

Resume

Nahed A. El-Mahallawy

**Professor of Materials and Manufacturing,
Faculty of Engineering , Ain Shams University**



Scopus and Google Scholar October 2025

Scopus h index 26

Google scholar citations 2155

Scopus Citations 1480

Scopus ID 7004060908

Research Gate citations 1806

h-index 26

I10-index 43

Orcid no 0000 002 1081 429X

Total no of international publications in scopus 132 (to be updated)

Personal Data:

Birth date: January 10, 1947

Marital Status: Married, two children.

Address: 24 Abu Gaafar El Nahas, Ard El Golf, Heliopolis

Mobile phone: 012 78 28 240

Education:

- *1976, Ph.D Production Engineering (Material Science), Ain Shams University, Cairo - Egypt.
Thesis title: “Effect of Solidification Parameters and Mould Shape on the Structure of Some Directionally Solidified AL-Ni Alloys”.
- *1972, M. Sc. Production Engineering (Material Science), Ain Shams University, Cairo - Egypt.
Thesis title: “Effect of Composition and Temperature on the Structure and Mechanical Behaviour of Al-Cu Alloys”.
- *1969, B. Sc. Production Engineering (Material Science), Ain Shams University, Cairo - Egypt. General Grade: **Very Good with Honors**, Project Grade : **Excellent**

Honors and Prizes:

* 2017 Ain Shams Prize of Appreciation in Engineering Sciences جائزة عين شمس التقديرية في العلوم الهندسية

*1982: State Prize in Engineering Sciences, Academy of Research and Technology, Egypt.

*1982: National Egyptian Science and Art Medal.

* 2022: International Best Researcher Award by ISSN Awards with World Research Council & Times of Research

* Aug 2024– State Prize of Appreciation in Engineering Sciences for 2023

جائزة الدولة التقديرية في العلوم الهندسية لعام ٢٠٢٣

Awards:

*2024-2026- Co-PI in the project ID 50142 :”*Integrating Advanced Self-Cleaning Coating and High-Thermal Conductive Technologies for Enhancing Solar Photovoltaic Performance in Severe Environment Conditions*” Egypt-UK Cooperation: International Science Partnerships Fund Research Collaborations Grant), call (1).

* 2024 ASRT STARS fellowship program- cycle1- 2023 “*On the feasibility of using biodegradable oils in gear lubrication*” in collaboration with Aalen University, Germany, 3months budget for mobility in summer 2024

* 2022- 2024-: STDF project 46898 co-PI "Zero emissions-solar energy station for green desalination of brackish aquifers and seawater " In cooperation with Agricultural Research Institute , Budget 1457560 LE

* 2019-2022: IMHOTEP project on *Zinc-Mg alloys scaffolds coated with bioactive materials for biomedical applications* in collaboration with University of Strassbourg, France.

*2020-2022: Co- Pi , German Egyptian Research Fund (GERF)- Project ID 33639, “*Developing and Processing of Al-Ceramic Particulate MMC-clad sheets with high mechanical performance and high corrosion resistance for transportation applications*” in collaboration with TU – Clausthal, Germany

