

Curriculum Vitae

- **Name and Address:**

Wagah Farman Mohammad Al-Azzawi
Professor of Electronics
Communications & Electronics Department
Faculty of Engineering,
Philadelphia University,
Amman, Jordan.

Tel:GSM: 00962-796423962

Line: 00962-65814242

- **E-mail:** wagahfaljubori@yahoo.com
wagah2000@yahoo.co.uk



- **Date of Birth:** 4/2/1952, **Place of Birth:** Mosul, Iraq.

- **Specialization:** Electrical & Electronic Engineering.

- **Sub specialization:** Digital & Microelectronics.

- **Qualifications:**

1. Ph.D., Electrical & Electronic Engineering, (An Investigation of Magnetic Memories Using Stroboscopic Technique), Manchester University, U.K., (1980).
2. M.Sc., Electronic Engineering, (Electronic Testing of Magnetic Memories), Manchester University, U.K., (1977).
3. B.Sc., Baghdad University, Iraq, (1973).
4. Promoted to Assistant Professor, Mosul University-Iraq (1987).
5. Promoted to Associate Professor, Al-Isra University-Jordan (2006).
6. Promoted to professor, Philadelphia University- Jordan (2012).

- **Professional Experiences:**

1. 1975 -1980: Postgraduate student, Manchester University, England.
2. 1980 -1983: Assistance Professor, Engineering College, Baghdad University.
3. 1983 -1985: Assistance Professor, Elec. Eng. Dept., College of Eng., Mosul University, Iraq.
4. 1985-1987: Assistance Dean of Engineering College, Mosul University.
5. 1987-1995: Associate Professor, Elec. Eng. Dept., College of Eng., Mosul University, Iraq.
6. 1995-2001: Head of Elec. Eng. Dept., Mosul University, Iraq.
7. 2001-2002: Associate Professor, Elec. Eng. Dept., College of Eng., Mosul University, Iraq.
8. 2002-2004: Director General of Engineering Consultancy Bureau, Engineering College, Mosul University.
9. 2004- 2006: Associate Professor & Head of Elec. Eng Dept., Al-Isra University, Amman, Jordan.
10. 2007 (One Term): Head of Engineering Dept. Salalah Technical College, Sultanate of Oman.
11. 2007- 2009: Dean of Shinas Technical College, Sultanate of Oman.
12. 2009- Up to Date: professor, Communications & Electronics Department, Philadelphia University, Amman, Jordan.

- **Memberships:**

1. Union of Iraqi Teachers - Iraq.
2. Union of Iraqi Engineers - Iraq.
3. British Physics Society - UK (BInst P).
4. World Renewable Energy Congress - UK (WREC).
5. International Energy Foundation - Canada (IEF).
6. Arab Scientific & Technology Foundation - UAE (ASTF).

- **Subjects Taught:**

1. Physical Electronics.
2. Introduction to Engineering.
3. Electronic Measurements & Devices.
4. Linear Electronics & Amplifiers.
5. Logic Design.
6. Digital Electronics.
7. Micro Electronics.
8. VLSI Circuits & Technology.
9. Digital Systems & Circuits.
10. Advanced Digital Design With Verilog HDL.
11. Microprocessors.
12. Semiconductors Technology: M. Sc. Course.
13. Thin Films & Solar Cells: M. Sc. Course.
14. Advance Micro Electronics: Ph.D. Course.
15. Advance Digital Techniques: Ph.D. Course.

- **Key Attributes &Skills:**

- 1- Logical problem solving mind & quick assimilation of new concepts and ideas, with communication skills.
- 2- Ability to manage projects and organize large groups.
- 3- Very good University lecturer with excellent ability to participate and organize conferences.
- 4- Building hardware, design circuitry and familiar with wide range of integrated circuits and very large scale integration circuit's technology.
- 5- Excellent project consultant and ability to supervise postgraduate researches.

- **Published Books:**

- 1- The Electrical and Magnetic Properties of Materials, (In Arabic), Mosul University, (1985).
- 2- Physical Electronics, (In Arabic), Mosul University, (2001).

- **Theses Supervised:**

- **M. Sc. Theses:**

- 1- Improved Efficiency of CdS Heterojunction Solar Cells (1984), Mosul University.
- 2- Fabrication and Investigation of Silicon-Germanium Alloy Thin Films (1994), Mosul University.
- 3- Study of Electrical and Photo-Electric Properties of CdS Thin Films (1995), Mosul University.
- 4- The Effect of Germanium and Annealing Temp. on Amorphous Silicon Germanium Thin Films (1997), Mosul University.

