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Professor of Chemical Engineering

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Specialized in
Desalination and Water Treatment
Environmental Science – Air Pollution

Birth Date: 23/02/1955 (1/7/1374 AH)

Place of Birth: Onayzah, Saudi Arabia

Education

Yale University, USA

Ph.D., Chemical Engineering, May 24, 1985.

M.Sc., Chemical Engineering, Dec. 1981

Ph.D thesis title: "Thermionic Emission Study of Hydrocarbon Decomposition, Carbon Deposition and Carbon Oxidation on Hot Metal Surfaces".

King Saud University, Riyadh, Saudi Arabia

B.Sc., Chemical Engineering, August 1979

Senior Project: Design of 5 mgd MSF Desalination Plant

Experience Highlights

Chemical Engineering Department, King Saud University, Riyadh Saudi Arabia

Sept 05, 1979 – Present

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| ▪ Teaching Assistant, | Sept 5, 1979 – May 5, 1980 |
| ▪ Assistant Professor of Chemical Engineering, | May 5, 1980 – July 11, 1989 |
| ▪ Associate Professor of Chemical Eng., | July 11, 1989 – April 27, 1994 |
| ▪ Professor of Chemical Engineering, | April 27, 1994 - Present |

Areas of Expertise:

- Desalination and Water Treatment
- Simulation of Desalination Processes
- Optimization of Desalination Processes
- Optimum Production of Water and Power
- Ground Water Pre-treatment Facilities
- Economical and Feasibility Studies
- Environmental Protection
- General Chemical Reaction Engineering

Part Time Consultants:

Ministry of Water and Electricity (Riyadh Water Treatment) Sep 1999 – Present

- Leading various project teams and conducted many technical report, e.g.
- Prediction on Performance of RO Desalination Plants
- Operation Characteristics of Manfouha Reverse Osmosis Plants

- Lime Recovery from Riyadh Water Treatment Plants
- pH Increase In Water Distribution Pipes
- Determination of Silica Scale Potential in Reverse Osmosis Pretreatment
- pH Control in Water Treatment Plant by the Addition of Carbon Dioxide
- Performance of Reverse Osmosis Units at High Temperatures
- Pretreatment and the effect of cations and anions on prevention of silica fouling
- Silica Fouling - effect of Ca, Mg, and Pretreatment by Sodium Aluminate, and Softeners
- Silica Reduction In Reverse Osmosis Desalting Plants

Affiliations

- Member of the foundation Committee of the Arab Water Council.
- Member of the executive Committee of Prince Sultan Research Center for Environment, Water & Desert
- Member of various scientific societies: IChemE (England). AIChE (USA). CSChE(Canada). ACS (USA). AWMA (USA), and others

Editorial Board:

1. Desalination Journal, Elsevier (ISI Journal)

(The International Journal on the Science and Technology of Desalting and Water Purification). Desalination is the premier international journal dedicated to communicating the latest developments in desalination and advanced water purification including: theoretical and applied research, technological and industrial development, and the experience of operators and users.

http://www.elsevier.com/wps/find/journaldescription.cws_home/502683/description#description

2. International Journal of Nuclear Desalination, Inderscience

The IJND is a refereed journal which aims to provide a highly professional and authoritative source of information in the field of nuclear desalination technology and management. It addresses all topics pertaining to the production and the social use of freshwater (and the joint production of freshwater and electricity) by nuclear energy. The IJND is an interdisciplinary forum, which establishes channels of communication between policy makers, government agencies, academic, research institutions, industry and those concerned with environmental technology, management and policy.

