



حاصلة على شهادة الاعتماد من الهيئة القومية
لضمان جودة التعليم والاعتماد في 2012|7|12م



Research Lab Sheet

Lab Name	Thin film lab
Academic Year	

Basic Information	
Department	Physics Department
Location	Second flour
Total area (m²)	50 m²

Lab Members				
No. of Prof.	No. of Ass. Prof.	No. of Lect.	No. of Ass. Lect. & Demonst.	No. of technicians
5	2	1	6	

Staff members

#	Name	Scientific degree	e-mail	Specializations	C.V
1	Prof.Dr. Elders Khalaf Shokr	Ph.D	elders.sh@science.sohag.edu.eg	Solid State Physics	Link of homepage
2	Prof. Dr. Mostafa Mohamed Wakkad	Ph.D	mostafa.wakkad@yahoo.com	Solid State Physics	
3	Prof. Dr. Hazem Mahmoud Ali	Ph.D	hazem95@yahoo.com	Material Science and Technology	
4	Prof. Dr. Hussain Abd El-Hafez	Ph.D	husseinabdelhafez2000@yahoo.com	Material Science and Technology	
5	Prof. Dr. Nomery Mohamed Abbas	Ph.D	nomery_abass@yahoo.com	Material Science and Technology	
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8	Dr. Yasmeen Ali Tayaa	Ph.D	yasmeen.taya@yahoo.com	Material Science and Technology	
9	Dr. Moumen Samir Kamel	Ph.D	Mim_chem2@yahoo.com	Organic Chemistry	
<i>Ass. Lecturers & Demonstrators</i>					
#	Name	Scientific degree	e-mail	Specializations	
1	Shaimaa Abd-Elnaser	M.Sc.	nasrshaimaa2@gmail.com	--	
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3	Nada Ayman	--	nadaayman.0195@gmail.com	--	
4	Ahmed Ali Esmail	--	a.ali.sci1106@gmail.com	--	
5	Ahmed Gamal Adam	--	ahmedgamaladam11@gmail.com	--	
6	Fatma Abd-Elnasser	--	fatoomabdelnaser@gmail.com	--	

Theses produced by the Lab			
M ScThesis			
	Degree	Title	Approval date
1	M.sc	Optical and electrical properties of amorphous Sb-Sn-O thin films	1999
2	M.sc	"Measurements of electrical and optical Properties of In-doped CdS thin films"	2003
3	M.sc	Thesis title: " <i>Some of Physical Properties of $In_{35}Sb_{45}Se_{20-x}Te_x$ Chalcogenid System</i> "	2010
4	M.sc	Structural, Electrical and Optical Properties of Silver-Indium-Selenium alloys".	2015
5	M.sc	Study and characterization of nano-structured MoO 3 thin films for optoelectronic applications.	2019

Theses produced by the Lab			
Ph.D Thesis			
	Degree	Title	Approval date
1	Ph.D	Investigation of the Bose condensation of the Cooper pairs in lattices of high-temperature superconductors using the emission Mossbauer spectroscopy.	2003
2	Ph.D	"Preparation and Investigation of Optical Properties of Nanowires Semiconducting Oxides SnO ₂ and In ₂ O ₃ / SnO ₂	2011
3	Ph.D	Thesis title: "optical study of novel perovskitic oxides, with focus on their lattice and electronic properties"	2015
4	Ph.D	"Electrical and optical properties of the quaternary Cu- In- Ga- Se system as a promising optical absorber material".	2019

