

## Aref Wazwaz

Date of Birth: 1<sup>st</sup> August 1966

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Assistant Professor, Chemical Engineering Department,  
College of Engineering, Dhofar University

P.O.Box 2509, Postal Code 211,  
Salalah, Sultanate of Oman



**Marital Status:** married. **Children:** Four.

## **EDUCATION**

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- September 2001 **Paul Sabatier University**
- PhD in Solar Energy Materials (Selective Absorber)(Chemical Engineering), Paul Sabatier University, Toulouse, France (1998-2001) (Scholarship) (**Average: High Honor**).
  - Title of the Thesis: “*Characterization, Solar Thermal Performance And Optical Modeling of Nickel Pigmented Aluminium Oxide Selective Absorber*”.
- July 1992 **Yarmouk University**
- MSc in Chemistry (Physical-Kinetics), Yarmouk University, Irbid, Jordan (1989-1992) (Assistantship) (**Average: Very Good**).
  - Title of Thesis: “*A Conductance Study of the Association of Methyl Orange and Methyl Red with Cyclodextrins*”.
- June 1989 **Yarmouk University**
- BSc in Chemistry (major) and Computer Science (minor), Yarmouk University, Irbid, Jordan (1985-1989) (Assistantship) (**Average: Very Good**).

## **EXPERIENCE**

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### **Academic Experience**

- 9/2009-Present **Dhofar University (managed by the American University of Beirut)**  
Salalah, Sultanate of Oman.  
*Assistant Professor, Chemical Engineering Department.*
- Teach General and Chemical Engineering courses.
  - Conduct research on Solar Energy.
  - Member of the University Research Board (URB).
  - Member of the University Library Committee.
  - Member of the College of Engineering projects.
  - Member of the Academic and Administrative Committee of the College of Engineering.
- 9/2007- 8/2009 **Palestine Polytechnic University**, College of Engineering and Technology,  
Biomedical Engineering Department.  
*Assistant Professor, Biomedical Engineering Department.*
- Teach: **Instrumental Analysis** (Basic Concepts for Biomedical Engineering), **General Chemistry (2)**, and **Special Topics in Biomedical**

**Engineering** (ENT Instruments, Ophthalmology Instruments, Chemical and Biochemical Sensors).

- Supervision many students' projects in Biomedical Engineering.
- Conduct research on the project “Biomedical Solar Autoclave”.

9/2003-8/2007

**College of Education Salalah**, Chemistry department, Faculty of Science, Salalah, Directorate General of Colleges, Ministry of Higher Education, Sultanate of Oman.

- *Assistant Professor, Chemistry Department.*
- Teach: **I-Physical Chemistry courses:** Thermodynamics, Kinetics, Electrochemistry, Quantum, Photochemistry, and Colloids. **II-Analytical Chemistry:** Qualitative Analysis, Quantitative Analysis, and Instrumental Analysis. **III-Environmental Chemistry course.** **IV-General Chemistry courses:** (1&2), General Inorganic Chemistry for Biology, General Chemistry for Diploma students, Integrated Sciences. **V-Organic Chemistry (I) course.** **VI-Biochemistry course.** **VII-Educational Training course.**
- Research Committee Member.
- Member in the “Caring of Talented Gifted Students” Program.

9/2001-7/2003

**Al-Quds Open University**, Hebron Educational Center, Hebron, West Bank

- *Assistant Professor.*
- Teach: **I-General Chemistry for Science (I&II) and for Agriculture.** **II-Analytical Chemistry: Quantitative Analysis and Instrumental Analysis.**

4/1995-8/1998

**Bethlehem University**, Bethlehem, West bank,

- Researcher on the project entitled “**Selective Coatings for Solar Heating and Cooling: Preparation and Characterization**”.

9/1989-6/1992

**Yarmouk University**, Chemistry Department, Irbid, Jordan.

- Teaching and Research Assistant.
- Teach: **Practical Physical Chemistry** and **General Chemistry (I &II)** courses.
- Research on **Ruthenium-Diimine complexes** (Preparation, Identification, and Photo-chemistry studies).

### **Industrial Experience (Pharmaceutical Companies)**

2/1994-4/1995

**Beit Jala Pharmaceutical Company** (JCL Co. Ltd. previous name), Beit Jala, West Bank.

- Quality Control and Researcher.
- Quality control on raw materials and finished products.
- Member of R&D Department (Researcher on generic products).