<http://www.inderscience.com/browse/index.php?journalID=53>

Supervisor PhD thesis:

- Vapor side Corrosion in MSF Desalination Plant.
Student: Ahmed S. Al-Arifi
Advisor(s): Prof. Ibrahim S. Al-Mutaz and Dr. Maher A. AlOdan
- Experimental and Theoretical Investigation of Nanofiltration as Pretreatment System for MSF Desalination Plant.
Student: Altaf A. Hussien
Advisor(s): Mohammed B. Abashar and Prof. Ibrahim S. Al-Mutaz
- Evaluation of Air Pollutant Concentrations and Estimation of Dispersion Patterns Near Power Stations in Riyadh City
Student: Ali O. Meshari
Advisor(s): Prof. Ibrahim S. Al-Mutaz

Supervisor Master thesis:

A Study of the Catalysis used for the Control of Automotive Exhaust Emission in the Kingdom of Saudi Arabia

Student: Abdullah S. al-Qurashi

Advisor(s): Prof. Ibrahim S. Al-Mutaz and Dr. Yusuf al-Zeghayre

Performance Study of Manfouha I and II RO Plants, 1999

Student: Bandar A. al-Sultan

Advisor(s): Prof. Ibrahim S. Al-Mutaz

Silica Removal in Water Purification Plants, 2002

Student: Ibrahim A. Al-enzi

Advisor(s): Prof. Ibrahim S. Al-Mutaz

Steady State Modeling of Activated Sludge Process in Wastewater Treatment Plants in Riyadh, 2002

Student: Absullah S. al-Muzaini

Advisor(s): Prof. Ibrahim S. Al-Mutaz, Prof. Ahmad Abasaed

Using MTBE AN Additive to Target High Quality Unleaded Motor Gasoline Production in Saudi Refinery, 2002

Student: Tariq S. al-shaie

Advisor(s): Prof. Hamid M. Mustafa and Ibrahim S. Al-Mutaz

Optimum Production of Water and Power in MSF Desalination Plants, 2003

Student: Abdullah M. Al-namlah

Advisor(s): Prof. Ibrahim S. Al-Mutaz

Modeling of Thermal and Brine Dispersion from Coastal MSF Desalination Plants, 2005

Student: Abdullah al-Mejaly

Advisor(s): Prof. Ibrahim S. al-Mutaz, Prof. Mohammad Abashar

Optimal Design of Hybrid RO/MSF Desalination Plants

Student: Abdullah I. Al-Khudhiri

Advisor(s): Prof. Ibrahim S. Al-Mutaz

Modeling and Simulation of a Reactive Distillation Unit for Production of MTBE

Student: Fahad S. AL-Harhi

Advisor(s): Prof. Ahmed E. Abasaed, Prof. Ibrahim S. Al-Mutaz

Modeling of Membrane Fouling and Flux Decline in Reverse Osmosis Desalination Plants

Student: Ahmed S. Ben Haidyrah

Advisor(s): Prof. Ibrahim S. Al-Mutaz

Reverse Osmosis Productivity Enhancement By Vibrating Membranes

Student: Fahad Al-Jamaan

Advisor(s): Prof. Ibrahim S. Al-Mutaz

Modeling of Nanofiltration Process for Desalination Pretreatment

Student: Mohammed M. Al-Dehani

Advisor(s): Prof. Ibrahim S. Al-Mutaz

Modeling of Carbon Dioxide Release in MSF Desalination Plants

Student: Ail Abdullah Al-Omeir

Advisor(s): Prof. Ibrahim S. Al-Mutaz

Funded Projects relate to Desalination and Water Resources

Project	Team	Source of Funds	Amounts of Funds, SR	Period
<i>Development of a Strategic Plan to Predict Future Demand on Potable Water in the Kingdom</i>	<i>Ibrahim Al-Mutaz, Emad Ali, AbdelHamid Ajbar</i>	<i>The National Plan for Sciences and Technology</i>	475,000	1.5 y
<i>Water Demand Forecast</i>	<i>Ibrahim Al-Mutaz, Emad Ali, AbdelHamid Ajbar, and Hamad alshiekh</i>	<i>Ministry of Water and Electricity</i>	4,000,000	2 y
<i>Developing a dynamic simulator for the industrial Multi Stage Flash (MSF) desalination plants</i>	<i>Emad Ali and Ibrahim Al-Mutaz</i>	<i>College of Engineering Research Center, KSU</i>	30,000	1 y

Chapter in Book

- "Water Management, Purification and Conservation in Arid Climates", edited by M. F.A Goosen and W. H. Shayya Technomic Publisher Co., Inc., Lancaster, Pennsylvania, USA, 2000.