- *2016-2018 DAAD/BMBF joint research project on Materials for Bone Regeneration in cooperation with GUC,Ulm and TU Clausthal Universities
- * October 2015 till 20 October 2017: South Africa/Egypt joint science and technology research project award, on “Development of high temperature solar absorbers with high stability in air”
- * 2014-2016 DAAD/BMBF joint research project on 3D printing in cooperation with GUC, Aachen and Stuttgart Universities
- * 2014-2016 DAAD/BMBF joint research project on Materials for Bone Regeneration in cooperation with GUC,Ulm and TU Clausthal Universities
- * 2014 GESP project for two years in cooperation with TU Chemnitz
- * July- September 2012: Award for Research Stay from the German Academic Exchange (**DAAD**), Germany to be spent in TU-Clausthal, Germany
- * 2011: Green Innovation Award INNOVA-2 from Heliopolis University for the Project :” Solar collectors for domestic and industrial applications: development of absorber surface”
- * 2008: Award from the German Academic Exchange (**DAAD**), W. Germany, Spent in TU-Clausthal
- * 2006 and 2007 : selected by Ain Shams University for the **State Prize of Excellence in Advanced Technology**
- * summer 2003, 2004 2005, 2006, 2007: invited professor at the Institute of Metallurgy, TU Clausthal
- * 2002: Award from the German Academic Exchange (**DAAD**), Germany, spent in TU Clausthal
- *1999: mentioned in “ **Who is Who in Science and Engineering**”
- * 1996, 97, 98 and 2000: **AUC Research Grants Awards**
- * 1995: Award from the **DFG**, Germany.
- * 1994: Award from the **DFG**, Germany
- * 1993: Award from the German Academic Exchange (**DAAD**), W. Germany, spent in TU-Berlin and in RWTH Aachen.
- * 1988: Included in **the Egyptian Encyclopedia for Outstanding Persons**, The Egyptian Authority for Information.
- * 1988: **Fullbright Senior Award** (June to August).
- * 1984: Award from the German Academic Exchange (**DAAD**), W. Germany, Spent in TU-Berlin.
- * 1976 – 1977: Award, Max-Planck Gesellschaft, Germany (research at Max-Planck Institut fuer Eisenforschung, Duesseldorf)

Patents

وحده شمسيه ذكية للتطلية الخضراء لمياه البحار والابار عالية الملوحة لانتاج المياه العذبة و كلوريد الصوديوم (الملح)

Smart solar unit for green desalination of seawater and high salinity wells to produce fresh water and sodium chloride (salt)

Applied in 2024 under review

Langages:

English: Excellent spoken and written

German: Good spoken and fair written

French: Very Good spoken and written

Arabic: Excellent spoken and written

Employment:

*Academic year 2010 till now :

Professor emeritus, Design and Production Engineering, (Material Engineering), **Ain -Shams University, Cairo -Egypt.**

*Academic Year 2007-till 2010:

Professor of Materials and Manufacturing and Acting Dean of Faculty of Engineering, **The German University in Cairo (GUC)**

* Academic year 2006-2007 :

Professor of Materials and Manufacturing and Acting Dean of Faculty of Engineering, **The German University in Cairo (GUC)**

***April 1988 till 2006:**

Professor, Design and Production Engineering, (Material Engineering), **Ain - Shams University, Cairo -Egypt.**

* **2003-2006** Director of the Materials Engineering Unit, Faculty of Engineering, Ain Shams University

*Academic Year 1990-1991 and 1995-2000:

Visiting Professor of Materials and Manufacturing, Mechanical Engineering Department, **The American University in Cairo (AUC)**

*1983-1988:

Associate Professor, Design and Production Engineering (Material Science)), Ain Shams University, Cairo - Egypt.

*1976-1983:

Assistant professor in Design and Production Engineering Department., (Material Science), Ain Shams University, Cairo - Egypt

*1973-1976:

Assistant Lecturer, Mechanical Engineering, Ain Shams University, Cairo – Egypt

* Academic Year 1972 – 1974:

Part-time Assistant, The American University in Cairo (AUC), Cairo- Egypt.

*1969-1972:

Demonstrator, Mechanical Engineering Dept., Ain Shams University, Cairo - Egypt.

Membership in Professional Societies:

* Member, Egyptian Foundrymen's Society, Cairo - Egypt.

* Member of the Egyptian Engineering Association.

* Member, International Committee For Cast Metal Matrix Composites.

