**Alaa-Eldin M. Adris, PhD**

Professor and former Chair,

Department of Petroleum and Energy Engineering

School of Sciences and Engineering

The American University in Cairo

[alaa@edrisgroup.com](mailto:alaa@edrisgroup.com); alaa.adris@aucegypt.edu

Apt. 24, Bldg. 15A St. # 6, Maadi, Cairo, Egypt

Tel. +20100-1077012

**Education**

**University of British Columbia, Vancouver, B.C., Canada.**

Ph.D. in Chemical Engineering, 1994

**University of Salford, England**

M.Sc. in Chemical and Gas Engineering, 1989

**Faculty of Engineering, Cairo University, Egypt**

B.Sc. in Chemical Engineering, 1983

**Professional Certification**

1. **Certified Board Director**, International Finance Corporation (IFC), 2007
2. **Certified Corporate Governance Consultant**, International Finance Corporation (IFC), 2007

**Personal Information**

Birth: November 5, 1959 – Cairo, Egypt

Status: Married, have two children; Yousef (1989) and Yasser (1992)

Nationality: Egyptian/Canadian

**Experience**

**Professor of Energy Engineering and former Chair, *Petroleum and Energy Engineering Department, American University in Cairo -*** *July 2014-Present*

**Responsibilities:**

Streamline Curriculum, teaching, administration and undergraduate research of the department.

**Chief Knowledge Officer,  *Misr El Kheir Foundation MEK***

November 2011 – August 2014

**Responsibilities:**

* Build two strategic business units for Education and Scientific Research and Innovation
* Establish technical and vocational clusters to cover industries underserved by the local education system, e.g. logistics, paramedical professions, nursing, quarrying and marble processing, desert agriculture, waste management, etc.
* Grow the volume of work for the two SBU’s from EGP28M to EGP300M (achieved)
* Establish a scholarship and a student loan system
* Establish Technology Incubator (GESR – Governorate Social and Economic Revival)
* Establish research programs in Biological, Physical and Social Sciences to meet community needs.

**Chemical Technology Consultant at Sabic, Saudi Arabia** 2001 - Present

* Building work systems for the full innovation cycle to develop a new chemical or polymer product and train research teams on applying the work process.
* Establish a national strategic plan for research tracks targeting alternative feedstock development
* Mentoring Ph.D. Graduates to take on technology development responsibilities.
* Evaluate the progress of technology development projects and directing development efforts.
* Establish a career path and technical ladder for research and development engineers and scientists

**Founder and Managing Director of Corde**

February 2005 - October 2011

Corde is a corporate development and empowerment company focused on the turnaround of family business towards institutionalized operation by means of applying good practices of:

* Business strategy formulation and management
* Establishment of work policies, systems and processes
* Business operation and financial planning
* Automation of business operation (ERP systems implementation)

Over its 6 years of operation, Corde have applied its business transformation model to 52 companies of the local and regional market.

**Adjunct Professor at the Department of Chemical and Biological Engineering, University of British Columbia, Vancouver, Canada.** 2002 - 2006

* Supervised Two Ph.D. dissertations Al-Sherehy (20005) and Boyd (2007)
* Supervised 4 graduation projects

**Chief Technology Officer at Membrane Reactor Technologies Ltd (MRT). Vancouver, Canada.** February 2001 - July 2005

Responsibilities:

- Coordinate day-to-day activities in research, design and all technical areas.

- Work, as a member of the Technical Advisory Committee, with NORAM engineers and others to design a successful FBMR prototype capable of producing 250 SLPM of hydrogen.

- Respond to enquiries and follow up on contacts that relates to business opportunities for MRT.

- Supervise researchers and research activities in the company Research labs [Gas Gun facility and NRC-Innovation Centre], providing leadership and assuring high standards of safety.

- Perform management tasks, such as the development of a business plan, financial accounting and development of administrative structure.

- Take initiative to procure research and other types of funding.

- Identify patentable IP and secure company position on such IP.