Experience in Nuclear Desalination

1- Publishing 6 papers in nuclear desalination (listed in the publication).

2- Participation into the following meetings:

Represented the Kingdom of Saudi Arabia in the International Atomic Energy Agency (IAEA) in the subject of Nuclear Desalination for the period 1995-2001.

- "Review of the Current Technological Status and Prospectus of Reverse Osmosis Technology", Advisory Group Meeting, AGM, IAEA, Vienna, Nov. 1-3, 1995.
- "Identification of User Requirements for Nuclear Desalination Projects", Advisory Group Meeting, AGM, IAEA, Vienna, July 8-10, 1996.
- "Next Steps in IAEA's Nuclear Desalination Programmes", Advisory Group Meeting, AGM, IAEA, Vienna, Oct. 28-30, 1996.
- "Steering Committee for Symposium on Desalination of Seawater with Nuclear Energy", Advisory Group Meeting, AGM, IAEA, Vienna, Nov. 21-22, 1996.
- "User Requirements of Desalination Systems in the Gulf and North Africa Regions: Expert Group Meeting", Arab Atomic Energy Agency, Cairo, April 2-5, 1997.
- The 1997 Symposium on Prospects for Desalination with Nuclear Energy, Taejon, Korea, May 26-30, 1997.
- The 1st Meeting of the Principal Committee on Nuclear Desalination, Arab Atomic Energy Agency, Cairo, March 21-25, 1999.

- International Nuclear Desalination Advisory Group, INDAG, 3rd Meeting, IAEA, Vienna, June 21-25, 1999.
- International Nuclear Desalination Advisory Group, INDAG, 4th Meeting, IAEA, Vienna, April 12-14, 2000.
- IAEA Technical Meeting, "Integrated Nuclear Desalination System", Chennai, India, Dec 13-16, 2004.

Experience in Nuclear Desalination

3- Share in Editing:

"Options Identification Programme for Demonstration of Nuclear Desalination". IAEA TECDOC Series No. 898. IAEA-TECDOC-898, 1998.

Publications:

- 1- Halpern,B,Al-Mutaz,I.S.,and Douyon,L., "Thermionic Emission From Platinum in Hydrocarbon Flows at Low Pressure" J. Applied Physics 52, 5315, 1981.
- 2- Al-Mutaz,I.S., "Hazard of Air Pollution Caused by The Internal Combustion Engines and Methods of Reduction", 5th Symposium of Industrial Safety, Abha, Saudi Arabia, Oct. 6-9, 1985. (Arabic) Published in Arab Journal for Science 4(8),69, 1986.
- 3- Al-Mutaz,I.S., "Improvement of Groundwater by Reverse Osmosis process" Water Resources and Management Conference in Qassim, King Saud University (Qassim branch) Saudi Arabia, March 31 - April 2, 1986. (Arabic) Published in Arab Journal for Science 4(12),71, 1988.
- 4- Al-Mutaz,I.S., "Recent Trend to Reverse Osmosis for Water Desalination in Saudi Arabia" First International Conference on Separation Science and Technology, New York, USA, April 13-18, 1986.
Published in "Chemical Separations ",vol. 1, edited by C.J.King and J.D.Navaratil, Litarvan Literature, Colorado, USA, 1986.
Summary of this paper was highlighted in Membrane and Separation Technology News 4(10), 14, 1986.
And also in Chemical And Engineering News 64(18),39, May 5,1986.
- 5- Halpern,B., and Al-Mutaz,I.S., "Chopped Fast Flow Technique For Transient Surface Reaction Rate Measurements Carbon Deposition and Oxidation on Hot Pt", 9th International Symposium on Chemical Reaction Engineering, Philadelphia, USA, May 18-21, 1986. Published in Chemical Eng. Science 41(4), 899, 1986.
- 6- Al-Mutaz, I.S., and Al-Fariss,T.F.,"Impact of Lead Phasedown on Saudi Refineries", Hydrocarbon Processing 65, 66B, May 1986.

