

## **Ali Khalaf Al-matar**

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### **Objective**

To obtain a challenging position that allows me to grow professionally and exploit my skills earned through experience and education in the theoretical and practical aspects of engineering.

### **Areas of Expertise**

- Statistical thermodynamics with emphasis upon Monte Carlo simulations of phase equilibria and virial coefficients.
- Development of new thermodynamic models of mixing rules for use in molecular simulation computer experiments, equations of state with particular emphasis on applications to supercritical fluid extraction, vapor-liquid and liquid-liquid equilibria.
- Separation processes with emphasis upon solvent extraction applied to hydrometallurgy in general, and uranium extraction from phosphoric acid and purification of phosphoric acid in particular.
- Numerical algorithms and methods applied to chemical engineering science and practice

### **Education**

- B.Sc. in Chemical Engineering, June 1990, University of Jordan, Amman, Jordan.
- M.Sc. in Chemical Engineering, October 1993, University of Jordan, Amman, Jordan.
- Ph.D. in Chemical Engineering, May 2002, New Mexico State University, Las Cruces, New Mexico, USA

### **Work Experience**

1. Assistant professor at the chemical engineering department (2003-present).

- a. Courses taught include: chemical engineering thermodynamics I and II, advanced thermodynamics for M.Sc. students, process modeling by statistical methods, statistics for M.Sc. students in the IE department, statistical quality control, engineering numerical methods, advanced mass transfer for M. Sc. students, physical chemistry, process plant commissioning, chemical engineering lab I (fluid mechanics and thermodynamics), chemical engineering lab II (heat transfer and particulate solids), and chemical engineering lab III (mass and combined heat and mass transfer), public safety.
  - b. Supervising many undergraduate graduation projects. Some of which won the JEA best project award in the field of chemical engineering. Also, some nominated for Ministry of Higher Education and Scientific Research distinguished student award.
  - c. Involved in funded research projects as well as other research projects.
  - d. Coordinator on the Jordanian part for a JEP-TEMPUS project.
  - e. Assistant Dean for students' affairs (2008-2009).
  - f. Delivered many courses for industry and academia: "Process plant commissioning, troubleshooting, and startup", "Process engineering fundamentals", "Statistical quality control" and "Process Safety". List of clients include Aramco (KSA), SABIC (KSA), Gasco (UAE), ZADCO-ADNOC (UAE), KNPC (Kuwait), KJO (KSA and Kuwait), Wintershall (Libya), ADSSC (UAE), TASNEE (KSA), Arab Potash Company (Jordan).
2. Teaching and Research Assistant (August 1997-2002). Chemical Engineering Department, New Mexico State University, Las Cruces, NM.
    - a. Job responsibilities included teaching and grading basic calculations in chemical engineering, chemical engineering thermodynamics, chemical engineering kinetics, fluid mechanics, computer programming, and fundamentals of heat and mass transfer.
  3. Researcher (1995-1997). Industrial Chemistry Center (ICC), Royal Scientific Society (RSS), Amman, Jordan.
    - a. Designing and evaluating the performance of a pilot plant for the treatment of the waste by-product of phosphoric acid manufacturing (phosphogypsum) to building grade plaster of Paris.
    - b. Technical services in the area of paint and surface coatings.
    - c. Minor work responsibilities dealing with the implementation of ISO 9000.
  4. Part time lecturer (Spring 1995). Chemical Engineering Department, University of Jordan, Amman, Jordan.
    - a. Instructing and grading the heat and mass transfer laboratory for senior students.
  5. Teacher (1993-1994). Jubilee School for Gifted Students, Amman, Jordan.
    - a. Teaching chemistry for ninth grade gifted students
  6. Internship (Summer 1989). Royal Scientific Society, Amman, Jordan.
  7. Internship (Summer 1988). Jordan Petroleum Refinery Company, Zarqa, Jordan.