**Chief Technology Officer at Molecular Membrane Technologies Inc. (MMTI)**

2002 - 2004

Responsibilities:

* Perform Research contracts to develop molecular membranes for Industrial clients
* Manage client relationship (objectives definition, reporting progress and manage expectations)

**Process Technology Development Manager at Chemical Technology Department, SABIC R&D, Riyadh, Saudi Arabia**

May 1999 - January 2001

Responsibilities:

* Accomplish a corporate mandate of establishing a process technology development department capable of running three grass-root technology development programs at a time, in addition to supporting production technology enhancements.
* Planning and setting up the quality measures for the developmental activities and develop a gate system for project phases approval.
* Coordinating project implementation schedules and monitor expenditure conformity with budget (Department budget in 2000 was US$ 11.2 million)
* Evaluation of technology opportunities offered to the company by others.
* Participation and follow up on joint developmental programs (such as Linear alpha Olefin with Linde AG and FBD-3/4 technology with Snamprogetti).
* Representing sabic in research consortiums (such as SRI and PSRI).
* Establish the department work systems and tools as well as manuals and procedures.
* Hands-in involvement in the reactor designs and related decisions.
* Supervise the operation of three pilot plants that generates technology performance data

**Process Development Advisor at The Chemicals Group, Research and Technology Support**

**Department, SABIC R&D- Riyadh, Saudi Arabia**

December 1994 - May 1999 (4 years 6 months)

Responsibilities: during this period, I have been involved in the following types of activities:

(1) Team leader for a task force program on the development of a new catalytic process technology. This task involves planning and coordination activities for all aspects of the technology development (catalysis, engineering studies, hazard evaluation, legal protection, economic analysis, piloting and scale-up). My role in this project is also to be fully responsible for the details of the reaction kinetics and the regression analysis to generate the kinetic rate expression needed for the design and reactor scale-up studies. In addition to perform reactor projections for both fixed and fluidized bed reactors.

(2) Technical support for SABIC affiliates operating plants. This is to provide trouble-shooting support as well as plan and implement investigation programs to address operational problems, especially with reaction systems and energy recovery systems.

(3) Development of work systems and the acquisition of work tools for the Chemicals Group (e.g., selection of simulation packages for different functions of the group, identifying the required design guides. etc.).

(4) Selection of graduate research topics for junior engineers and relate the product of the research work to the corporate medium and long-term objectives. In addition, I provide the follow-up on the progress of these research programs and observe the maintenance of the confidentiality of the company information.

(5) Supervision of three M.Sc. thesis projects as listed later under "current Research Involvements".

**Research Associate at The Industrial Hydrogen Chair Program at the Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, Alberta, Canada.**

May 1994 - November 1994

Responsibilities:

* to establish and promote a research base in the area of hydrogen production, by means of hydrogen sulfide decomposition and steam/methane reforming, as well as hydrogen separation/purification by means of selective membranes.
* To transfer the knowledge of FBMR operation to the Hydrogen Chair Team.

**Graduate Research Assistant, Department of Chemical Engineering, University of British Columbia, Vancouver, Canada.**

1989 - 1994

Responsibilities:

* Designing, building, commissioning and operating a pilot scale steam methane-reforming plant to examine and validate a new reactor configuration concept. The plant has a hydrogen production capacity of 6 m3 [STP]/h and is capable of handling the reforming reactions at temperatures and pressures up to 750 C and 1.5MPa, respectively. The reactor is a fluidized bed and is provided with membrane tubes for in-situ selective hydrogen separation.
* Investigating the system hydrodynamics, permeation rates and the reactor performance with and without hydrogen removal.
* Studying the effect of the different operating variables and some of the design parameters on the overall reactor performance.
* Development of a rigorous simulation package for the new reactor system to be used for design and scale-up, control and optimization purposes.

**Graduate Teaching Assistant at Department of Chemical Engineering, University of British Columbia, Vancouver, Canada**:

During the period 09/1989 to 04/1994 I provided teaching assistantship for numerous courses including:

* Chemical Reactor Design,
* Diffusional Operations II,
* Chem. Eng., Lab IV,
* Engineering Physics Lab. I and Physics100 level.

**Research Engineer at Chemical Engineering Department, King Saud University, Riyadh, Saudi Arabia.** 1987 - 1989

**Process Engineer - Part Time at Al Sharif Scientific Center**

January 1985 - January 1987

Al-Sharif Scientific Center ASC is a consultation office supporting Al-Sharif Petrochemical Complex, Cairo, Egypt.

Responsibilities:

Working on planning phase of the Petrochemical complex project, during which I contributed to:

- The infrastructure planning and utility estimation.