- 5- Fabrication & Characterization of In-doped CdTe / Si (p) Heterojunction (1999), Mosul University.
- 6- New Digital IC Tester (1999), Mosul University.
- 7- Computerized Electronic Circuit to Control off and on Time for Distribution Substations (1999), Mosul University.
- 8- Fabrication & Characterization of In-doped CdTe / Si Infrared Detectors (2000), Mosul University.
- 9- Fabrication & Characterization of Silicon Photo detector at visible and Infrared Regions (2001), Mosul University.
- 10- Simulation of the Electrical and Optical characterizations of Amorphous Silicon (PIN) Solar Cell (2002), Mosul University.
- 11- Study & Improvement of Supervisory Control & Data Acquisition (SCADA) System for Power Distribution Substations (2002), Mosul University.
- 12- Computerized Method for Capacitor Banks Insertion to Improve Power Factor in the Distribution Substations (2003), Mosul University.
- 13- Design and Performance Evaluation of Smart Antenna System for Mobile Communications, (2006), Mutah University.
- 14- Artificial Intelligence Applications in Electrical Engineering Systems, (2009), Denmark Arabic University.
- 15- Temperature and Voltage Control Of Photovoltaic Solar Cell Panel For Hybrid Cars Applications, (2015), Philadelphia University.

- **Ph.D. Theses:**

- 1- Fabrication & Characterization of In-doped Silicon Solar Cell (1999), Mosul University.
- 2- Fabrication & Characterization of AL/SiO₂/Si Thin Films Resistor & Capacitors with Capability of Using Them as Memory Storage (2001), Mosul University.
- 3- Effect of Interfacial Layer on Performance of Schottky Barrier Photo detector (2003), Mosul University.

- **Conferences Attended:**

- 1- International Conference on Magnetic (INERMAG 78) - Florence - Italy, 9-12 May (1978).
- 2- 3rd International Conference on Magnetic Bubbles - CA - USA, 11-15 March (1979).
- 3- 1st Symposium on Iraqi National Astronomical Observatory, Baghdad, 11-14 Jan. (1982).
- 4- 1st Symposium on Thin Films and Electron Microscope Applications, Baghdad, Iraq 17-26 Nov. (1984).
- 5- 1st Symposium on Microelectronics, Mosul, Iraq 16-18 April (1985).
- 6- 4th Scientific Research Conference - Baghdad Iraq, March (1985).
- 7- 4th Arabic Conference in Physics & Math, Baghdad, Iraq, 20-24 April (1985).
- 8- 1st Regional Conference on Materials Science, Alexandria, Egypt, 29-31 Dec. (1987).
- 9- 3rd Arab International Solar Energy Conference (AISEC-3) Baghdad, Iraq, March, (1988).
- 10- 1st Mosul Conference on Electrical Engineering, Mosul, Iraq, 24-26 April (1995).
- 11- 2nd Jordanian Conference on Electrical Engineering, Mutah University, Jordan, 18-20 Nov. (1996).
- 12- 1st Baghdad Conference on Electrical Engineering, University of Technology, Iraq, 22-24 Oct. (1997).
- 13- 1st Conference for Materials Science, Mutah University, Jordan, 1-4 Nov. (1997).