- 7- Al-Mutaz, I.S., "Public Cleanliness As a Deterrent to the Pollution of the Environment", City Cleaning with the Framework of Environment Protection: Second Seminar, Cairo, Egypt, Sept. 21-26, 1986. (Arabic/ translated into English)
- 8- Al-Mutaz, I.S., "Control of Automotive Emissions", Symposium on Environment Protection in the Arabian Gulf, Kuwait, Oct. 25-28, 1986. (Arabic)
- 9- Al-Mutaz, I.S., Abdulaleem, F.A., El-Nahlawi, T., and ElDahshan, M.E, "The Hazard of Pollution Caused by Ionized Radiation" 6th Symposium of Industrial Safety, Yanbu, Saudi Arabia, Oct. 26-29, 1986. (Arabic)
- 10- Wagialla, K.M., Al-Mutaz, I.S., and El-Dahshan, M.E, "The Manufacture of Soda Ash in the Arabian Gulf", 1st Conference of Indigenous Raw Materials and their Industrial Utilization in the Gulf Region, Kuwait, Nov. 1-4, 1986.
- 11- El-Dahshan, M.E., Wagialla, K.M, and AlMutaz, I.S., "The Production of Alumina from Saudi Bauxite Ores", 1st Conference on Indigenous raw Materials and their Industrial Utilization in the Gulf Region, Kuwait, Nov. 14, 1986.
- 12- Al-Mutaz, I.S., "Catalysis used in Oil Refineries", Symposium of Catalysis in the Chemical and Petroleum Industry, Doha, Qatar, Dec. 20-22, 1986. (Arabic)
- 13- Al-Mutaz, I.S., and Al-Ubaid, A.S, "The Role of Catalysis in the Manufacturing of MTBE", Symposium of Catalysis in the Chemical and Petroleum Industry, Doha, Qatar, Dec. 20-22, 1986. (Arabic)
- 14- Al-Mutaz, I.S., "Power Stations And The Environment", Environmental Issues No 29, Kuwait Environmental Protection Society, Kuwait, Feb. 1987. (Arabic: small Booklet 35 pages)
- 15- Al-Mutaz, I.S., "Chemistry of Gasoline Combustion and Its Role on Air Pollution", The 2nd National Meeting of Chemist, College of Science, King Saud University, Riyadh, Saudi Arabia, March 7-9, 1987.
- 16- Al-Mutaz, I.S., "Power Stations and the Environment", First Symposium on Electric Power Systems in Fast Developing Countries, College of Engineering, King Saud University, Riyadh, March 21-24, 1987.
- 17- Al-Mutaz, I.S., "Saudi MTBE Plant and Its Role in The Lead Phasedown in The Country", Energy Progress 7(1), 18, (March) 1987.