- Technology evaluation for the following processes:

\* Polystyrene process

\* Melamine process

\* SBR (Styrene Butadiene Rubber) process

**Process Engineer at ENPPI** October 1983 - January 1987

ENPPI (Engineering for Petroleum and Process Industries) is a joint venture company between EGPC (Egyptian General Petroleum Corporation) and IBI (International Bechtel Inc.).

Responsibilities

* Designing of Heat Transfer Equipment (Heat Exchangers, Air Coolers and Fired Heaters) for Assuit Refinery and Suez Refinery Expansion projects
* Debottlenecking refinery heat exchange train using Pinch Technology
* Automate manual procedure for design equipment
* Equipment procurement technical evaluation.

**Other Professional and Civic Society Engagements**

* Member and Elected President of the Technical Committee of the UN-ESCWA. [2017]
* Established the Egyptian Center for the Advancement of Science, Technology and Innovation (ECASTI) [www.ecasti.org](http://www.ecasti.org) (Chairman of the Board of Trustees) [2013]
* Co-founder of Misr Elkheir Foundation, [www.misrelkheir.org](http://www.misrelkheir.org) . [2007]
* Member of the board of directors for the Egyptian STDF (Science and Technology Development Fund), which is the main national R&D funding mechanism. [20112015]
* Member of the Faculty Council for the Engineering school at Cairo University [2013-2015]
* Member of the Board of Trustees of Nile University [2011-2014]

Patents Granted

1. **Fluidized Bed Reaction System for Steam/Hydrocarbon Gas Reforming to Produce Hydrogen** United States Patent 5,326,550 Issued 1994

Inventors: Alaa-Eldin Adris, Grace, J.R., Lim, C.J. and S.S.E.H. Elnashaie

1. **Method for Producing Vinyl Acetate Monomer from Ethane or Ethylene Oxidation**

United States Patent 6,143,921 Issued 2000

Inventors: Alaa-Eldin Adris, Karim, K.

1. **Low Temperature Autothermal Steam Reformation in a Fluidized Bed**

United States Patent 6,331,283 Issued 2001

Inventors: Alaa-Eldin Adris, Roy, S; Pruden and J. Grace

1. **Tubular Reactor with Gas Injector for Gas Phase Catalytic Reactions**

United States Patent 6,818,189 Issued January 2002

Inventors: Alaa-Eldin Adris, Friedrich Gutlhuber

1. **Continuous Flow Reaction Systems with controlled addition of reactants**

United States Patent 7,445,758 Issued November 2005

Inventors: Alaa-Eldin Adris, A.M; Al-Sherehy, F.A.; Soliman, M. A.; Hakeem, T.;

Kareemuddin, S.; Al-Nutaifi, A.A; Saudagar, M and S.M. Azam

1. **Internally circulating fluidized bed membrane reactor system**

United States Patent 7,141,231 Issued November 2006

Inventors: John R. Grace, Choon Jim Lim, Alaa-Eldin M. Adris, Donglai Xie, David Anthony Boyd, Clive M. H. Brereton

1. **Communicating compartmentalized fluidized bed reactor**

United States Patent US20080118407 A1 Issued May 2008

Inventors: John R. Grace, Choon Jim Lim, Alaa-Eldin M. Adris, Heping Cui, David Anthony Boyd.