## Computer Skills

- Excellent knowledge and use of different computer platforms including UNIX and Windows 95/98/2000/ME/XP/NT
- Excellent programming capabilities using ISO implementation of FORTRAN, especially the new standards: Fortran 90/95/2000. Excellent programming capabilities using Matlab. In addition of to a fair knowledge of different other languages: BASIC, C, and Pascal
- Good knowledge in building Graphical User Interfaces (GUI) under windows using Delphi and Visual Basic and their implementation for scientific applications
- Web design capabilities using HTML, FrontPage
- Fair knowledge in using ASPEN PLUS process simulator

## Publications

### Dissertation and Theses

1. **Ali Al-Matar**, "Extraction of uranium from purified wet process Jordanian phosphoric acid: A study of system properties and performance of a pulsed sieve plate extraction column," Master's thesis, University of Jordan, 1993.
2. **Ali Al-Matar**, "A Generating equation for mixing rules and assessment of their effect on the second virial coefficient," Doctoral dissertation, New Mexico State University, May 2002.

### Referred Publications

1. **Ali Al-Matar**, and Rawajfeh Khaled, "A study of the extraction equilibrium in the system: phosphoric acid produced in Aqaba-Uranium-0.5M DEPA-0.125M TOPO diluted in kerosene," *Dirasat*, 22B (6):1459-1474, 1995.
2. Rawajfeh Khaled, and **Ali Al-Matar**, "A generalized equation for calculation of fractional recoveries and presentation of data for solvent extraction systems," *Dirasat*, 27(1):1-9, April 2000 (Muharram 1421 Hijri).
3. **Ali Al-Matar**, and Rawajfeh Khaled, "Uranium extraction from purified wet process Jordanian phosphoric acid: A development study," *Hydrometallurgy*, 56:309-322, July 2000.
4. **Ali Al-Matar**, and David Rockstraw, "A Generating equation for mixing rules and two new mixing rules for the interatomic potential energy parameters," *Journal of computational chemistry*, Vol. 25(5):660-668, 15 April 2004.
5. **Ali Al-Matar**, and David Rockstraw, "Assessment of the effect of mixing rules on the second virial coefficient," *Dirasat: engineering sciences*, Vol. 33(1): 27-36, April 2006.
6. **Ali Al-Matar**, Ahmed Tobgy, and Ibrahim Suleiman, "The phase diagram of the Lennard-Jones fluid using temperature dependent interaction parameters", *Journal of Molecular Simulation*, Vol. 34, No. 3, March 2008, 289–294.

7. **Ali Al-Matar**, Ahmed Tobgy, and Ibrahim Suleiman, "The phase diagram of uranium hexafluoride (UF<sub>6</sub>) using temperature dependent interaction parameters", in preparation.
8. **Ali Al-Matar**, Bassam Eleswed, and Maha Tutonji, "Kinetics of omeprazole degradation in the presence of 2-mercaptoethanol", International Journal of Chemical Kinetics, Volume 40, Issue 6, Pages 352-358, June 2008.
9. **Ali Al-Matar**, Bassam Eleswed, and Maha Tutonji, "Kinetics of acid degradation of proton pump inhibitors in the presence of thiol", International Journal of Chemical Kinetics, Volume 41, Issue 7, Pages 498-506, July 2009.
10. **Al-Matar, Ali** and Sweis, Fawaz K. (2010) "Thermodynamics of Supercritical Fluid Extraction of Some Dyes and Pharmaceutical Compounds Using the Weighting Matrix Approach," Chemical Product and Process Modeling: Vol. 5 : Iss. 1, Article 26.
11. **Ali Al-Matar**, Bassam Eleswed, and Maha Tutonji, "Comparative study of the degradation kinetics of proton pump inhibitors omeprazole, pantoprazole and lansoprazole in the presence of 2-mercaptoethanol", in preparation.
12. **Ali Al-matar**, "Improved prediction of the solubility of some dyes in supercritical fluids", in preparation.
13. **Ali Al-matar**, "Improved prediction of the solubility in supercritical fluids: a new vdW1 mixing rule and the weighting matrix approach", in preparation.
14. **Ali Al-matar**, "Prediction of the solubility of explosive substituents and chemical warfare agents in supercritical fluids", in preparation.
15. **Ali Al-matar**, "The weighting matrix approach as a replacement for the binary interaction parameters in equations of state", in preparation.