Reviewer in Journals

- **J Applied Physics D: Applied Physics**
- **J. Recent Patents on Materials Science**
- **Ain Shams University Engineering Journal- Elsevier**
- **J of Coating technology- Elsevier**
- **RSC Advances**

- **Materials Research Express**
- **Materials Research**
- **Review and evaluate ASRT projects**
- **Transactions of Nonferrous Metals Society of China**
- **Acta Metallurgica Sinica (English Letters)**
- **Journal of Advanced Research in Fluid Mechanics and Thermal Sciences**
- **Metals and Materials International – Springer**
- **Energy Reports**
- **J Magnesium and Alloys**
- **Materials Science & Engineering A**
- **J of Materials Science**
- **Advanced Composite Materials**
- **J. Materials Engineering and Performance, ASM**
- **Advances in Materials and processing technologies, Taylor & Francis**
- **Advances in Material Science and Engineering- Hindawi**
- **J MEP : Journal of Engineering Materials and Performance, ASM**
- **Materials science and Engineering Technology- Wiley**
- **Welding International, Tailor & Francis**
- **Surface Review and Letters, Scimago**
- **Nano Materials Science IF 9.9**
- **Materials Genome Engineering Advances**
- **Materials and corrosion, Wiley**
- **Materials Science & Technology, Sage**
- **Materials Communication Today, Elsevier**
- **ACS Biomaterials Sciences & Engineering**
- **Langmuir- ACS publisher**
- **J of Biomaterials Applications- Sage publisher(October 2024)**
- **JOM November 2024**
- **and many others**

Editor in international journals:

- in Current smart materials
- Ain Shams Engineering Journal
- Frontiers in Metals and Alloys
- Materials Physics and Chemistry (ISSN 2661-412X)
- Clean Energy Technology and Application (CETA), Universe Scientific Publishing Pte. Ltd, <https://cae.usp-pl.com/index.php/ceta/>, Singapore 534818

Membership in Professional Committees:

- * Reviewer for candidate for الجائزه التشجيعيه في الهندسه اقل من ٤٥ عام Prize CMRDI , February 2024
- * Reviewer of funded projects offered by E-JESOR Program ASRT, 2024
- * Reviewer for the candidates proposals applying for scholarships at the Fullbright Commission in Egypt.
- * Reviewer of papers for several local and international journals
- * 1999: member of the Scientific Committee for selecting Candidates for the “ State Prize in Engineering Sciences” the Academy of Research and Technology, Egypt
- * Member of the Scientific Committees for promotion to Professor and Associate Professor, The Supreme Council of Universities, Egypt
- * Member of the Scientific Committee for selecting Candidates for the " State Prize for Excellence" in the Field of Engineering Sciences for year 2005
- * Member of scientific committee for evaluating the scientific work of candidates for State Prize of excellence in the field of Advanced technological Sciences 2016

Main Fields of Interest:

- * ***Materials Science and Materials Engineering:***
advanced materials-composite materials (in-situ, metal matrix, polymer matrix composites), effect of processing on the structure and properties of materials-structure- property relationship -nano structured materials- Materials for solar energy applications.
- * ***Surface coating for corrosion , wear resistance and special characteristics:***
Aluminizing of Steel Sheet Surface, Electroless and Physical Vapour Deposition (PVD) , Diffusion bonding, coating of Mg alloys- surface coating for solar thermal applications- Thermal barrier coating- solar energy applications
- * ***Advanced manufacturing processes:***
Technology and materials used such as: Rapid Prototyping – Rapid Tooling, lasers industrial applications- severe plastic deformation processes

Research Experience:

Materials Science and Engineering Topics:

- * Materials Characterisation: Microstructure investigation and analysis using optical, electron scanning microscopes and microprobe analyzer- Testing of mechanical properties – testing of corrosion and wear resistance- optical properties- AFM- in general Engineering and in Oil Industry
- * Surface treatment using electroplating, electroless plating, PVD, diffusion bonding, liquid metal treatment, thermal spray, sol gel
- * Casting and solidification of ferrous and nonferrous alloys.
- * Relationship between structure and properties of alloys in directional solidification, rapid solidification, stir-(rheo)- casting, squeeze casting. Severe plastic deformation
- * Composite materials (in-situ, metal matrix, polymer matrix)

