

## CURRICULUM VITAE

### Personal Data

**Name** : Alaa Mahmoud Abd-Elnaiem Mohamed.  
**Gender** : Male.  
**Nationality** : Egyptian.  
**Date of Birth** : March 27, 1983.  
**Place of Birth** : Assiut – Egypt.  
**Marital Status** : Married.  
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### Biosketch

Alaa M. Abd-Elnaiem received his B.Sc. degree (with distinction) in 2004, M.Sc. degree in Solid State Physics in 2010 and a Ph.D. degree in Materials Science in 2013 from Assiut University, Egypt. In 2011, he was awarded a Ph.D. scholarship by the Center of Excellence of Nano-manufacturing Applications (CENA). His Ph.D. experimental work conducted at imec-Belgium<sup>1</sup> in the energy storage group. His areas of research interest are Physics of magnetic metals and alloys and in nano-material fabrication and applications.

### Education

- Ph.D. in Physics (Materials Science), Faculty of Science, Assiut University (Dec. 2013)  
Research Topic: Fabrication of 3D Nanowire Network for Energy-storage.
- Master of Science in Physics (Solid State Physics), Faculty of Science, Assiut University (Nov. 2010)  
Research Topic: Spinodal to Nucleation-Growth Phase Transition and Physical Properties of the Co-Cu Binary Alloy Systems.
- B.Sc. Physics, Faculty of Science, Assiut University (Jun. 2004).  
Grade: *Distinction with Honor*.

### Employment History

- Lecturer of Physics, Department of Physics, Assiut University Sept. 2013 – up to date.
- Assistant Lecturer, Department of Physics, Assiut University Sept. 2010 – Sept. 2013.
- Demonstrator, Department of Physics, Assiut University since Nov. 2004 up to Sept. 2010.

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<sup>1</sup>*Imec*, the *Interuniversity Microelectronics Centre*, is a micro- and nano-electronics research center headquartered in Leuven, Belgium.

### **Experiences (Research)**

- Bulk and thin films preparation (special Metallic alloys).
- Structure investigations of bulk specimens using X-ray diffraction and Scanning Electron Microscopy.
- Mechanical properties including microhardness, and Thermal analysis of materials.
- Different type of thermal heat treatments at high temperatures.
- Fabrication of porous materials using electrochemical methods such porous alumina template and porous silicon.
- Fabrication of nanostructured materials such as nanowires arrays and 3D nanowires by using electrochemical deposition.

### **Training and internships**

- ❖ The Training Workshop for Chemists and Researchers on Thermal Analysis and X-Ray Diffraction, Assiut University, 16-17/4/2011.
- ❖ KACST-Intel - CENA Scholarship (Consortium Center of Excellence in Nano-manufacturing Applications (CENA)) at imec in the area of energy storage with a specific focus on the fabrication and characterization of super-capacitors, nanowires, and microbatteries, 9/2011-3/2013.
- ❖ Safely tidying up of chemicals - IMEC 09/2012
- ❖ chemical lab training – IMEC 9/2012
- ❖ Wetbench and Chemicals Training- IMEC 09/2012
- ❖ Safety care at imec training – IMEC 01/2012
- ❖ Cleanroom behavior training, IMEC, 01/2012
- ❖ Working with P-Line course – IMEC 01/2012
- ❖ Scientific Writing course, IMEC, 11,12/2011
- ❖ Cleanroom safety training – IMEC. 11/2011

### **Attending the next workshops**

- ❖ Teaching with Technology (FLDC<sup>2</sup>).
- ❖ Effective Communication Skills (FLDC).
- ❖ Effective Teaching Skills (FLDC).
- ❖ How to write a scientific article for Publication (FLDC).
- ❖ Security and Safety Means in Laboratories (FLDC), June 2009.
- ❖ Credit Hours System (FLDC).
- ❖ E-Learning (FLDC).

### **Selected Publications and Presentations**

#### **Presentations:**

1. “Research Plan for the Ph.D. degree,” Physics Department, Faculty of Science, Assiut University, Egypt April 16, 2011
2. “General Discussion for the Master Thesis,” Physics Department, Faculty of Science, Assiut University, Egypt October 30, 2010
3. “Presentation of the Master Thesis,” Physics Department, Faculty of Science, Assiut University, Egypt July 18, 2010.

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<sup>2</sup> FLDC= is the Faculty and Leadership Development Center- Assiut University.