Articles produced by the Lab	
	Title
1	N.M.A. Hadia , S.V. Ryabtsev, E.P. Domashevskaya, VI International Conference " Amorphous and microcrystalline semiconductor " June 30-July 6, 2008
2	N.M.A. Hadia , S.V. Ryabtsev, E.P. Domashevskaya, IV All-Russian Conference " Physical and chemical processes in condensed media and at interfaces " FAGRAN - 2008": October 6-9, 2008
3	N.M.A. Hadia , S.V. Ryabtsev, E.P. Domashevskaya, " Conference with the elements of a scientific school for young people ", March 29-31, 2009,
4	N.M.A. Hadia , S.V. Ryabtsev, E.P. Domashevskaya, " International Conference of Students and young scientists in the basic sciences ", September November 26-29, 2010
5	Germanium-Sulfurs, Germanium-Selenium and Germanium-Tellurium glass structure, V. Bordovsky, N. Anisimova, A. Marchenko, H. M. Ali , P. Seregin, Herzen University Journal of Humanities & Sciences, No. 135 (2010)
6	Improvement of the optical properties of ITO/SiO ₂ /glass films for Photovoltaic applications, M. M. Abd El-Raheem, H. M. Ali , N. M. Al-Hosiny, M. S. Abdelaal, Journal of Non-oxide Glasses, Vol. 2, No. 1(2010) 67-76
7	Crystallization kinetics determination of Pb ₁₅ Ge ₂₇ Se ₅₈ Chalcogenide glass by using the various heating rates (VHR) method, M. M. Abd El-Raheem, H. M. Ali , Journal of Non-Crystalline Solids, 356 (2010) 77-82
8	Structure and Optical Properties of Chemically Synthesized Titanium Oxide Deposited by Evaporation Technique, H. M. Ali , M. M. Abou-Mesalam and M.M. El-Shorbagy, Journal of Physics and Chemistry of Solids 71 (2010) 51–55
9	Structural and optical properties of Sb ₆₅ Se _{35-x} Ge _x thin films, S A Saleh, A Al-Hajry, H. M. Ali , PhysicaScripta 84 (2011) 015604
10	Structural, optical and photoluminescence characterization of electron beam evaporated



	ZnS/CdSe nanoparticles thin films, S. H. Mohamed, H. M. Ali , JOURNAL OF APPLIED PHYSICS 109, (2011) 013108
11	Plasma oxidation of electron beam evaporated cadmium thin films H. M. Ali and M. Raaif, Thin Solid Films, 520 (2012) 4418-4421
12	Study of platinum impurity atom state in vitreous arsenic selenide, G. A. Bordovsky, A. V. Marchenko, T. Yu. Rabchanova, P. P. Seregin, E. I. Terukov, and H.M. Ali Semiconductors, Vol 46, Issue 7 (2012) 878-881
13	H. A. Mohamed , International Congress on Energy Efficiency and Energy Related Materials (ENEFM), Antalya- Turkey (2013).
14	N. M. A. Hadia and H. A. Mohamed , Synthesis, structure and optical properties of single-crystalline In ₂ O ₃ nanowires, Journal of Alloys and Compounds 574 (2013) 63
15	H. A. Mohamed , Dependence of efficiency of thin-film CdS/CdTe solar cell on optical and recombination losses, Journal of applied physics 113 (2013) 093105
16	H. A. Mohamed and N. M. A. Hadia, Post thermal annealing effect on the optical properties of SnO ₂ films prepared by electron beam evaporation technique, International Review of Physics 8 (2014) 58
17	H. A. Mohamed , Influence of the optical and recombination losses on the efficiency of CdS/CdTe solar cell at ultrathin absorber layer, Canadian Journal of Physics 92 (2014) 1350
18	H. A. Mohamed , Theoretical study of the efficiency of CdS/PbS thin film solar cells, Solar Energy 108 (2014) 360
19	H. A. Mohamed , Enhancing the performance of thin film CdS/PbS photovoltaic solar cells, Philosophical Magazine 94 (2014) 3467
20	N.M.A. Hadia , Santiago García-Granda, José R. García, <u>Synthesis and optical characterization of single crystalline CdS, nanowires by the solvothermal process</u> , J. Nanosci. Nanotechnol. 14 (2014)
21	N.M.A. Hadia , Santiago García-Granda, José R. García, <u>Effect of the temperatures on structural and optical properties of Zinc oxide (ZnO) nanoparticles</u> , J. Nanosci. Nanotechnol. 14 (2014) 5443-5448
22	N.M.A. Hadia and H.A. Mohamed, <u>Improvement in the Efficiency of Thin Film CdS/CdTe Solar Cells Using Different TCO Materials</u> , In: Oral A., Bahsi Z., Ozer M. (eds) International Congress on Energy Efficiency and Energy Related Materials (ENEFM2013). Springer Proceedings in Physics, vol 155 (2014).
23	N.M.A. Hadia , Santiago García-Granda, José R. García, D. Martínez-Blanco and S.H. Mohamed, <u>Morphological and</u>