- 14- 3rd International Conference on Engineering Math. & Physics, Cairo University, Egypt, 23-26 Dec, (1997).
- 15- Third International Conference on Solar Electricity (ICSE), Sharjah, UAE, 21-25 March (1998),
- 16- Sixth Arab International Solar Energy Conference (AISE-6), 29 March-1st April (1998) Sultan Qaboos University, Muscat, Sultanate of Oman.
- 17- 3rd Jordanian Conference in Electrical Engineering, Mutah University, Jordan 17/4/1999.
- 18- 4th International Conference in Physics of Condensed Matter, University of Jordan, Amman 18-22 April (2000).
- 19- Scientific Research Outlook in the Arab World, Science & Technology, University of Sharjah, UAE, 24-26 April (2000).
- 20- The First International Energy Conference, UAE University, UAE, 7-9 May (2000).
- 21- 1st Iraqi Conference on Electrical and Electronic Engineering (Head of the Conference) Mosul – IRAQ, 11-13 Nov. (2000).
- 22- Comple's 2k Mediterranean Conference for Environment and Solar, Beirut, Lebanon, 16-18 Nov. (2000).
- 23- Sharjah Solar Energy Conference, University of Sharjah, UAE, 19-22 January (2001).
- 24- World Conference on Technology Advances for Sustainable Development, The Second International Conference on Renewable Energy & Environment Protection Technologies, Cairo-Egypt, 11-14 March (2002).
- 25- World Renewable Energy Conference VII, Cologne-Germany, 29 June – 5 July (2002).
- 26- International Symposium & Exhibition in Renewable, Selangor, Malaysia, 14-17 Sep. (2003).
- 27- 8th Arab International Solar Energy Conference (AISEC 8) Manama, Bahrain, March (2004).
- 28- International Engineering Conference “Mutah 2004 “Mutah, Jordan, April (2004).
- 29- Third International Conference on Signals, Systems and Devices, Sousse, Tunisia, March 21-24, 2005.
- 30- International Congress on the Renewable Energies and the Environment, Sousse, Tunisia, March 24-26, 2005.
- 31- 8th Annual International Middle Eastern Simulation and Modeling Conference (MESEM 2006), Ref: ELEC 08, Alexandria, Egypt, August 28-30, 2006.
- 32- The Arab Regional Solar Energy Conference (ARSEC-06), 5-7 Nov., 2006, University of Bahrain, Kingdom of Bahrain.
- 33- International Conference on Communications, Computer & P0wer (ICCCP07), Feb 19-21, 2007, Sultan Qaboos University, Oman.
- 34- 2nd International Conference on Electrical Engineering Design & Technology (ICEEDT08), Nov. 8-10, 2008, Hammamet, Tunisia.
- 35- International Multi-Conference Systems, Signals & Devices (ISSD10), 27-30 June 2010, Philadelphia University, Amman, Jordan.
- 36- 8th International Multi-Conference on Systems, Signals & Devices (ISSD11), (March, 19 -25, 2011), Sousse-Tunisia.
- 37- World Renewable Energy Congress- October 17- 19, 2011, Bali, Indonesia.
- 38- Ninth International Multi-Conference on Systems, Signals & Devices (ISSD12), March 20-23, 2012 - Chemnitz, Germany.
- 39- Sixth International Conference on Sensing Technology, December 18 to 21, 2012 at Kolkata, India.

- 40- 11th International Multi-Conference on Systems, Signals & Devices, SSD2014, Castelldefels - Barcelona, Spain, from 11th - 14th February 2014.
- 41- 12th International Multi-Conference on Systems, Signals & Devices, SSD2015, Saffax, Tunisia, March 16-19, 2015
- 42- International Symposium on Mechatronics and its Applications, December 8-10, 2015, -Alsharjeh American University, Alsharjeh, UAE.
- 43- The International Multi-Conference on Systems, Signals and Devices SSD16, March 21 - 24, 2016 - Leipzig, Germany.

• **Journal Published Papers:**

1. "Stroboscopic Measurements of Strip Domain Expansion in Chevron Stacks". Joint 3M / Intermag. Conf., New York, and J. App. Physics. Vol. 50, p. 7871 (abs) (1979).
2. "Performance Characteristics of a Chevron Expander". IEEE Trans. MAG. Vol. MAG-17, No.5, P.2434, September (1981).
3. "Magnetic Bubble Memories". (In Arabic), Al-Sinaa Journal, Baghdad, Vol. 3, P. 30, (1985).
4. "Increase of Data Transformation in Magnetic Bubble Memories". (In Arabic), Computers Journal, Baghdad, Vol.16, P.46, (1986).
5. "Vacuum Deposition and Evaluation of Constituent Layers of Cu₂S/CdS Solar Cell". Journal of Solar Energy Research Baghdad, Vol. 4, No.2, P. 82, Sep. (1986).
6. "Improved Efficiency of Cu₂S/CdS Solar Cell". IETE Journal, India, Vol.33, No.2, P.70, (1987).
7. "Measurement of Length and Velocity of Magnetic Bubbles in Thin Film Ferrite". (In Arabic), Journal of Electronics and Computers Research, Baghdad, Vol.2, No.1, April (1988).
8. "Electrical Characteristics of a Si_{1-x}Ge_x Alloy Thin Films". Al-Rafidian Eng., Vol.3, No.2, Mosul University, Mosul, Iraq, P.1, (1995).
9. "Study of Aluminum Thin Film Properties under Different Thermal Vacuum Deposition Parameters". Al- Rafidian Eng. Vol.3, No.2, Mosul University, Mosul, Iraq, P.38, (1995).
10. "The Effect of Temperatures and Doped Level on CdS Thin Films". Eng. & Tech. J., Vol.14, No.7, P.34, July, (1995).
11. "The Effect of Evaporation Parameters on the Deposition Rate of Metals Deposited Under Low Pressures". Al-Rafidian Sciences J., Mosul University, Mosul, Vol.7, No.1, (1996).
12. "The Effect of Germanium Quantity on Electrical Properties of a-SiGe Thin Films". Eng. & Tech. J., Vol. 16, No. 8, (1997).
13. "Some Aspects of Alloying and Crystallization of Amorphous Silicon Germanium Thin Films". Mu'tah Lil-Buhuth Wad-Dirasat Vol. 12, No. 3, P.63 (April 1997).
14. "The Electrical Properties of Thermal Vacuum Deposition CdS Thin Films" Eng. & Tech. J., University of Technology, Vol.17, No.12, P.1114, (1998).
15. "The Photo-Electric and Thermal Properties of Vacuum Deposited CdS Thin Films". Renewable Energy Journal Vol. 14(1-4), (May-August 1998).
16. "Electro-Thermal properties of Thermal Deposited CdS Thin Films". Dirasat Journal, Jordan, Vol. 25(3), Oct. (1998).
17. "The Effect of The Series Resistance on The Photovoltaic Properties of In-doped CdTe (p) Thin Film Homojunction", Renewable Energy J., England, Vol. 21(2), P. 141, (2000).
18. "Design of Programmable Electronic System to Calculate and supervise Feeders on and off Time in Substations", Al-Rafidian Engineering, Mosul, Vol. 8(3), P. 1, (2000).