### List of journal papers:

1. A.M. Mebed, M.I. Abd-Elrahman, A.M. Abd-Elnaiem, M.A. Gaffar, "*Thermal analysis study for the phase determination and instable to metastable transformation of the Co–13Cu alloy*", Phase Transitions, 82:8, (2009)587-598.
2. A.M. Mebed, A.M. Abd-Elnaiem, T.B. Asafa, M.A. Gaffar, "*Composition, microstructure, Vickers hardness and activation energies of Co–Cu alloys fabricated by arc melting technique*", Phase Transitions, 85:12, (2012) 1079-1090.
3. A.M. Abd-Elnaiem, A. Gaber, "*Parametric Study on the Anodization of Pure Aluminum Thin Film Used in Fabricating Nano-pores Template*", Int. J. Electrochem. Sci., 8 (2013) 9741 – 9751.
4. A.M. Abd-Elnaiem, A.M. Mebed, A. Gaber, M.A. Abdel-Rahim, "*Effect of the Anodization Parameters on the Volume Expansion of Anodized Aluminum Films*", Int. J. Electrochem. Sci., 8 (2013) 10515-10525.
5. A.M. Abd-Elnaiem, A.M. Mebed, W.A. El-Said, M.A. Abdel-Rahim, "*Porous and mesh alumina formed by anodization of high purity aluminum films at low anodizing voltage*", Thin Solid Films, 570, Part A ( 2014) 49–56.
6. A.M. Mebed, A.M. Abd-Elnaiem, "*Microstructural study and numerical simulation of phase decomposition of heat treated Co–Cu alloys*", Prog. Nat. Sci.: Mater. Int., 24 (6) (2014) 599-607.
7. J. Vanpamel, A.M. Abd-Elnaiem, S. De Gendt, P.M. Vereecken, "*The Formation Mechanism of 3D Porous Anodized Aluminum Oxide Templates from an Aluminum Film with Copper Impurities*", J. Phys. Chem. C, 119 (4) (2015) 2105–2112.
8. M.A. Abdel-Rahim, M.M. Hafiz, A.Y. Abdel-Latif, A.M. Abd-Elnaiem, A.Elwhab. B. Alwany, "*A study of the non-isothermal crystallization kinetic of Zn<sub>10</sub>Se<sub>90</sub> glass*" Appl. Phys. A 119(3) (2015) 881-890.
9. M. Mohamed, S. Mostafa, A.M. Abd-Elnaiem, M.A. Abdel-Rahim, "*The optical parameters of  $\gamma$ -irradiated and annealed Ge<sub>15</sub>Se<sub>50</sub>Te<sub>35</sub> thin films*", J. Alloys Compd., 647 (2015) 771-777.
10. A.M. Abd-Elnaiem, A.M. Mebed, A. Gaber, M.A. Abdel-Rahim, "*Tailoring the porous nanostructure of porous anodic alumina membrane with the impurity control*" J. Alloys Compd., 659C (2016) 270-278.
11. Cedric Huyghebaert, Alaa Abd-Elnaiem, Philippe M. Vereecken, "*Method for interconnected nanowire cluster formation using Anodic Aluminium Oxide (AAO) templates*" *European Patent*, EP20160032475, 2016 Feb., 4.
12. Huyghebaert, Cedric, Alaa Abd-elnaiem, and Philippe Vereecken. "*Method for Nanowire Cluster Formation.*" U.S. Patent 20,160,032,475, issued February 4, 2016.
13. M. Rashad, N. M. Shaalan, and A. M. Abd-Elnaiem. "*Degradation enhancement of methylene blue on ZnO nanocombs synthesized by thermal evaporation technique*" Desalin. Water Treat. 57(54) (2016) 26267-26273.
14. A.M. Abd-Elnaiem, A.M. Mebed, W.J. Stępniewski, T. Czujko "*Characterization of arrangement and geometry of porous anodic alumina formed by one-step anodization of Al-1 wt % Si thin films*" Surf. Coat. Tech. 307 (2016) 359-365.
15. M. A. Dabban, Nema M. Abdelazim, Alaa M. Abd-Elnaiem, S. Mustafa, M. A. Abdel-Rahim, "*Effect of Sn substitution for Se on dispersive optical constants of amorphous Se–Te–Sn thin films*" Materials Research Innovations (2017): <http://dx.doi.org/10.1080/14328917.2017.1323427>
16. A.M. Abd-Elnaiem, M. Mohamed, R.M. Hassan, A.A. Abu-Sehly, M.A. Abdel-Rahim, M.M. Hafiz "*Influence of annealing temperature on the structural and optical properties of As<sub>30</sub>Te<sub>70</sub> thin films*", Mater. Sci.-Poland, 35(2), (2017) 335-345.

17. Alaa M. Abd-Elnaiem, T. B. Asafa, Francisco Trivinho-Strixino, Adriana de O. Delgado-Silva, Manly Callewaert, Wim De Malsche "*Optical reflectance from anodized Al-0.5 wt % Cu thin films: porosity and refractive index calculations*", J. Alloys Compd., 721C (2017) 741-749.
18. M. Mohamed, A.M. Abd-Elnaiem, R.M. Hassan, M.A. Abdel-Rahim, M.M. Hafiz "*Non-isothermal crystallization kinetics of As<sub>30</sub>Te<sub>60</sub>Ga<sub>10</sub> glass* ", Appl. Phys. A, 123(8), (2017) 511.
19. Safeya A.Taha, Alaa M. Abd-Elnaiem, Mansour Mohamed, Samar Mostafa, M.S. Mostafa "*Structural study and photocatalytic performance of ZnO thin films prepared by electrochemical deposition*", Desalin. Water Treat. 100 (2017) 160-167.
20. Cedric Huyghebaert, Alaa Abd-Elnaiem, Philippe Vereecken "*Nanowire cluster and template and method for nanowire cluster formation*" U.S. Patent 9,834,847, issued December 5, 2017.
21. Waleed A. El-Said, M. Abdel-Shakour, Alaa M. Abd-Elnaiem, "*An efficient and low-cost photoanode for backside illuminated dye-sensitized solar cell using 3D porous alumina*", Mater. Lett. 222 (2018) 126–130.