12/1992-2/1994

**Eastern Chemical Company** (merged with BeirZeit Pharmaceutical Co. Ltd.), Beir Zeit, West Bank.

- Quality Control and Researcher.
- Researcher on Shelf Life Studies on the Pharmaceutical Finished Products (Kinetic Studies).

## COURSES TAUGHT

- I have taught Principles of Chemical Engineering, Thermodynamics, Renewable Energy, Introduction to Engineering, Engineering Economy, Engineering Ethics, Instrumental Analysis (Basic Concepts for Biomedical Engineering), General Chemistry (1, 2), Special Topics in Biomedical Engineering (ENT Instruments, Ophthalmology Instruments, Chemical and Biochemical Sensors), Physical Chemistry: Thermodynamics, Kinetics, Electrochemistry, Quantum, Photochemistry, and Colloids. Analytical Chemistry: Qualitative Analysis, Quantitative Analysis, and Instrumental Analysis, Environmental Chemistry, General Inorganic Chemistry for Biology, General Chemistry for Diploma students, Integrated Sciences, Organic Chemistry (I), Biochemistry, Educational Training.

## AWARDS

- PhD scholarship from The European Commission to study at Paul Sabatier University, Toulouse, France.
- MSc assistantship (Teaching and Research Assistantship) from Yarmouk University, Irbid, Jordan.
- Research Grant of around \$10000 from Palestine Polytechnic University to conduct the research on the project entitled “Biomedical Solar Autoclave”.
- I was included in the Journal "Marquis Who's Who in Science and Engineering<sup>®</sup>", (9<sup>th</sup>) edition 2006-2007, September 2006 (890 Mountain Avenue, Suite 4 , New Providence, NJ 07974,USA).
- I was included in the Journal "Marquis Who's Who in Science and Engineering<sup>®</sup>", (10<sup>th</sup>) edition 2008-2009, December 2007 (890 Mountain Avenue, Suite 4 , New Providence, NJ 07974,USA).
- Seed Grant from Dhofar University for the proposal “Optical Modelling of the Selective Coatings Made Up of Composite and Non-Composite Layers”.
- Research Grant of around 40000 O.R( \$110000) from The Omani Research Council for the project entitled “Medical Sterilization Systems Using the Concentrated Parabolic Dish Collector”.

## PUBLICATIONS

### Journal Papers

- **A. Wazwaz, J. Salmi, R. Bes**, "Solar Net Collective Flux and Conversion Efficiency of the Nickel-Pigmented Aluminium Oxide Selective Absorber Prepared by Alternate and Reverse Periodic Technique in Different Prototype Volumes”, **Jordan Journal of Mechanical and Industrial Engineering**, **4(1)**, **177(2010)**, and available online on the website <http://jjmie.hu.edu.jo/Vol4.htm>
- **A. Wazwaz, J. Salmi, R. Bes** , “ The Effects of Nickel-Pigmented Aluminium Oxide Selective Coating over Aluminium Alloy on the Optical Properties and Thermal Efficiency of the Selective Absorber Prepared by Alternate and Reverse Periodic Plating Technique”, **Journal of Energy Conversion and Management**, **51(8)**, **1679 (2010)** and available online on the website <http://dx.doi.org/10.1016/j.enconman.2009.11.047>
- **A.Wazwaz, A. Abed-Rabbo, R. Bes, Y. Mastai**, “*Characterization and Degradation Testing of Nickel-Pigmented Anodic Alumina Solar Selective Absorber Films Produced by Alternate and Reverse Periodic Plating Technique*”, **International Journal of Sustainable Energy**, **23(3)**, **121(2003)**.
- **A.Wazwaz, J. Salmi, H. Hallak, R. Bes**; “*Solar Thermal Performance of a Nickel-Pigmented Aluminium Oxide Selective Absorber*”, **J. Renewable Energy**, **27(2)**, **277(2002)**.

- K.Tawarah and **A.Wazwaz**; “*The Electrical Conductivities of the Sodium Salts of Methyl Orange, o-Methyl Red and p-Methyl Red in Aqueous Solutions*”, **Dyes and Pigments**, **21**, 97 (1993).
- K.Tawarah and **A.Wazwaz**; “*Conductance Study of the Binding of Methyl Orange, o-Methyl Red and p-Methyl Red Anions by  $\alpha$ -Cyclodextrin in Water*”, **J.Chem.Soc.Faraday Trans.**, **89(11)**, 1729(1993).
- K.Tawarah and **A.Wazwaz**; “*A Conductance Study of the Binding of Methyl Orange, o-Methyl Red, and p-Methyl Red Anions by  $\beta$ -Cyclodextrin in Water*” *Ber. Bunsenges. Physical Chem.*, **97(5)**, 727 (1993).

