

CURRICULUM VITAE

Personal Data

Name : Alaa Mahmoud Abd-Elnaiem Mohamed.
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Nationality : Egyptian.
Date of Birth : March 27, 1983.
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Education

- Ph.D. in Physics (Materials Science), Faculty of Science, Assiut University (December 2013).
Thesis Title: “*Fabrication of 3D Nanowire Network for Energy-storage*”.
- M.Sc. in Physics (Solid State Physics), Faculty of Science, Assiut University (November 2010).
Thesis Title: “*Spinodal to Nucleation-Growth Phase Transition and Physical Properties of the Co-Cu Binary Alloy Systems*”.
- B.Sc. Physics, Faculty of Science, Assiut University (June 2004).
Grade: *Distinction with Honor*.

Standard academic and research record

Name & Address of Employer	Position	From		To	
		Month	Year	Month	Year
Physics Department, Faculty of Science, Assiut University, Assiut 71516, Egypt	Associate Professor	February	2019	up to date	
Physics Department, Faculty of Science, Assiut University, Assiut 71516, Egypt	Assistant professor	January	2017	February	2019
		January	2014	June	2016
Department of Chemical Engineering, Vrije Universiteit Brussel, Pleinlaan 2, B-1050, Brussel, Belgium	Visiting Researcher	July	2016	January	2017
Imec, Belgium & Centre of Surface Chemistry and Catalysis, KU Leuven, Belgium	Researcher	September	2011	March	2013
Physics Department, Faculty of Science, Assiut University, Assiut 71516, Egypt	Assistant Lecturer	December	2010	September	2011
		March	2013	January	2014
Physics Department, Faculty of Science, Assiut University, Assiut 71516, Egypt	Demonstrator	November	2004	December	2010

Experiences (Research)

- Preparation of bulk and thin films of metals, metal oxides and chalcogenide materials using various techniques such as melt quenching and thermal evaporation methods.
- Structural investigations of materials using X-ray diffraction, Scanning Electron Microscopy, and transmittance electron microscopy.
- Mechanical properties including microhardness, optical, electrical, and thermal analysis of materials.
- Different types of thermal heat treatments at high temperatures.
- Fabrication of nanoporous materials using electrochemical methods such as porous alumina template, porous Titania and porous silicon.
- Fabrication of nanostructured materials such as nanowires arrays and 3D nanowires by using electrochemical deposition.
- Fabrication and characterization of conductive polymers and dye-sensitized solar cells.
- Fabrication of different photo-catalysis for wasted water purification technology.

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.
- ❖ Surface modification by electrochemical methods: synthesis and applications on nanomaterials, 27-28 June, MTM – K.U. Leuven – Belgium.
- ❖ Safely tidying up of chemicals - IMEC 09/2012
- ❖ chemical lab training – IMEC 9/2012
- ❖ Wet bench 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
- ❖ Visiting Researcher, Department of Chemical Engineering, Vrije Universiteit Brussel, Pleinlaan 2, B-1050, Brussel, Belgium, 3/7/2016 to 3/3/2017.
- ❖ Safety Instructions for use of Gas Bottles, VUB 7/2016
- ❖ General Safety & Lab Rules, VUB 7/2016

Attending the next Workshops

- ❖ Teaching with Technology (FLDC¹).
- ❖ 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).
- ❖ Analytical and Creative Thinking in Teaching (FLDC).
- ❖ Scientific Researches Funding and Grants (FLDC).
- ❖ Legal and Financial Aspects in the University Environment (FLDC).
- ❖ E-Learning “advanced” (FLDC).
- ❖ Statistical Analysis in Scientific Research (FLDC).
- ❖ University Administration (FLDC).

¹ FLDC= is the Faculty and Leadership Development Center- Assiut University.

List of International Publications:

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. Vanpaemel, 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 Zn₁₀Se₉₀ 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 γ -irradiated and annealed Ge₁₅Se₅₀Te₃₅ thin films**", J. Alloy. 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. Alloy. Compd., 659C (2016) 270-278.
11. 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.
12. A.M. Abd-Elnaiem, A.M. Mebed, W.J. Stepniowski, 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.
13. 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 As₃₀Te₇₀ thin films**", Mater. Sci.-Poland, 35(2), (2017) 335-345.
14. Alaa M. Abd-Elnaiem, T. B. Asafa, Francisco Trivinho-Strixino, Adriana de O. Delgado-Silva, M anly Callewaert, Wim De Malsche "**Optical reflectance from anodized Al-0.5 wt % Cu thin films: porosity and refractive index calculations**", J. Alloy. Compd., 721C (2017) 741-749.
15. M. Mohamed, A.M. Abd-Elnaiem, R.M. Hassan, M.A. Abdel-Rahim, M.M. Hafiz "**Non-isothermal crystallization kinetics of As₃₀Te₆₀Ga₁₀ glass** ", Appl. Phys. A, 123(8), (2017) 511.
16. 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.
17. 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.
18. 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. Res. Innov. 22(6) (2018) 324-332.
19. Waleed A. El-Said, M. Abdel-Shakour, Alaa M. Abd-Elnaiem, "**An efficient and low-cost photo anode for backside illuminated dye-sensitized solar cell using 3D porous alumina**", Mater. Lett. 222 (2018) 126–130.
20. Seena I. Hussein, Alaa M. Abd-Elnaiem, Tesleem B. Asafa, Harith I. Jaafar, "**Effect of incorporation of conductive fillers on mechanical properties and thermal conductivity of epoxy resin composite**", Appl. Phys. A, 124(7), (2018) 475.