- 18- Al-Mutaz, I.S., Al-Fariss,T.F., and Al-Habdan,F.M., "An Assessment of Sulphur Recovery at Riyadh Refinery", British Sulphur's 11th International Conference, Sulphur 87, Houston, Texas, April 5-8, 1987.
- 19- Al-Mutaz, I.S., and Al-Farraj,M.M., "Environmental Pollution From Agriculture Activities", Tenth Symposium on The Biological Aspects in Saudi Arabia, Saudi Biological Society, Meteorology and Environmental Protection Administration, Jeddah, April 20-24, 1987.
- 20- Al-Mutaz, I.S., "The Role of Industrial Pollution on Deterioration of Environmental Balance", Tenth Symposium on The Biological Aspects in Saudi Arabia, Saudi Biological Society, Meteorology and Environmental Protection Administration, Jeddah, April 20-24, 1987.
- 21- Al-Mutaz, I.S., "Improvement of Underground Waters For Human and Agriculture Uses", Agriculture and Water Journal, 3(5), 34, April 1987. (Arabic).
- 22- Al-Mutaz, I.S., "Environmental Impact of Seawater Desalination Plants", 7th International Symposium on Environmental Pollution, Toronto, Canada, June 11-12, 1987.
- 23- Al-Mutaz, I.S., "Air Pollution Problem at Riyadh Refinery", Air Pollution Control Association Annual Meeting, New York, June 22-26, 1987.
- 24- Al-Mutaz, I.S., "Chemistry of Sulphur Production From Oil Refineries", Asian Chemical Congress 87 Seoul, The Korean Chemical Society, Seoul, Korea, June 29-July 3, 1987.
- 25- Al-Mutaz,I.S., "Simple Design Model For Reverse Osmosis Process", International Conference on Modeling and Simulation, Karlsruhe, West Germany, July 20-22, 1987.
- 26- Al-Mutaz, I.S., "CO, Particulates, Lead Levels in the Indoor Environment in Riyadh, Saudi Arabia", The 4th International Conference on Indoor Air Quality and Climate, Berlin(West), August 17-21, 1987.
- 27- Al-Fariss, T.F., and Al-Mutaz, I.S., "Possible Utilization of Solar Energy in Saudi Arabia", ISES Solar World Congress 87, Hamburg, Germany, Sept. 13-18, 1987.
- 28- Al-Mutaz, I.S., "By-Products Recovery from Saudi Desalination Plants", Desalination 64, 97, 1987.
Also presented in the 3rd World Congress on Desalination and Water Reuse, Cannes, France, Sept. 14-17, 1987.

- 29- Al-Mutaz, I.S., "Water Resources Development in Riyadh, Saudi Arabia", *Desalination* 64, 193, 1987.
Also presented in the 3rd World Congress on Desalination and Water Reuse, Cannes, France, Sept. 14-17, 1987.
- 30- Al-Mutaz, I.S., "The Effect of the Accumulation of Carbon Dioxide in the Elevation of Atmospheric Temperature", *Journal of Islamic Capitals and Cities*, No. 9, p73, Sept. 1987. (Arabic)
- 31- Al-Mutaz, I.S., "Automotive Emission Problem in Saudi Arabia", *Environment International* 13, 335, 1987.
- 32- Al-Mutaz, I.S., "Recent Trends on Desalination of Sea Water", *Agriculture and Water Journal* 3(6), 46, November 1987. (Arabic).
- 33- Al-Mutaz, I.S., "Techno-economic Studies on the Production of Magnesia and Magnesium from Al-Jubail Desalination Rejected Brine", *Workshop on Production of Magnesia and Magnesium*, Gulf Organization for Industrial Consulting, Dec. 2, 1987. (Arabic)
- 34- Al-Mutaz, I.S., and Al-Zahrani, S.A., "Production of Automobile Alternative Fuel From Agricultural Wastes in Saudi Arabia", 8th Miami International Conference on Alternative Energy Sources, Miami, Florida, USA, Dec. 14-16, 1987.
- 35- Al-Mutaz, I.S., "Guidelines For The Use of Thermionic Emission as an Automotive Emission Sensor", *Indian Chemical Engineering Congress 87, 40th Annual Session of the Indian Institute of Chemical Engineers*, Dhanbad, India, Dec. 19-22, 1987.
- 36- Al-Fariss, T.F., and Al-Mutaz, I.S., "Fertilizer Industry in The Arabian Gulf Countries", *Indian Chemical Engineering Congress 87, 40th Annual Session of the Indian Institute of Chemical Engineers*, Dhanbad, India, Dec. 19-22, 1987.
- 37- Al-Mutaz, I.S., "Pollution at Oil Refineries and Methods of Control", *Journal of Industrial Cooperation in the Arabian Gulf*, 8(31), 40, Jan 1988. (Arabic)
- 38- Al-Mutaz, I.S., "Utilization of Treated Wastewater in Riyadh, Saudi Arabia", *International Conference on Air/Water and Environmental Pollution and Hazardous Wastes*, Bombay, India, Feb. 11-12, 1988.
- 39- Al-Mutaz, I.S., Al-Fariss, T.F., and Abdullah, A.I., "Production of Lead-Free Gasoline From Riyadh Refinery", *Transaction of Egyptian Society of Chemical Engineers (TESCE)*, vol. 14, 1988.
Also presented at the Third Chemical Engineering Congress, Egyptian Engineering Society, Cairo, March 19-21, 1988.