### Conference Papers

- **A. Wazwaz**, “Photothermal Testing Followed by Degradation Testing of Nickel-Pigmented Aluminium Oxide Selective Absorber Prepared by Alternate and Reverse periodic Currents”, accepted for the conference “**Global Conference on Renewables and Energy Efficiency for Desert Regions 2009**”, Jordan University, Amman, Jordan (26 April - 31 April 2011) (GCREEDER 2011).
- **A.Wazwaz**, “Comparison Between Theoretical and Experimental Optical Properties of Nickel-Pigmented Aluminium Oxide Selective Coating Over Aluminium alloy prepared By Alternate and Reverse Periodic Plating Technique”, presented at the “**2nd International Chemical Engineering Conference**”, University of Jordan, Amman, Jordan, (11-13 October 2010).
- **A.Wazwaz**, J. Salmi, R. Bes, “Solar Net Collective Flux and Conversion Efficiency of the Nickel-pigmented Aluminium Oxide Selective Absorber Prepared by Alternate and Reverse Periodic Technique in Different Prototype Volumes”, Special Issue at “**International Conference and Exhibition on Green Energy & Sustainability (ICEGES 2009)**”, Hashemite University, Amman, Jordan (10-12 November 2009).
- **A.Wazwaz**, “Accelerated Heat Degradation Testing and Characterization of Nickel-Pigmented Aluminium Oxide Selective Absorber”, published in the proceeding of the “**2<sup>nd</sup> International Conference on the Palestinian Environment 2009**”, An-Najah National University, Nablus, West Bank, Palestine (13 -15 October 2009).
- **A. Wazwaz**, **J. Salmi**, **R. Bes**, “The Effects of Nickel-Pigmented Aluminium Oxide Selective Coating over Aluminium Alloy on the Optical Properties and Thermal Efficiency of the Selective Absorber Prepared by Alternate and Reverse Periodic Plating Technique”, Special Issue at “**Global Conference on Renewables and Energy Efficiency for Desert Regions 2009**”, Jordan University, Amman, Jordan (31 March - 2 April 2009) (GCREEDER 2009).
- **A.Wazwaz**, J. Salmi, H. Hallak, R. Bes, “*Solar Thermal Performance of a Nickel-Pigmented Aluminium Oxide Selective Absorber*”, published in the proceeding of the “**Environment and Development Conference**”, College of Education Salalah, Ministry of Higher Education, Sultanate of Oman, (12-15 December 2005).

### Reviewing Papers:

- Journal of Petroleum and Gas Engineering (one paper, February 2011).
- The Arabian Journal for Science and Engineering (one paper, February 2011).

### Manuals

- I prepared and assembled **General Chemistry (II) Laboratory Manual**, Chemistry Department, Faculty of Science, Hebron University.

## Theses

- **A. Wazwaz**; “*Characterization, Solar Thermal Performance and Optical Modeling of Nickel Pigmented Aluminium Oxide Selective Absorber*”, **Ph.D. Thesis, Paul Sabatier University, Toulouse, FRANCE (2001)**.
- **A. Wazwaz**; “*A Conductance Study of the Association of Methyl Orange and Methyl Red with Cyclodextrins*”, **M.Sc. Thesis, Yarmouk University, Irbid, JORDAN (1992)**.

## COMITTEES & MEMBERSHIP

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- **American Chemical Society (ACS) (2001-Present)**.
- **Alchemist (2001-Present)**.
- **College of Engineering Research Committee Member (2010-Present)**.
- **Arab Materials Science and Nanotechnology Network, Sharjah, UAE (2010 – Present)**.
- **University Research Board Member, Dhofar University, Salalah, Sultanate of Oman (2009 – 2010)**.
- **Library Committee Member, Dhofar University, Salalah, Sultanate of Oman (2009 – 2010)**.
- **Researches Committee Member** at College of Education Salalah, Salalah, Ministry of Higher Education, Sultanate of Oman **(2005- 2007)**.
- **Member in the “Caring of Talented Gifted Students” Program, College of Education Salalah, Salalah, Sultanate of Oman (2003- 2007)**.
- **Scientific Committee Member in the Conference “Environment and Development ”, College of Education Salalah, Salalah, Ministry of Higher Education, Sultanate of Oman (12-14 December 2005)**.