- * Numerical simulation and modelling of solidification processes using heat and fluid flow models for: Directional solidification (steady and unsteady state), rapid solidification, (melt spinning), stir-casting, squeeze casting, and continuous casting..
- * Rapid prototyping using stereolithography combined with investment casting
- * Industrial sands and Clay minerals

Environmental Engineering research topics:

- * Gas and dust emissions- in foundry and smelting operations
- * Health hazards in industrial operations.
- * Waste water contamination, gas and dust emissions in metal finishing operations
- * Recycling of plastic packaging materials.
- * Design of environmental friendly small foundries
- * Design of environmental friendly electroplating workshops
- * Materials for solar energy applications- absorber surface for low, medium and elevated temperature applications
- * Design and testing of compact solar collectors

Current Research Activities:

- * Surface Treatment using different techniques for coating steel and magnesium alloys for improved corrosion and wear resistance, and surface properties
- * Selective coating for solar absorber surfaces
- * Severe plastic deformation using ECAP and ARB techniques of aluminium alloys
- * Surface treatment using electroplating , electroless , thermal spray and sol gel
- * Thermal barrier coating using thermal spray
- * Design and testing of compact solar water heaters with thermal storage
- * Metal matrix and polymer- matrix composite materials prepared by different techniques : structure and properties
- * Light metal for biomedical applications and for structural applications

Courses taught

- * Courses in Materials testing, characterization for undergraduates and post graduates
- * Courses in materials properties and structure/property relationship
- * Courses in material Manufacturing : conventional and non conventional techniques

Research Leaves in European Universities and Institutes:

- * July-August 2025: Research stay in TU Aalen to work on *Laser structuring of a coated surface for solar absorbers*
- * July-August 2024: Research stay in TU Aalen working on a collaborative research project funded by **ASRT STARS fellowship program- cycle1- 2023** “*On the feasibility of using biodegradable oils in gear lubrication*”
- * July-August 2015: Research leave in TU- Clausthal working on Mg alloys and TU Chemnitz working on thermal barrier coating
- * July-September 2012, 2013, 2014: Research leave in TU-Clausthal working on Mg Light Alloys
- * July- August 2003 and 2004, and August 2005 , 2006, 2007, 2008, 2009. 2010 : visiting professor at the Metallurgy Institute, Clausthal University, Germany with Prof. H. Palkowski working on a common research project on coating Mg alloys

