

## Personal Resume

### Personal Information

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### Objective

Seeking full time position to contribute and leverage my practical work experience in a team oriented environment that challenges my analytical skills and technical abilities..

### Education

- **Assiut University, Faculty of Science** Assiut, Egypt  
*PhD, Research Area(s): Experimental solid-state physics* 2015-2019
  - **Course Modules:**
    - \* Some Basics En Route to Iso-conversional Methodology
    - \* Iso-conversional Methodology
    - \* Electrical conduction in materials and semiconductors
    - \* PTC Mathcad Math Software
    - \* OriginLab Analysis and Graphing Software
    - \* X'Pert HighScore (XRD Software)
    - \* EndNote Clarivate Analytics
  - **Thesis Work:**  
Study of Structural, Optical and Electrical Properties of Se-As-Ag Chalcogenide Semiconductors.
- **Assiut University, Faculty of Science** Assiut, Egypt  
*Master, Research Area(s): Experimental solid-state physics* 2010-2014
  - **Course Modules:**
    - \* Thin films
    - \* Semiconductors
    - \* Programming and computer
    - \* Special course ( measurement devices )
    - \* Experimental Solids Physics
    - \* Mathematical Physics
  - **Research Attentions:**  
Se- In- Pb chalcogenide glasses, differential thermal analysis (DTA) technique, non-isothermal conditions Johnson-Mehl-Avrami (JMA) model , SestakBerggren model SB (M, N) ,Crystallization kinetics, Thermal stability, Iso-conversional methods, Kinetic parameters, Film thickness, , Optical parameters , Single oscillator model, Annealing temperature, Dispersion parameters, Crystalline phases, X-ray, diffraction technique (XRD) and scanning electron microscopy (SEM).

- **Thesis Work:**  
Study of some physical properties of Se-In-Pb Chalcogenide Glasses.

- **Al-Azhar University, Faculty of Science** Cairo, Egypt  
*B.Sc -"Hall effect" [Excellent Degree], Physics* 2002-2005
- **Al-Azhar University, Faculty of Science** Cairo, Egypt  
*First level, Faculty of Education Physics and Mathematics* 2001-2002

## Working History

- **Assiut University, Faculty of Science** 2015-2019  
*Research Follow, Ph.D*
  - **Team number:4**  
one Ph.D and three master student
  - **Number of Project:1**  
**Project(1): Study of Structural, Optical and Electrical Properties of Se-As-Ag Chalcogenide Semiconductors.**  
*The Main Innovation Points:*
    1. Study the crystallization kinetics and the evaluation of the crystallization parameters in non-phase separated glass compositions in the  $(As_{50}Se_{50})_{100-x}Ag_x$  ( $0 \leq x \leq 25$ ) by using DSC technique under non-isothermal conditions.
    2. Study the effect of compositions, heat treatment and different thickness on optical and electrical properties of  $(As_{50}Se_{50})_{100-x}Ag_x$  ( $0 \leq x \leq 25$ ) thin films.
- **Assiut University, Faculty of Science** 2010-2014  
*Research Follow, Master*
  - \* **Team number:3**  
one Ph.D and two master student
  - \* **Number of Project:1**  
**Project(1): Study of some physical properties of Se-In-Pb Chalcogenide Glasses.**  
*The Main Innovation Points:*
    1. Study the crystallization kinetics and the evaluation of the crystallization parameters in non-phase separated glass compositions in  $Se_{95-x}In_x Pb_5$  ( $x = 2, 4, 6, 8$  and  $10$  at.) glasses by using DTA technique under non-isothermal conditions.
    2. Study the effect of compositions, heat treatment and different thickness on optical properties of  $Se_{95-x}In_x Pb_5$  thin films.
- **Higher Engineering and Technological Institute** El-Minya, Egypt  
*Teacher* 2008-2018
  - \* **Taught(Laboratory of General Physics Experimentally):**
    - **Taught Properties of matter Lab::**  
Experiments: Simple Pendulum, Hawk Law, Young's modulus, Specific gravity of fluids, Surface tension, Viscosity of Fluids: Ball Drop Method, Mechanical Equivalent of Heat, Measurement of Thermal Conductivity of a Metal Bar, Linear Thermal Expansion of Solid.
    - **Taught Electricity Lab:**  
Experiments: Ohms law: Application of Ohmic materials, Ohms law: Application of Non- Ohmic materials, Internal Resistance and Electromotive Force, Connection of Resistors, Meter Bridge, Charge and Discharge of a Capacitor, Connection of Capacitors.