- 40- Al-Mutaz, I.S., and Al-Farraj, M.M, "Mechanism of Ozone Destruction and its Environmental Impact", 11th Symposium on the Biological Aspects in Saudi Arabia, Yanbu, May 30 - June 2, 1988.
- 41- Al-Mutaz,I.S., and Al-Farraj,M.M., "Formation and Destruction of Ozone in Polluted Atmosphere", 11th Symposium on the Biological Aspects in Saudi Arabia, Yanbu, May 30 - June 2,1988.
- 42- Al-Mutaz, I.S., "Major Sources of Air Pollution in Riyadh, Saudi Arabia", 81st Annual Meeting of Air Pollution Control Association, Dallas, Texas, USA, June 20-24, 1988.
- 43- Al-Mutaz, I.S., "Liquid and Solid Wastes in Riyadh and Jeddah", Arabian City Journal, No 32, July 1988. (Arabic)
- 44- Al-Mutaz,I.S., "Monitoring Combustion Completeness- A Review", Journal of Engineering Science, King Saud University, 14(2), 199, 1988.
- 45- Al-Fadli,A.M, Soliman, M.A., Wagiala,K.M, and Al-Mutaz, I.S., "A Network Model For The Optimal Planning Of The Saudi Petrochemical Industry", Journal of Engineering Science, King Saud University, 14(2), 1988.
- 46- Al-Mutaz,I.S., and Wagialla,K.M., "Techno-economic Feasibility of Extracting Minerals from Desalination Brines", Desalination 69(3), 297, 1988.
- 47- Fadli,A.M., Soliman,M.A., Wagialla,K.M., and Al-Mutaz,I.S., "Optimal Resources Allocation and Processing for the Saudi Petrochemical Industry", Process Economics International 7, 22, 1988.
- 48- Al-Mutaz,I.S., "Solid Wastes from Oil Refineries", Symposium on Utilization of Industrial Wastes, Baghdad, Iraq, Nov. 6-10, 1988. (Arabic)
- 49- Al-Mutaz,I.S., "Oscillation in Carbon Oxidation on Platinum Surface", International Conference on Advances in Chemical Engineering, Kanpur India, Jan. 4-6, 1989.
- 50- Al-Mutaz,I.S., "Water Budget for the Kingdom of Saudi Arabia", The First Saudi Symposium on Earth Sciences, King Abdul-Aziz University, Jeddah, Jan 28-30, 1989.
- 51- Al-Mutaz,I.S., " Production and Utilization Development of Natural Gas in Saudi Arabia", The First Saudi Symposium on Earth Sciences, King Abdul-Aziz University, Jeddah, Jan 28-30, 1989.
- 52- Al-Mutaz,I.S., "Potential Pollution from Petrochemical Industry", The Third National Meeting of Chemist, King Fahd University of Petroleum and Minerals, Dhahran, March 12-14, 1989. (Arabic)