- * July- August 2002: visiting professor at the Materials Testing Institute, Clausthal University, Germany with Prof. V. Neubert- DAAD Award.
- * July- August 2001: visiting professor at the Materials Testing Institute, Clausthal University, Germany with Prof. V. Neubert.
- * July-August 2000: visiting professor at the Department of Industrial Engineering and Management Systems, University of Central Florida, with Prof. Yasser Hosni and at the Mechanical Engineering Department , Technical University of Clausthal, Germany, with Prof. Dietz.
- * June-August 99: visiting professor at the Metallurgy Institute, Clausthal University, Germany with prof. K. Schwerdtfeger.
- * June-August 1997 and 98: visiting professor, Institute of Metal Research- Metal Science, Berlin.
- * June-August 1996: Visiting Professor at the Royal Institute of Technology - Stockholm Sweden, with Prof. H. Fredriksson
- * June-August 1995, Visiting Professor, Institute of Metals Research - Metal Science - Berlin, DFG research award with Prof. W. Reif
- * June-August 1994: Visiting Professor, Technical High School of Aalen, Aalen, Germany, with Prof. K. Klein.
- * June-August 1993: Visiting Professor, Institute for Metal Research - Metal Science - Berlin Technical University, W. Germany - with Prof. W. Reif, and Technical University of Aachen (RWTH) Eisenhuettenkunde, with Prof. T. El-Gammal
- * July-August 1989, 1990, 1991, 1992 Visiting Professor Department of Casting of Metals, Royal Institute of Technology, Stockholm, Sweden with Professor H. Fredriksson.
- * June-August 1988: Visiting on Fullbright Senior Award in University of Florida, Gainesville, Department of Material Sciences and Engineering - with Prof. Abbaschian.
- * July-August 1986: Visiting Professor on AID-research project Chemical Engineering Department, Texas A&M University, Texas - with Prof. A.M Gadalla
- * July - September 1985: Visiting Professor, Department of Casting of Metals, Royal Institute of Technology, Stockholm, Sweden - with Prof. H. Fredriksson.
- * June-August 1984: Visiting Professor, Institute for Metal Research - Metal Science - Berlin Technical University, W. Germany - with Professor W. Reif.
- * June - August 1983: Scientific Researcher, Thermal Insulation Lab., technical University of Denmark, Lyngby, Denmark - with Prof. P. Hansen.
- * July 1980 - August 1982: Scientific Researcher, Foundry Institute, Technical University of Aachen (RWTH), Aachen, W. Germany - with Prof. P.R. Sahn.
- * July-September 1979: Visiting Researcher, Department of Metallurgy, Max-Planck Institute of Iron Research, Dusseldorf, W. Germany - with Professor K. Schwerdtfeger.
- * July - September 1978: Researcher, Department of Material Science, Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland - with Prof. W. Kurz.
- * 1976-1977: Researcher, Department of Metallurgy, Max-Planck Institute for Iron Research, Dusseldorf, W.Germany, with Professor K. Schwerdtfeger.

Professional Outreach:

1. Organizing Symposia and Conferences:

- * Symposium on “The Aluminium Industry in Egypt” Ain Shams University and the American University in Cairo, Egypt, February, 1980.
- * "Meeting between Producers, Processors and Consumers of Egyptian sands and clay minerals”, Ain Shams University, Cairo - Egypt.
- * Symposium on Status and Future Development of Iron and Steel Industry in Egypt, 1990.
- * International Meeting Cairo 13-15 April 1992 Symposium 1: Continuous Casting. Symposium 2: Metal Matrix Composites held at Marriot Hotel , Cairo.
- * 6th International Conference on Production Engineering & Design for Development- PEDD6- at Ain Shams University, Cairo, February 12-14,2002.
- * 1st International Ain Shams University Conference on Environmental Engineering, April 2005 (ASCEE I)
- * 7th International Conference on Production Engineering & Design for Development- PEDD7- at Ain Shams University, Cairo, February 7-9,2006.
- * Workshop “ On Materials behaviour, qualification and characterization”, December 3rd to 5th 2007, The **German University in Cairo, New Cairo, Egypt**, In the German-Egyptian Year of Science and Technology.

2. Research Projects:

On going

***2024-2026- Co-PI in Egypt-UK Cooperation, International Science Partnerships Fund Research Collaborations Grant), call (1), project ID 50142 :”Integrating Advanced Self-Cleaning Coating and High-Thermal Conductive Technologies for Enhancing Solar Photovoltaic Performance in Severe Environment Conditions”**

*** 2024 ASRT STARS fellowship program- cycle1- 2023 “On the feasibility of using biodegradable oils in gear lubrication” in collaboration with Aalen University, Germany, 3months budget for mobility in summer 2024**

*** 2022- 2024-: STDF project 46898 co-PI "Zero emissions-solar energy station for green desalination of brackish aquifers and seawater " In cooperation with Agricultural Research Institute , Budget 1457560 LE**

*** 2022- 2024-: STDF project 46898 co-PI "Zero emissions-solar energy station for green desalination of brackish aquifers and seawater " In cooperation with Agricultural Research Institute , Budget 1457560 LE**

Terminated

* PI in ***IMHOTEP*** project 2019-2020 with University of Strasburg on Zinc-Mg alloys scaffolds coated with bioactive materials for biomedical applications – budget 200000LE