\* **Taught(Physics course):**· **Taught Properties of matter course:**

physical quantities, standard units, dimensions, oscillations. Gravitation. Fluid statics, surface tension, fluid dynamics, viscosity. Elasticity, waves in elastic media, sound waves. Heat: temperature and temperature measurement, thermal expansion, heat transfer, the first law of thermodynamics, kinetic theory of gases, entropy and the second law of thermodynamics. Coulombs law, the electric field, Gauss law, the electric potential, capacitance and dielectrics, current electricity, electric circuits.

· **Taught Electricity and magnetism course:**

Electricity and magnetism: charge and matter, the electric field, Gauss law, electric potential, capacitors and dielectrics, current resistance and electromotive forces, the magnetic field, Amperes law, Biot-Savart law. Maxwells equations in integral form.

· **Taught optics and Modern physics course:**

Interference, diffraction, polarization, electro- and magneto- optical effects

Basic constituents of matter the atomic structure, the interaction of similar and dissimilar atoms, the interaction of photons and electrons, basic properties of atomic nuclei, radioactivity.

### Skills

Experience in use to the Origin lap Mathcad professional MATLAB I got International Computer Driving License ICDL Some experience with different operating systems (Windows 98, Xp) Office (Word, Excel, Power point) Some Internet abilities

### Publications

1. **Mohamed N. Abd-El Salam**, El Sayed Yousef, E. R. Shaaban Transformation kinetic analysis of the two overlapped crystallization peaks of As<sub>40</sub>Se<sub>40</sub>Ag<sub>20</sub> semiconductor glass using theoretical method developed (TMD) currently Under review in Chinese Journal of Physics.
2. **Mohamed N. Abd-El Salam**, A. Almohammed, Ammar Qasem, El Sayed Yousef, A. Ashour, E. R. Shaaban. Studying of Structural and Optical properties of Phase Transition of As<sub>40</sub>S<sub>45</sub>Se<sub>15</sub> Thin Films for wide technological applications. currently Under review in optoelectronics and advanced materials rapid communications
3. **Mohamed N. Abd-El Salam**, Mansour Mohamed, E. R. Shaaban, M. A. Abdel-Rahim, A.Y. Abdel-Latief. The crystallization kinetics studies of the two crystallization stages of As<sub>37.5</sub>Se<sub>37.5</sub>Ag<sub>25</sub> glass using the model-fitting and model-free approaches, Chinese Journal of Physics 60 (2019) 3547.
4. **Mohamed N. Abd-El Salam**, E.R. Shaaban, M.A. Abdel-Rahim, Mansour Mohamed, A.Y. Abdel-Latief and El Sayed Yousef, Structural and Optical Constants of Annealed As<sub>47.5</sub>Se<sub>47.5</sub>Ag<sub>5</sub> Film using DSC Transformation Curve. ACTA PHYSICA POLONICA A, Vol. 135 (2019).
5. **Mohamed N. Abd-El Salam**, Mansour Mohamed, E. R. Shaaban, Safwat A.Mahmoud, M. A. Abdel-Rahim, Investigation of the optical and electrical parameters of As<sub>47.5</sub>Se<sub>47.5</sub>Ag<sub>5</sub> thin films with

different thicknesses for optoelectronic applications. *Optik - International Journal for Light and Electron Optics* 178 (2018) 13021312.