- 53- Al-Mutaz,I.S., "Removal of Gaseous Pollutants in a Wet Atmosphere", The Third National Meeting of Chemist, King Fahd University of Petroleum and Minerals, Dhahran, March 12-14, 1989.
- 54- Al-Mutaz,I.S., "Present and Future Prospect of Saudi Petrochemical Industry", The fifth Scientific Conference of the Scientific Research Council, Baghdad, Iraq, April 28- May 2, 1989.
- 55- Al-Mutaz,I.S., "Techno-Economic Study of Solar Desalination", The fifth Scientific Conference of the Scientific Research Council, Baghdad, Iraq, April 28- May 2, 1989. (Arabic)
- 56- Al-Mutaz,I.S., "The Role of Automobile Inspection Program in Reducing Automotive Emissions in Saudi Arabia", 82nd Annual Meeting of Air Pollution Control Association, Anaheim, California, USA, June 25-30, 1989.
- 57- Al-Mutaz,I.S., "A Simple Method for the Estimation of Deposited Carbon Thickness", The Arabian Journal of Science and Engineering, King Fahd University of Petroleum and Minerals, 14, 1989.
- 58- Al-Mutaz,I.S., "Pollution in Agriculture Environment", Environmental Issue # 35, Environmental Protection Society, Kuwait, May 1989.(Book in Arabic)
- 59- Al-Mutaz,I.S., "Future Prospect of Seawater Desalination in the Arabian Gulf Countries", Science and Technology 17,216, July 1989.
- 60- Al-Mutaz,I.S., "Feedstock Limitations in Saudi Arabian Petrochemical Plants Dictate Products", Oil and Gas Journal, Sept. 4, 1989.
- 61- Al-Mutaz,I.S., "Treated Waste Water As a Growing Water Resources For Agriculture Use", Desalination 73, 27, 1989.
4th World Congress on Desalination and Water Reuse, Kuwait, Nov. 48, 1989.
- 62- Al-Mutaz,I.S., and Al-Ahmed,M.I., "Evaluation of Solar Powered Desalination Processes", Desalination 73, 181, 1989.
4th World Congress on Desalination and Water Reuse, Kuwait, Nov. 48, 1989.
- 63- Al-Mutaz,I.S., Soliman,M.A., "Simulation of MSF Desalination Plants", Desalination 74, 317, 1989.
4th World Congress on Desalination and Water Reuse, Kuwait, Nov. 48, 1989.
- 64- Al-Zahrani,A.E.S., Soliman,M.A., and Al-Mutaz,I.S., "An Approximate Analytical Solution for Performance of Reverse Osmosis Plants" Desalination 75, 15, 1989.
4th World Congress on Desalination and Water Reuse, Kuwait, Nov. 48, 1989.

- 65- Al-Mutaz,I.S, Soliman,M.A, and Daghthem,A.M., "Optimum Design for a Hybrid Desalting Plant", *Desalination* 76, 177, 1989.
4th World Congress on Desalination and Water Reuse, Kuwait, Nov. 48, 1989.
- 66- Al-Mutaz,I.S., "Air Pollutants Transport and Diffusion", 12th Symposium on the Biological Aspects in Saudi Arabia, King Saud University, Riyadh, Dec. 19-21, 1989.
- 67- Al-Mutaz,I.S., Al-Fariss,T.F., and Abd El-Aleem,F.A., "Hydrogen Production From Sea Water", the First Saudi Symposium on Energy, Utilization and Conservation, King Abdulaziz University, Jeddah, March 4-7, 1990.
- 68- Al-Fariss,T.F., Al-Mutaz,I.S., and Abd El-Aleem,F.A., "Nuclear Energy Utilization and Solar Energy Application in Hydrogen Production", the First Saudi Symposium on Energy, Utilization and Conservation, King Abdulaziz University, Jeddah, March 4-7,1990.
- 69- Al-Mutaz,I.S., "Energy Utilization from Domestic Wastes", the First Saudi Symposium on Energy, Utilization and Conservation, King Abdulaziz University, Jeddah, March 4-7, 1990.
- 70- Al-Mutaz,I.S., "Energy Conservation in Seawater Desalination Plants", the First Saudi Symposium on Energy, Utilization and Conservation, King Abdulaziz University, Jeddah, March 4-7,1990.
- 71- El-Dahshan,M.E., and Al-Mutaz,I.S., "Selection of the suitable Material in Industrial Field As a mean of Successful Maintenance", Symposium on Maintenance Planning and Operation, College of Engineering, King Saud University, Riyadh, March 17-19, 1990.
- 72- Al-Mutaz,I.S., " A Simple Technique for Optimizing Automobile Engine Operation to Reduce Emission and Maintain Efficiency", 83rd Annual Meeting of Air Pollution Control Association, June 26, 90.
- 73- Al-Mutaz,I.S., "Hydrogen Recovery in Oil Refinery by Selective Membrane Separation Processes", AIChE Summer Meeting, San Diego, California, USA, Aug. 19, 1990.
- 74- Al-Mutaz,I.S., and Wagialla,K.M, "Production of Magnesium from Desalination Brines", *Resources, Conservation and Recycling Journal*, vol. 3, 231, 1990.
- 75- Al-Mutaz,I.S., "Estimation of the probability of Methane Decomposition On Hot Platinum Surface by Thermionic Emission", *Arab Gulf J Scientific Res.* 8,(3), 51, 1990.

