 101-110, 2017.
6. Zakaria Al-Qodah, **Mohammad Al-Shannag**, Mohd Adib Yahya, "On the performance of bioadsorption processes for heavy metal ions removal by low cost agricultural and natural by-products bioadsorbent: a review", *Desalination and Water Treatment*, 87, 339–357, 2017.
7. Zakaria Al-Qodah, **Mohammad Al-Shannag**, "Heavy metal ions removal from wastewater using electrocoagulation processes: a comprehensive review", *Separation Science and Technology*, 52, 2649-2676, 2017.
8. Zakaria Al-Qodah, **Mohammad Al-Shannag**, Abdulaziz Amro, Eman Assirey, Mustafa Bob, Khalid Bani-Melhem, Malek Alkasrawi, "Impact of surface modification of green algal biomass by phosphorylation on the removal of copper (II) ions from water", *Turkish Journal of Chemistry*, 41, 190-208, 2017.
9. Zakaria Al-Qodah, **Mohammad Al-Shannag**, M Al-Busoul, I Penchev, Wasim Orfali, "Immobilized enzymes bioreactors utilizing a magnetic field: A review", *Biochemical Engineering Journal*, 121, 94-106, 2017.
10. **Mohammad Al-Shannag**, Zakaria Al-Qodah, Mansour Nawasreh, Zayed Al-Hamamreh, Khalid Bani-Melhem, Malek Alkasrawi, "On the performance of Ballota undulata biomass for the removal of cadmium(II) ions from water", Desalination and Water Treatment, 67, 223-230, 2017
11. Zayed Al-Hamamre, Motasem Saidan, Muhanned Hararah, Khaled Rawajfeh, Hussam E. Alkhasawneh, **Mohammad Al-Shannag**, "Wastes and biomass materials as sustainable-renewable energy resources for Jordan", *Renewable and Sustainable Energy Reviews*, 67, 295-314, 2017.
12. Malek Alkasrawi, Zayed Al-Hamamre, **Mohammad Al-Shannag**, Md Joynal Abedin, Eric Singsaas , "Conversion of paper mill residuals to fermentable sugars", *Bioresources*, 11(1), 2287-2296, 2016.
13. Raghu Gurram, **Mohammad Al-Shannag**, Samuel Knapp, Tapas Das, Eric Singsaas and Malek Alkasrawi, "Technical Possibilities of Bioethanol Production from Coffee Pulp: A Renewable Feedstock", *Clean Technologies and Environmental Policy,* 18, 269-278, 2016.
14. Zakaria Al-Qodah, **Mohammad Al-Shannag**, Khalid Bani-Melhem, Eman Assirey Kholoud Alananbeh, Nahla Bouqellah, "Biodegradation of olive mills wastewater using thermophilic bacteria", *Desalination and Water Treatment*, 56, 1908-1917, 2015.

15. Raghu Nandan Gurram, Mohammad Al-Shannag, Nicholas Joshua Lecher, Shona M. Duncan, Eric Lawrence Singsaas, Malek Alkasrawi, "Bioconversion of paper mill sludge to bioethanol in the presence of accelerants or hydrogen peroxide pretreatment", *Bioresource Technology*, 192, 529-539, 2015.

16. Zakaria Al-Qodah, **Mohammad Al-Shannag**, Eman Assirey, Wasim Orfali, Khalid Bani-Melhem, Kholoud Alananbeh, Nahla Bouqellah, "Characteristics of a novel low density cell-immobilized magnetic supports in liquid magnetically stabilized beds", *Biochemical Engineering Journal*, 97, 40-49, 2015.

17. Khalid Bani-Melhem, Zakaria Al-Qodah, **Mohammad Al-Shannag**, Ahmad Qasaimeh, Mohammed Rasool Qtaishat, Malek Alkasrawi, "On the performance of real grey water treatment using a submerged membrane bioreactor system", *Journal of Membrane Science*, 476, 40-49, 2015.

18. Mohammad Al-Shannag, Zakaria Al-Qodah, Khalid Bani-Melhem, Mohammed Rasool Qtaishat, Malek Alkasrawi, "Heavy metal ions removal from metal plating wastewater using electrocoagulation: kinetic study and process performance", *Chemical Engineering Journal*, 260, 749-756, 2015.

19. Mohammad Al-Shannag, Zakaria Al-Qodah, Kholoud Alananbeh, Nahla Bouqellah, Eman Assirey, Khalid Bani-Melhem, "*COD* reduction of baker's yeast wastewater using batch electrocoagulation", *Environmental Engineering and Management Journal*, 13, 3153-3160, 2014.

20. Zakaria Al-Qodah, Abeer Al-Bsoul, Eman Assirey, **Mohammad Al-Shannag**, "Combined ultrasonic irradiation and aerobic biodegradation treatment for olive mills wastewaters", *Environmental Engineering and Management Journal*, 13, 2109-2118, 2014.