	magnetic properties of the hydrothermally prepared α -Fe ₂ O ₃ nanorods, Materials Chemistry and Physics 147 (2014) 1037-1041
24	N.M.A. Hadia and H.A. Mohamed, Post Thermal Annealing Effect on the Optical Properties of SnO ₂ Films Prepared by Electron Beam Evaporation Technique, International Review of Physics (IREPHY), 8 (2014) 58-64.
25	Growth, and opto–electro–structural properties of nanocrystalline PbSe thin films H.M. Ali , S.A. Saleh, Thin Solid Films 556 (2014) 552–559
26	Effect of annealing on properties of decorative zirconium oxynitride thin films, Sodky Hamed Mohamed, Nomery M.A. Hadia, and Hazim M. A , Eur. Phys. J. Appl. Phys. (2015) 69: 30301
27	Characterization of n and p-type (SnO ₂) _x (ZnO) _{100-x} nanoparticles thin films. H. M. Ali and A. M. Abdel hakeem Eur. Phys. J. Appl. Phys. (2015) 72: 10301
28	H. A. Mohamed , Optimized conditions for the improvement of thin film CdS/CdTe solar cells, Thin Solid Films 589(2015)72
29	N. M. A. Hadia and H. A. Mohamed , Characteristics and optical properties of MgO nanowires synthesized by solvothermal method, Materials Science in Semiconductor Processing 29 (2015) 238
30	H. A. Mohamed , Optimized conditions for the improvement of thin film CdS/CdTe solar cells, Thin Solid Films 589(2015)72
31	H. A. Mohamed and N. M. A. Hadia, Theoretical analysis of ZnO and ZnO based alloys as front electrode in CdS/CdTe solar cells, Optik 126 (2015) 1976
32	F. Capitani, S. Koval, R. Fittipaldi, S. Caramazza, E. Paris, W. S. Mohamed , J. Lorenzana, A. Nucara, L. Rocco, A. Vecchione, P. Postorino, and P. Calvani, “Raman phonon spectrum of the Dzyaloshinskii-Moriya helimagnet Ba ₂ CuGe ₂ O ₇ ” Phy.Rev.B 91, 214308 (2015). ISSN: 24699969.
33	A.K. Diab, M.M. Wakkad, E.Kh. Shokr, W.S. Mohamed , “Structural and electrical properties of In ₃₅ Sb ₄₅ Se _{20-x} Te _x chalcogenide thin films” Optik 126 , 1855-1860 (2015). ISSN: 00304026.
34	Nucara, M. Ortolani, L. Baldassarre, W. S. Mohamed , U. Schade, P. P. Aurino, A. Kalaboukhov, D. Winkler, A. Khare, F. Miletto Granozio, and P. Calvani, “Hardening of the soft phonon in bulk SrTiO ₃ interfaced with LaAlO ₃ and SrRuO ₃ ”, Phy.Rev.B 93, 224103 (2016). SSN: 24699969.

35	H. A. Mohamed , Thin film CdS/CdTe and CdS/PbS photovoltaic solar cells, optoelectronics and advanced materials 18 (2016)254
36	Optical and photocatalytic properties of sol gel nano particles Co:TiO ₂ thin films, , Mai M. Khalaf, Hany M. Abd El-Lateef, H. M. Ali Plasmonics, DOI: 10.1007/s11468-018-0693-7 (2017).
37	H. A. Mohamed and M. R. Ahmed, Improvement of the performance of thin-film CdS/PbS solar cells using low-cost ZnO-based alloys as front electrode, Journal of Optoelectronics and Advanced Materials 5-6 (2017) 359
38	H. A. Mohamed and A. S. Mohamed, Quantitative assessment of electrical, optical and recombination losses in heterojunction CdS/CdTe solar cells, Optoelectronics and Advanced Materials rapid communications 11 (2017) 171.
39] M.A. Awad and N.M.A. Hadia , <u>Towards understanding the morphological, magnetic, optical and electrical properties of MnO₂ nanowires for magneto-and optoelectronic applications</u> , Journal of Materials Science: Materials in Electronics (2018) 29:20695–20702
40	N.M.A. Hadia , M.F. Hasaneen, Mohamed Asran Hassan and S.H. Mohamed, <u>Effect of the carrier gas on morphological, optical and electrical properties of SnO₂ nanostructures prepared by vapor transport</u> , J. Mater. Sci. - Mater. Electron. 29 (2018) 4155–4162
41	Structure, Optical, Corrosion, and Photocatalytic Properties of Thermally Evaporated Molybdenum Trioxide Thin Films deposited on different substrates, Sh. A. Elko1, W. S. Mohamed, Mahmoud Elrouby, H. M. Ali , and E. Kh. Shokr, Int. J. New. Hor. Phys. 7, No. 1,7 - 17 (2019) 7
42	Promising Molybdenum trioxide films for optically detectable gas sensor and solar cell applications, H. M. Ali , E. Kh. Shokr, Sh. A. Elkot, W. S. Mohamed, Mater. Res. Express 6 (2019) 126451 https://doi.org/10.1088/2053-1591/ab6ad0
43	Optical, Electrical, and Thermoelectric Properties of Hydrothermally Synthesized Bi ₂ Te ₃ Nanoflakes, Mohamed Abdullah Abdullah Mohamed, Hazem Mahmoud Ali , Eslam Mohamed Mohamed Ibrahim, and Moustafa Mohamed Wakkad, Phys. Status Solidi A 2019, 1800958
44	H. M. Ali, E. Kh. Shokr, Sh. AElkot and W.S. Mohamed , <i>Promising Molybdenum trioxide films for optically detectable gas sensor and solar cell applications</i> , Mater. Res. Express 6 (2019) 126451. ISSN: 20531591.