**Cited Publications**

1. Adris, Alaa-Eldin M; Grace, John R; "Characteristics of fluidized-bed membrane reactors: scale-up and practical issues” Industrial & engineering chemistry research, 36,11, 4549-4556, 1997. ACS Publications.
2. Boyd, Tony; Grace, John; Lim, C Jim; Adris, Alaa-Eldin M; "Hydrogen from an internally circulating fluidized bed membrane reactor”, International Journal of Chemical Reactor Engineering, 3, 1, 2005.
3. Dogan, Meltem; Posarac, Dusko; Grace, John; Adris, Alaa-Eldin M; Lim, C Jim; "Modeling of autothermal steam methane reforming in a fluidized bed membrane reactor”, International Journal of Chemical Reactor Engineering, 1, 1, 2003.
4. Xie, Donglai; Lim, C Jim; Grace, John R; Adris, Alaa-Eldin M; "Gas and particle circulation in an internally circulating fluidized bed membrane reactor cold model”, Chemical Engineering Science, 64, 11, 2599-2606, 2009. Elsevier
5. Al-Sherehy, Fahad; Grace, John R; Adris, Alaa-Eldin M; " The influence of distributed reactant injection along the height of a fluidized bed reactor”, Chemical engineering science, 60, 24, 7121-7130, 2005. Elsevier
6. "Al‐Sherehy, Fahad; Grace, John; Adris, Alaa‐Eldin; "Gas mixing and modeling of secondary gas distribution in a bench‐scale fluidized bed “, AIChE journal, 50, 5, 922-936, 2004. Wiley Online Library
7. Boyd, Tony; Grace, John R; Lim, C Jim; Adris, Alaa-Eldin M; "Cold modelling of an internally circulating fluidized bed membrane reactor”, International Journal of Chemical Reactor Engineering, 5, 1, 2007.
8. Grace, John R; Al-Sherehy, Fahad; Adris, Alaa-Eldin M; " The influence of distributed reactant injection along the height of a fluidized bed reactor”, Chemical engineering science, 24, 7121-7130, 2005. Pergamon
9. Adris, AM; Elnashaie, SSEH; Hughes, R; " A fluidized bed membrane reactor for the steam reforming of methane”, The Canadian Journal of Chemical Engineering, 69, 5, 1061-1070, 1991. Wiley Online Library
10. "Adris, AM; Lim, CJ; Grace, JR; " The fluidized-bed membrane reactor for steam methane reforming: model verification and parametric study”, Chemical Engineering Science, 52, 10, 1609-1622, 1997. Elsevier
11. Adris, AM; Lim, C Jim; Grace, JR; "The fluidized bed membrane reactor system: a pilot scale experimental study”, Chemical Engineering Science, 49, 24, 5833-5843, 1994. Elsevier
12. "Elnashaie, SSEH; Adris, AM; Al-Ubaid, AS; Soliman, MA; "On the non-monotonic behaviour of methane—steam reforming kinetics”, Chemical Engineering Science, 45, 2, 491-501, 1990. Elsevier
13. Adris, AM; Pruden, BB; Lim, CJ; Grace, JR; " On the reported attempts to radically improve the performance of the steam methane reforming reactor”, The Canadian Journal of Chemical Engineering, 74, 2, 177-186, 1996. Wiley Online Library
14. Soliman, MA; El-Nashaie, SSEH; Al-Ubaid, AS; Adris, A; " Simulation of steam reformers for methane”, Chemical engineering science, 43, 8, 1801-1806. 1988. Elsevier
15. Roy, S; Pruden, BB; Adris, AM; Grace, JR; Lim, CJ; "Fluidized-bed steam methane reforming with oxygen input”, Chemical Engineering Science, 54, 13, 2095-2102, 1999. Elsevier
16. Elnashaie, SSEH; Adris, AM; Soliman, MA; Al‐Ubaid, AS; "Digital simulation of industrial steam reformers for natural gas using heterogeneous models”, The Canadian Journal of Chemical Engineering, 70, 4, 786-793, 1992. Wiley Online Library
17. Roy, S; Cox, BG; Adris, AM; Pruden, BB; " Economics and simulation of fluidized bed membrane reforming”, International journal of hydrogen energy, 23, 9, 745-752, 1998. Elsevier
18. Al-Sherehy, FA; Adris, AM; Soliman, MA; Hughes, R; "Avoidance of flammability and temperature runaway during oxidative dehydrogenation using a distributed feed”, Chemical engineering science, 53, 23, 3965-3976, 1998. Elsevier
19. Soliman, MA; Adris, AM; Al‐Ubaid, AS; El‐Nashaie, SSEH; "Intrinsic kinetics of nickel/calcium aluminate catalyst for methane steam reforming”, Journal of Chemical Technology and Biotechnology, 55, 2, 131-138, 1992. Wiley Online Library
20. "Abashar, MEE; Alhumaizi, KI; Adris, AM; "Investigation of methane–steam reforming in fluidized bed membrane reactors”, Chemical Engineering Research and Design, 81, 2, 251-258, 2003. Elsevier.
21. Elnashaie, SSEH; Alubaid, AS; Soliman, MA; Adris, AM; " ON THE KINETICS AND REACTOR MODELING OF THE STEAM REFORMING OF METHANE-A REVIEW”, JOURNAL OF ENGINEERING SCIENCES, 14, 2, 247-273, 1988.