### **Conferences, seminars, workshops, and continuing education**

1. Molecular simulation Spring School CCP5, Bristol, UK, 1998.
2. **Ali Al-Matar**, Jennifer Alwin, and David Rockstraw, "Enhanced Pyrite Destruction and Copper Recovery with Fe (VI)," Waste Management 99 Proceedings, Tucson, Arizona, February 28 - March 4, 1999.
3. **Ali Al-Matar**, and David Rockstraw, "A Generating equation for mixing rules and two new mixing rules for the noble gases," Poster presentation, AIChE annual meeting, Reno, Nevada, November 7, 2001.
4. TEMPUS project JEP-30092-2002: evaluation of quality in higher education-MEDA region
  - a. Launching conference, 19-21/1/2004, Paris, France.
  - b. Assessment of the internal evaluation reports, 5-7/9/2004, Amman, Jordan.
  - c. Outcomes and future perspectives, 23-24/4/2005, Cairo, Egypt.
5. Training human resources for quality assurance review in the academic departments workshop, University of Jordan in cooperation with Ministry of Planning 19-23/9/2004, Amman, Jordan.
6. **Ali Al-Matar**, "The weighting matrix approach as a replacement for the binary interaction parameters in equations of state", Thermo International 2006:

- Sixteenth symposium on thermophysical properties, July 30 - August 4, 2006, Boulder, Colorado, USA.
7. Training of trainers' workshop: Cleaner Production. Royal Scientific Society 10-13/9/2006, Amman, Jordan.
  8. ABET criteria EC2000 workshop, Faculty of Engineering and Technology, University of Jordan, 13-14/6/2007.
  9. Assessment process on ABET EC2000 workshop, Faculty of Engineering and Technology, University of Jordan, 24-25/6/2007.
  10. **Ali Al-Matar**, Ahmed Tobgy, and Ibrahim Suleiman, "Improved prediction of the phase diagram of simple fluids using temperature dependent interaction parameters", *First International Chemical Engineering Conference*, University of Al-Baath, Homs, Syria, 9-12 February 2009.
  11. **Ali Al-Matar**, "Thermodynamics of supercritical fluid extraction of some dyes and pharmaceutical compounds using the weighting matrix approach", *First International Chemical Engineering Conference*, University of Al-Baath, Homs, Syria, 9-12 February 2009.
  12. **Head of the Jordanian delegation** to the course: "**Nuclear energy policy development and planning**", South Korea, 10/7 to 1/8/2010. Held by the Korean International cooperation Agency (KOICA) and Korean Atomic Energy Research Institute (KAERI) .

#### **Reviewer for Scientific Publications**

1. Journal of Molecular Liquids (Elsevier).
2. Arab Journal for Science and Engineering (King Fahd University of Petroleum and Minerals – KSA).
3. Journal of Chemical and Engineering Data (American Chemical Society, USA).
4. Mutah Journal of Research (University of Mutah, Jordan).
5. Reviewer for the Higher Council for Science and Technology (HCST), Jordan.

#### **Honors, Rewards, and Leadership Skills**

- First place for best oral presentation. Graduate research and arts symposium (GRAS). New Mexico State University, Las Cruces, April 2002.
- President of the Chemical Engineering Graduate student organization, 2000-2001.
- Member of the team that won the best innovative process design for Task I (Recovery of acid mine tailings), WERC International Design Contest, April 1998, Las Cruces, NM.

#### **Languages**

- Arabic (native)
- English (excellent)
- Spanish (minor)

**References are available upon request.**