- 76- Al-Mutaz,I.S., and Al-Farraj, M.M, " Mechanism of Ozone Destruction and Its Environmental Impact", *Tropical Ecology* 31(2), 1, 1990.
- 77- Al-Fariss,T.F., Al-Mutaz,I.S., and Al-Shamrani, "Modification of Darcy's Law", *Science International* 2, 341, 1990.
- 78- Al-Mutaz,I.S, "Environmental Impact of seawater Desalination Plants", *Environmental Monitoring and Assessment Journal*, vol. 16, 75, 1991.
- 79- Al-Ahmad,M.I and Al-Mutaz,I.S, "Techno-Economic Study of Re Refining Waste Lubricating Oils in the Arabian Gulf Countries", *Resource' Conservation and Recycling* 6, 71, 1991.
- 80- Al-Mutaz,I.S., "Removal of Gaseous Pollutants in Wet Atmosphere", *Journal of King Saud University*, Vol. 4, *Engineering Science* (1), 47, 1992.
- 81- Wagialla,K.M, Al-Mutaz,I.S. and El-Dhshan,M.E., "The Manufacture of Soda Ash in the Arabian Gulf", *International Journal of Production Economics* 27, 145, 1992.
- 82- Al-Fariss,T.F., Fakeeha,A.H., Al-Mutaz,I.S and Al-Shamrani,A.M., "Viscosity Correlation for Non-Newtonian Waxy Oils" *Journal of King Abdulaziz University - Engineering Science* 4, 91, 1992.
- 83- Wagialla,K.M., and El-Dahshan,M.E. and Al-Mutaz,I.S., "Techno Feasibility of a Modified Bayer Hydrochloric Acid Leaching Method for extraction of Alumina from Bauxite Ores", Submitted for publication in *Chemical Review and Production Economic*.
- 84- Al-Mutaz,I.S., Soliman,M.A. and Al-Zahrani,A.E.S, "Simplified Model for Hollow Fine Fiber Modules with Radial Dispersion", *Journal King Saud university*, vol 10, *Eng. Sci* (1), 115-126, 1998.
- 85- Al-Mutaz,I.S., Soliman,M.A. and Al-Zahrani,A.E.S, "Modeling and Simulation of Hollow Fine Fiber Modules with Radial Dispersion: Parametric Sensitivity Study", Submitted for publication in *Desalination Journal*.
- 86- Faheeha,A.H., Abdelaleem,F.A., Al-Fariss,T.F, Al-Mutaz,I.S. and Idriss,A.I., "The Application of Electro-Chemical Impedance Spectroscopy in Porous Electrode - Studies for Hydrogen Evolution", the 182nd Meeting of the Electro-chemical Society, Toronto, Canada, October 11-16, 1992.

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