21. Mohammad Al-Shannag, Khalid Bani-Melhem, Zaid Al-Anber, Zakaria Al-Qodah, "Enhancement of COD-Nutrients Removals and Filterability of Secondary Clarifier Municipal Wastewater Influent Using Electrocoagulation Technique", *Separation Science and Technology*, 48 (4), 673-680, 2013.

22. Zaid Ahmed Al-Anber, Munther Issa Kandah**, Mohammad Al-Shannag**, Zakaria Al-Qodah, Abdullah Abu-Shaqra, "Isobaric vapor–liquid equilibria of binary system ethyl acetate + ethyl benzene + lithium bromide", *Journal of Thermal Analysis and Calorimetry,* 112 (2), 953-959, 2013.

23. Mohammad Al-Shannag, "Mass transport enhancement in annular-shaped lid-driven bioreactor", *Bioprocess Biosystems Engineering*, 35,875–884, 2012.

24. Mohammad Al-Shannag, Walid Lafi, Khalid Bani-Melhem, Fawzi Gharagheer, Oqlah Dhaimat, "Reduction of COD and TSS from paper industries wastewater using electro-coagulation and chemical coagulation", *Separation Science and Technology*, 47 (5), 700-708, 2012.

25. Mohammad Al-Hassan, Hisham Mujafet**, Mohammad Al-Shannag,** "An Experimental Study on the Solubility of a Diesel-Ethanol Blend and on the Performance of a Diesel Engine Fueled with Diesel-Biodiesel-Ethanol Blends", *Jordan Journal of Mechanical and Industrial Engineering*, Hashemite University, 6(2),147-153, 2012.

26. Mohammad Al-Shannag, "Energy Savings in Alkyd-Resin and Aqueous-Emulsion Processes Using a Heat-Integrated Cycle", *Journal of the University of Chemical Technology and Metallurgy*, 47 (1), 31-36, 2012.

27. Walid .K. Lafi, Mohammad Al-Anber, Zaid A. Al-Anber, **Mohammad Al-Shannag**, Adnan Khalil, "Coagulation and Advanced Oxidation Processes in the Treatment of Olive Mill Wastewater (OMW)", *Desalination and Water Treatment*, 24, 251-256, 2010.

28. B. Shannak, R. Damseh, M. Al-Odat, **M. Al-Shannag**, and A. Azzi, "Two-Phase Flow through Corrugated U-Tube", *Journal of Mechanical Engineering Science: Part C,* 224(11), 2408-2417, 2010.

29. M. Matouq, O. Al-Ayed, Z. Al-Anber, **M. Al-Shannag**, N. Kloub, T. Tagawa, S. Aljbour, "Wastewater Treatment Resulted from Oil Shale Retorting at High Frequency Ultrasound Waves with Chemical elemental analysis", *Energy Sources, Part A*, 32, 1878–1884, 2010.

30. Walid K. Lafi, Benbella Shannak, **Mohammad Al-Shannag**, Zaid Al-Anber, Mohammad Al-Hasan, "Treatment of olive mill wastewater by combined advanced oxidation and biodegradation", *Separation and Purification Technology*, 70 (2), 141-146 ,2009.

31. Shannak Benbella, **Mohammad Al-Shannag**, Zaid A. Al-Anber , "Gas-Liquid Pressure Drop in Vertical Internally Wavy 90° Bend", *Experimental Thermal and Fluid Science*, 33 (2), 340-347, 2009.

32. Fares Al Momani, Mo'ayyad Shawaqfah, Ahmad Shawaqfeh, **Mohammad Al-Shannag,** "Impact of fenton and ozone on oxidation of wastewater containing nitroaromatic compound", *Journal of Environmental Sciences*, 20, 675–682, 2008.

33. Mohammed A. Matouq, Zaid A. Al-Anber, Tomohiko Tagawa, Salah Aljbour, **Mohammad Al-Shannag**, "Degradation of dissolved diazinon pesticide in water using the high frequency of ultrasound wave", *Ultrasonics Sonochemistry*, 15 (5), 869–874, 2008.

34. Mohammad Al-Shannag, Zakaria Al-Qodah, Joan Herrero, Joseph A.C. Humphrey, Francesc Giralt, "Using a wall-driven flow to reduce the external mass-transfer resistance of a bio-reaction system", *Biochemical Engineering Journal*, 39 (3), 554-565, 2008.

35. Mohammad Al-Shannag, Mohammed Matouq, Zaid Al-Anber, "Simulation of Surfactant-Oil-Solvent Ternary System: Mean Field Theory", Asian Journal of Chemistry, 20(5), 4021-4030, 2008.

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