* Principal Investigator in ***South Africa/Egypt*** joint science and technology research project - code 2-3-14, starting 21 October 2015 till 20 October 2017” development of high temperature solar absorbers with high stability in air”total budget 200000LE

* **Principal investigator in RDI** (Research, development and Innovation Fund) on: “ solar collectors for domestic and industrial applications : development of solar absorber surfaces” 2009-2011

* **Co-PI in** Research project (2008- 2010) on: “Development of thermal barrier coating”, in collaboration with NRC and MPA Stuttgart

- * **Coordinator for Ain Shams University in the TEMPUS Project** : Advanced Materials Technology” in cooperation with Cairo University and the European Consortium (Germany-France- Sweden) 2007-2010.
- * **Principal investigator in research project** (2001-2002): on Environmental upgrading of small electroplating workshops, Ain Shams University Environmental Projects
- * **Principal investigator in research project** (1999-2000): on:” Stereolithography and investment casting for rapid tooling” with Dr. Yasser Hosni, cooperation between University of Central Florida and AUC
- * **Principal investigator in research project** (1998-1999) on :” The effect of processing route on structure and properties of some aluminium- matrix composite materials” cooperation between AUC and Zagazig University.
- * **Principal investigator in research project** (1997) on:” Recyclability of plastic packaging materials” at AUC
- * **Research member in a European Community Project** on “Composite Materials” in cooperation with the Royal Institute of Technology, Stockholm and the Technical University of Aachen. The project proposal is presented by N. El-Mahallawy and M.A. Taha
- * **Principal Investigator**, in a university Linkage Project -no 402- on “An Integrated Approach on the Upgrading of Egyptian Small Foundries (with emphasis on Lead Smelters)”- Dec. 1998-99- in cooperation with Dr. J. Ramsey, Texas Tech University.
- * **Principal Investigator** in “ Environmental Upgrading of Lead Smelters”, project financed by the Cabinet of Ministers - Egyptian Environmental Affairs Agency, 1993-94.
- * **Research Member, FRCU-Project** No. 842045, financed by US-AID programs in Egypt, on: “Evaluation and Classification of Egyptian Sand and Clay Minerals for Industrial Applications”. USA counterparts in the project are: Prof. J. Berry, Head, Dept. of Metallurgical Engineering, the University of Alabama, and DR. A.M. Gadalla, Department of Chemical Engineering, Texas A&M University (1985-90).

3. Consultation:

Consultation for Factory 63 regarding “ the Production line of brass - semicontinuous casting- hot rolling-cold rolling- annealing” January 2024-

Consultant with Egyptian Environmental Affairs Agency (EEAA) project on “Lead Smelters in Greater Cairo” in 1994.

* **Consultant** with USAID in “Cairo Air Project” 1995-96. The work includes lead smelters: current technology and related problems, possible modern and clean technology, air pollution, design of new smelters, and relocation of present smelters - Technical visits to lead smelters, September 21st, till October 2nd, 1996: A technical visit was made to the up-to-date secondary lead smelters facilities in USA and Canada. The visit was sponsored by USAID, It included senior representatives from two major lead smelters in Cairo, the General Metals Co. and the Factory for Melting and Manufacturing of Lead, (Sayed Awadalla). The visit is part of the joint USAID/GOE program to introduce modern clean smelting technology in Egypt. The smelters visited were Tonolli Canada Ltd., Mississauga, Ontario - Exide, Reading, Pennsylvania - Sanders Lead, Troy, Alabama.

Number of Theses and Dissertations:

Accepted

Ph.D Degree : 12
M. Sc. : 32

Currently Supervised

PhD degree 3
M. Sc. Degree : 5

Publications:

N.B. List of publication (Avaialable on request) including:

* Published Research Papers: 232
* Technical and Project Reports: 16
* Edited Books: 5
* Book Author: 1