45	Sh. A. Elkot, W.S. Mohamed , Mahmoud Elrouby, H. M. Ali, E. Kh. Shokr, <i>Structure, Optical, Corrosion, and Photocatalytic Properties of Thermally Evaporated Molybdenum Trioxide Thin Films Deposited on Different Substrates</i> , Int. J. New. Hor. Phys. 7, No. 1,7 -17 (2019). ISSN: 2314-4572.
46	M.F. Hasaneen , Z.A. Alrowaili, W.S. Mohamed , <i>Structure and optical properties of polycrystalline ZnSe thin films: validity of Swanepol's approach for calculating the optical parameters</i> , Mater. Res. Express 7 (2020) 016422. ISSN: 20531591
47	W.S. Mohamed , Ahmed M. Abu-Dief, <i>Impact of rare earth europium (RE-Eu³⁺) ions substitution on microstructural, optical and magnetic properties of CoFe_{2-x}Eu_xO₄ nanosystems</i> , Ceramics International 46 (2020) 16196-16209. ISSN: 02728842
48	Influence of different types of substrates on the physical properties of CdSe films, Mahrous R.Ahmed , H.M.Ali , M.F.Hasaneen , Physica B: Physics of Condensed Matter, 2021
49	S.H. Mohamed, M.A. Awad, Mohamed Ismail Hafez & N.M.A. Hadia , <i>Change in properties upon thermal treatment of copper sulphide powder and thin films</i> , Bull. Mater. Sci. (2021) 44:81
50	Meshal Alzaid, Fai Alsalh, Rizwan Ahmed Malik, Adnan Maqbool, Noha Almoisheer, N.M.A. Hadia , W.S. Mohamed, <i>LiTaO3 assisted giant strain and thermally stable energy storage response for renewable energy storage applications</i> , Ceramics International Available online 20 February 2021.

Lab instruments						
#	Device	quantity	Quality			
			Good	Poor	Need maintenance	malfunction
1	Coating Device	2			√	
2	Spectrophotometer	1	√			
3	Furnace tube	1	√			
4	Furnace	1	√			
5	UV lamp	1	√			
6	Cryostat for electric measurement	1			√	

Instruments Description	
Device image	Description /use
توضع صورة للجهاز	وصف بسيط لاستخدامات الجهاز
	<p>*Physical vapor deposition</p> <p>The device is used to prepare different thin film samples</p>
	<p>*Furnace Tube</p> <p>1- The device is used to prepare nanomaterials</p> <p>2- It is used in solar cells</p>





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Faculty of Science

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جامعة سوهاج
University of Sohag

	<p>*Spectrophotometer Used to measure optical properties of materials</p>
	<p>*UV incubator Used in the operation of photocatalytic</p>
	<p>*Microwave Used to annealing of organic materials</p>



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*Furnace
Used to annealing thin film and bulk materials

Evaluate the fulfillment of lab to appropriateness of areas, building installations, facilities and human resources standards

Areas of assessment		Indicators	Yes	Somewhat	No
Floor area and capacity	1	Adequacy of the total capacity of the lab for the number of researcher(1).		√	
Windows and doors	2	Availability of windows for adequate ventilations.		√	
	3	Ease of use of windows.	√		
	4	There are two exits (doors) at least (2).			√

	5	There are signs to locate directions of emergency exits			√
Equipment	6	Appropriate temperature during the lectures (3).	√		
	7	Availability of good ventilation (4).	√		
	8	The existence of adequate lighting (4).	√		
	9	Lab is connected to the Internet	√		
	10	The existence of directions inside the Lab showing entrances and emergency exits.			√
Security and Safety	11	Existence of firefighting equipment near the hall (5).	√		
	12	Cleanliness of the room.	√		