#### **List of conferences:**

1. The first Conference of Young Researchers, Basic Sciences & Technology, Faculty of Science, Assiut University, Egypt May, 5-6 2007.
2. Alaa Abd-Elnaiem, Cedric Huyghebaert, Mohamed A. Gaffar, Philippe M. Vereecken, "*Anodized Alumina with Tailored Pore Architectures*", 63<sup>rd</sup> Annual Meeting, Int. Soc. of Electrochem., Symp.7, Aug. 2012, Cz. Rep.
3. Alaa Abd-Elnaiem, A. Gaber, Cedric Huyghebaert, Philippe M. Vereecken, "*Tailoring the Porous Nanostructure of AAO by Impurity Control*", 2<sup>nd</sup> Saudi International Nanotech. Conf. (2SINC), Nov. 2012, Riyadh KSA.
4. A.M. Abd-Elnaiem, A. Gaber, M.A. Abdel-Rahim, "*Formation of Porous Alumina Integrated on Silicon Oxide Substrate*", International Conference on New Horizons in Basic and Applied Science (ICNHBAS 2013), September 2013, Hurgada, Egypt.
5. A.M. Abd-Elnaiem, M.A. Abdel-Rahim, "*Anodic Aluminum Oxide as Matrix for Li-composite Electrolyte*", 9<sup>th</sup> International Conference on the Physical Properties and Application of Advanced MATerials (ICPMAT2014), 13-18 September 2014, Krakow, Poland.

#### **Editorial Duties and Society Fellows**

International Board of Executive Editors: *International Journal of Extensive Research*

#### **Referee/Reviewer:**

Materials Letter; Current Nanoscience; Nanoscale Research Letters; Journal of Membrane Science; Thin Solid Films; Current Smart Materials; Physics & Astronomy International Journal; Inżynieria Materiałowa Materials Engineering

#### **Projects:**

- Generation, Characterization and Magnetic Properties of Two-phase Ferromagnetic Nanostructures with a Homogeneous Size-Distribution in a Paramagnetic Thin Films, Al-Jouf University, Sakaka 2014, Saudi Arabia, March 2013 to February 2014, No. 71/33.
- Synthesis of 3D Nickel Nano-wire Array, Al-Jouf University, Sakaka 2014, Saudi Arabia, April 2015 to March 2016, No. 306/35.

## Honors and Awards

- Certificate of Merit for Academic Excellence from Faculty of Science, Assiut University, 2004/2005.
- Graduated with Distinction and Honors, Faculty of Science, Assiut University, June 2004.
- The Faculty of Science Award for the published article with the heights Impact factor from academic thesis in Basic Science (Physics) for 2014.

## Teaching experience (in Assiut University)

**Course title:** General Physics

Teaching frequency: 2 hours/week (Faculty of Science, Faculty of Education & Faculty of Engineering)

Level: first level

**Course title:** Electricity and Magnetism & AC Current

Teaching frequency: 3 hours/week (Faculty of Science)

Level: Second level

**Course Title:** Physics of Metals, alloys & Ceramics

Teaching Frequency: 3 hours/week (Faculty of Science)

Level: Third level Course

**Course Title:** Physics of Amorphous Materials

Teaching Frequency: 3 hours/week (Faculty of Science)

Level: Fourth level Course

## References

<b>Dr. Makarem A. Hussein</b> Intel Corporation, Hillsboro, Oregon 97123,USA E-mail: <a href="mailto:makarem.hussein@intel.com">makarem.hussein@intel.com</a> ; <a href="mailto:makarem.hussein@gmail.com">makarem.hussein@gmail.com</a>	<b>Prof. Dr. Wim De Malsche</b> Associate Professor µFlow, Department of Chemical Engineering Vrije Universiteit Brussel, Pleinlaan 2 B-1050 Brussels, Belgium Tel. +3226293781, Mobile +32494296742 Fax. +3226293248 E-mail: <a href="mailto:wdemalsc@vub.ac.be">wdemalsc@vub.ac.be</a>	<b>Dr. A. M. Mebed</b> Associate Prof. of Solid state Physics ( <i>Computational Physics</i> ) Faculty of Science, Assiut University, Assiut 71516, Egypt. E-mail: <a href="mailto:abdu_55@yahoo.com">abdu_55@yahoo.com</a> Mobile: +966553348704
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