## TRAINING COURSES

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- **“METHODS of TEACHING and EVALUATION”**, College of Engineering and Technology, Palestine Polytechnic University **(24 of February – 15 of March 2009) (30 hours)**.
- **“INSTRUMENTAL ANALYSIS”**, UNESCO BIOTECHNOLOGY EDUCATIONAL & TRAINING CENTER, funded by UNESCO, Bethlehem University **(1<sup>st</sup> of January to 12<sup>th</sup> of June 1996)**.
- **“DISSOLUTION TESTS AND BIO- EQUIVALENCE”**, *Pharmacists without Borders, France*, funded by EUROPEAN COMMUNITY, Organized and held in cooperation with BIRZEIT University. **(3<sup>rd</sup> to 8<sup>th</sup> January 1995)**.
- **“GOOD LABORATORY PRACTICES”**, *Pharmacists without Borders, France*, funded by EUROPEAN COMMUNITY, organized and held in cooperation with BIRZEIT University. It was held under the supervision of Mr. Jean-Francois POGNANT, Department Head Officer in RND-ORGANON, FRANCE **(3<sup>rd</sup> to 7<sup>th</sup> December 1994)**.

## WORKSHOPS

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- **“Dynamic Simulator for Education, Process & Power Industries”**, Armfield Company, Hotel Crown Plaza, Qurum, Muscat, Oman **(January 25, 2011)**.
- **“Developing Program and Course Learning Outcomes”**, In collaboration with the American University of Beirut (AUB), Center for Teaching and Learning(CTL), Dhofar University, Salalah, Sultanate of Oman **(May 30- May 31, 2010)**.

- **"Biomedical Curriculum Enhancement Workshop"**, funded by Healthcare Sector Enhancement through Quality Improvement of the PPU for Biomedical Engineering Project, Biomedical Engineering Department, College of Engineering, Palestine Polytechnic University, (20 August 2009).
- **Speaker** in **"1<sup>st</sup> Training Workshop"** funded by Healthcare Sector Enhancement through Quality Improvement of the PPU for Biomedical Engineering Project, Biomedical Engineering Department, College of Engineering, Palestine Polytechnic University (7 May 2009).

## **SKILLS AND ACTIVITIES**

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- **Computer skills:**
- Programming Languages: *BASIC, COBOL, FORTRAN, Turbo PASCAL, Turbo C<sup>++</sup>, BORLAND C<sup>++</sup>.*
- Software: *scientific and non-scientific software* (e.g.: WINDOWS, MS-OFFICE, EXCEL, POWER POINT, GRAPHER, SURFER, HARFARD, SPSS, CHI-WRITER, SPEKEZ, Internet...etc).
- **Languages:** Arabic, English, French.

## **SEMINARS**

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- **"Radiation and Its Effects on the Health"**, Biomedical Engineering Department, College of Engineering and Technology, Palestine Polytechnic University (7 April 2008).
- **"Selective Surfaces for Solar Energy Conversions"**, College of Engineering and Technology, Palestine Polytechnic University (16 December 2008).
- **"Passive Cooling: Natural Cooling of a House"**, College of Education Salalah, Salalah, Ministry of Higher Education, Sultanate of Oman (11 December 2006).
- **"Optical Modeling of the Selective Coatings and the Simulation Process"**, Faculty of Science and Technology, Hebron University (October 1999).
- **"Selective Coating for Solar Heating and Cooling: Preparation and Characterization"**, Physics Department, Bethlehem University (July 1998).
- **"Theoretical Calculations of the Optical Properties of the Selective Coating using the Effective Medium Theories"**, Laboratories of Materials and Energy (CIRIMAT/LCMI), Paul Sabatier University, Toulouse, FRANCE (July 1997).
- **"Selective Surfaces for Solar Energy Conversion: The Effects of the Surface' Material and Morphology on the Optical Properties"**, Solar Energy Center, Al-Najah National University (July 1997).
- **"Selective Coatings for Radiative Cooling to Low Temperatures"**, Department of Applied Physics, Autonouma University, Cantoblanco, Madrid, SPAIN (July 1996).

## **INTERESTED FIELDS**

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- Solar Energy Materials, Renewable Energy, Chemical Engineering (Kinetics & Thermodynamics), Physical Chemistry (all fields), Analytical Chemistry, Environmental Chemistry, Materials Science (Nanotechnology), Pharmaceuticals (generic products).

## **REFEREES**

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College of Applied Sciences, Salalah - P.O. Box 1905 – Postal Code 211  
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• **Dr. Musa SAID (Alexander von Humboldt Fellow)**

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