21. A.M. Abd-Elnaiem, M. Mohamed, R.M. Hassan, A.A. Abu-Sehly, M.A. Abdel-Rahim, M.M. Hafiz " *Structural and optical characterization of annealed $As_{30}Te_{60}Ga_{10}$ thin films prepared by thermal evaporation technique*", Mater. Sci.-Poland, 36(2), (2018)193-202.
22. A.M. Abd-Elnaiem, S. Mostafa, " *Optical properties of annealed $As_{30}Te_{67}Ga_3$ thin films grown by thermal evaporation* ", Process. Appl. Ceram., 12 (3), (2018) 209–218.
23. A.M. Mebed, Alaa M. Abd-Elnaiem, " *A thermodynamic understanding of horizontal Pores formation mechanism in anodized doped aluminum with alloying elements*", J. Electroanal. Chem., 829 (2018) 138–147.
24. A.M. Abd-Elnaiem, M. Rashad, " *Morphology of anodic aluminum oxide anodized in a mixture of phosphoric acid and lithium phosphate monobasic*", Mater. Res. Express 6 (2019) 016412.
25. A.M. Mebed, Alaa M. Abd-Elnaiem, Waleed A. El-Said, T. B. Asafa, " *Review on Formation of Anodic Metal Oxides and their Sensing Applications*", Curr Nanosci., 15(1) (2019) 6-26.
26. Mansour Mohamed, Samar Mostafa, Safeya A. Taha, Alaa M. Abd-Elnaiem, " *Morphological characterization and refractive index calculation of anodized titanium (99.7%) foil in HF-ethanol electrolyte*", Mater. Res. Express 6 (2019) 035026.
27. Abd-Elnaiem, Alaa, Ghada Abbady, Dalia Ali, and Tesleem Asafa. " *Influence of anodizing voltage and electrolyte concentration on Al-1 wt% Si thin films anodized in H_2SO_4* " Mater. Res. Express 6 (2019) 086468.
28. Abbady, Gh, and Alaa M. Abd-Elnaiem. " *Thermal stability and crystallization kinetics of $Ge_{13}In_8Se_{79}$ chalcogenide glass*" Phase Transitions 92 (2019) 667-682.
29. Alaa M. Abd-Elnaiem, and Gh Abbady. " *A thermal analysis study of melt-quenched $Zn_{5}Se_{95}$ chalcogenide glass.*" Journal of Alloys and Compounds (2019): 152880.
30. Alaa M. Abd-Elnaiem, S. Moustafa, and T. B. Asafa. " *Comparative Study of Pore Characterizations of Anodized Al-0.5 wt.% Cu Thin Films in Oxalic and Phosphoric Acids.*" Nano (2019): 1950140.

List of Patents:

1. 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.
2. Huyghebaert, Cedric, Alaa Abd-Elnaiem, and Philippe Vereecken. " *Method for Nanowire Cluster Formation.*" U.S. Patent 20,160,032,475, issued February 4, 2016.

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*", 63rd 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*", 2nd 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*", 9th International Conference on the Physical Properties and Application of Advanced Materials (ICPMAT2014), 13-18 September 2014, Krakow, Poland.
6. Alaa M. Abd-Elnaiem " *Synthesize of 3D/2D Porous Structure by Anodization of Bi-layer of Impure Aluminum Films*", The First International Conference on Multidisciplinary Research, organized by The Multidisciplinary Research Centre of Excellence, Assiut University- EGYPT, 28 – 31 October, Porto Sokhna Resort, Ain Sokhna-EGYPT.

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; Surface and Coatings Technology; Journal of Materials Science: Materials in Electronics; Journal of Nanoscience and

Nanotechnology Applications (JNNA); Journal of Physics and Chemistry of Solids; Materials Chemistry and Physics; Desalination and Water Treatment; Phase Transitions; Journal of Nanoscience and Nanotechnology; Diamond & Related Materials.

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 the academic thesis in Basic Science (Physics) for 2014.

Teaching Experience (in Assiut University)

• Undergraduate Courses:

<i>Course title</i>	<i>Credits/Week</i>	<i>Grads - Faculty</i>
General Physics	2 hours	1 st grade (school of Science, Education, and Engineering)
Electricity and Magnetism & AC Current	3 hours	2 nd grade (school of Science)
Physics of Metals, alloys & Ceramics	3 hours	3 rd grade (school of Science)
Solid-state Physics	2 hours	3 rd grade (school of Science & Faculty of Education)
Physics of Amorphous Materials	3 hours	4 th grade (school of Science)
Materials Science	2 hours	4 th grade (school of Education)

• Graduation Projects:

- ✓ Supervisor for B.Sc. Students, various subjects in “Physics and Materials Science” (2014-Current, 2 hours/week).

• Graduate Courses:

- ✓ Teaching a special course “Introduction to Electrochemistry” for MSc. students.

Thesis Supervisor

- **Master degree** in the field of Nanotechnology, the proposed title is “Electrochemical Fabrication, Characterizations, and applications of Nanostructured Metal Oxide”- awarded 2019.
- **Ph.D.** in the field of Solid State Physics, his thesis title is “characterization and Electronic Properties of As-Te-Ga Chalcogenide Glass Thin Films”- awarded 2018.

▪ References

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