6. **Mohamed N. Abd-El Salam**, E. R. Shaaban, Mansour Mohamed, A. Y. Abdel-Latief, M. A. Abdel-Rahim, El Sayed Yousef. Structural, linear and non-linear optical properties of annealed As<sub>47.5</sub>Se<sub>47.5</sub>Ag<sub>5</sub> thin films for optoelectronic applications. *Optical Materials* 86 (2018) 318325.
7. **Mohamed N. Abd-El Salam**, Mansour Mohamed, A. Y. AbdelLatief, M. A. AbdelRahim, N. M. A. Hadia, E. R. Shaaban, , Examination of the kinetic reaction mechanisms of amorphous As<sub>50</sub>Se<sub>50</sub> chalcogenide glass. *Applied Physics A* (2018) 124:562 <https://doi.org/10.1007/s00339-018-1976-8>.
8. **Mohamed N. Abd-El Salam**, Mansour Mohamed, M. A. AbdelRahim, M. Mohamed, A. Y. Abdel-Latief, E. R. Shaaban, Effect of Ag addition on crystallization kinetics and thermal stability of AsSe chalcogenide glasses. *Journal of Thermal Analysis and Calorimetry*, April 2018, Volume 132, Issue 1, pp 91101.
9. **Mohamed N. Abd-El Salam**, E. R. Shaaban, M. Mohamed, M. A. AbdelRahim, A. Y. AbdelLatief. Determination of the optical constants of AsSeAg chalcogenide thick films with high precision for optoelectronics applications, *Journal of Materials Science: Materials in Electronics*, September 2017, Volume 28, Issue 18, pp 1337913390.
10. **Mohamed N. Abd-El Salam**, M.A. Abdel-Rahim, A.Gaber, A.Y. Abdel-Latief, Iso-conversional kinetic study of non-isothermal crystallization of Se<sub>89</sub>In<sub>6</sub>Pb<sub>5</sub> chalcogenide glass, *Egyptian journal of Solids* 2015.
11. **Mohamed N. Abd-El Salam**, M.A. Abdel-Rahim, A.Y. Abdel-Latief, Kinetic analysis of crystallization process of Se-In-Pb glasses Iso-conversion method, *Thermochimica Acta* 573 (2013) 57 64.

### Conferences:

**Mohamed N. Abd-El Salam**, M.A. Abdel-Rahim, A.Y. Abdel-Latief, Kinetic analysis of crystallization process of Se-In-Pb glasses Iso-conversion method, the first international conference on new horizons in basic and applied science, 21-23 Spt. (2013), Hurghada-Egypt.

**Mohamed N. Abd-El Salam**, E.R. Shaaban, M. Mohamed, M.A. Abdel-Rahim, A.Y. Abdel-Latief, " Investigation of the optical constants for non-uniform thickness thin Films of As-Se-Ag chalcogenide glassy system", The 1st International Conference on Physics Materials Sciences Engineering (ICPMSE), Luxor, Egypt (2017) 22.

### Language Skills:

- \* Arabic(Native)
- \* English(bilingual, professor)

### Future Work:

**Project:** Structure analysis and optical parameters of nano-scale ZnSe/flexible substrate thin film

1. The ZnSe thin films, with different thicknesses have been deposited on polymer substrates for flexible optical devices applications. The XRD of different thicknesses for ZnSe films, reveals the cubic structure of the film oriented along the (1 1 1) direction. The structural parameters such as particle

size [40.41105.24 nm] and lattice strain [ $6.5 \times 10^{-3}$ – $14.7 \times 10^{-3}$  lin-2m-4] were evaluated. Also AFM was used in order to get quantitative information on microstructure properties.

2. The optical constants, the refractive index  $n$  and the absorption index  $k$ , have been calculated from transmittance  $T$  and reflectance  $R$  through the spectral range of 400–2500 nm using Swanepoel's method. The optical constants ( $n$ ,  $k$ ) were calculated in medium and transparent regions. The energy gap of direct transition for polycrystalline ZnSe thin films was calculated in the strong absorption region and found to be increased from 2.55 to 2.70 eV with the increasing the film thickness. ZnSe/flexible substrates are good candidates in optoelectronic devices.

## References:

**Prof.Dr. E. R. Shaaban,**

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**Prof.Dr. M.A. Abdel-Raheem,**

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