19. "Infrared Response and Quantum Efficiency of In-doped Silicon (n) Structure" Renewable Energy Journal, England, Vol. 21(3-4), P. 323, Nov.-Dec. (2000).
20. "Some Aspects of Conduction Mechanisms and Activation Energy Measurements of $\text{Si}_{1-x}\text{Ge}_x$ Thin Films" Al-Rafidian Engineering Journal, Mosul, Vol. 8(3), P. 73, (2000).
21. "The Electrical Properties of Post-Deposition annealed and as-deposited In-Doped CdTe Thin Films" Renewable Energy Journal, England, Vol. 26(2), P.285, (2002).
22. "The Effect of Deposition Parameters on Hall Mobility and Carrier Concentration of CdS Thin Films" abhath al-yarmook Journal, Jordan, Vol. 11(1B), (2002).
23. "Calculation of Light Trapping, Responsivity and Internal Quantum Efficiency of In-Doped n-Type Silicon" Renewable Energy Journal, England, Vol.28 (2), P.311, (2003).
24. "Digital IC Testing System Based Microcontroller and FPGA array", Engineering & Tech. J. Baghdad, Vol. 21(6), (2002).
25. "The Influence of Defects on Short Circuit Current Density in p-I-n Silicon Solar Cell", Renewable Energy Journal, England, Vol.30 (2), P.187, (2005).
26. "Effect of Oxide Layers and Metals on Photoelectric and Optical Properties of Schottky Barrier photo detector", Renewable Energy Journal, England, Vol.31 (10), P. 1493-1503, July 2006.
27. "Digital and Analogue storage Capability of Al/SiO₂ /Si Structures", Asian Journal of Information technology, Vol. 5(1), P. 1-4, Jan. 2006.
28. "Short Circuit Current Improvement of In-doped Silicon (n) Structures", Journal of Arab Association Universities for Basic and Applied Sciences (JAAUBAS), Vol. 1(2) , P. 23, 2006.
29. "Fast Power Loss Computation & Shunt Capacitance Insertion Using Fuzzy Logic Technique", American Journal of Applied Sciences Vol. 4, No. 1, P. 37- 41, USA (2007).
30. "New Analysis to Measure the Capacitance and Conductance of MOS Structure toward Small Size of VLSI Circuits", Circuits and Systems Journal, Vol.2, NO.3, P.145-150, California, USA (2011).
31. "The Effects of Fabrication Parameters and Electroforming Phenomenon on CdTe/Si (P) Heterojunction Photovoltaic solar Cells, Circuits and Systems Journal, Vol.3, NO.1, P. 42-47, California, USA (2012).
32. " Power Conversion Enhancement of CdS/CdTe solar cell Interconnected with Tunnel diode" Circuits and Systems Journal, Vol.3, NO.3, P. 230-237, California, USA (2012).
33. "Investigation of Current Mechanisms and Electronic Properties of Schottky Barrier Diode" Wagah F. Mohammad (PhD), & Eng. Nada N. Khatib, manager's Journal on Electronics Engineering, Vol. 21 No. 31, P. 30- 36, March – May 2012.
34. "The effects of MOS layers on sensing properties of MOS photosensor" Wagah F. Mohammed, M. M. Ali, Munther N. Al-Tikriti, K. Kaleel, International Journal on Smart Sensing and Intelligent Systems, Vol. 6, No.3, P.1102, June 2013.
35. "Simulation of photogenerated current of PN silicon photodetector enhanced by impurity photovoltaic effect" Renewable and Sustainable Energy Reviews 26 (2013) 408–413, May 2013.
36. " Comparison study of optoelectronic properties of silicon photodetector doped with indium or aluminum" Accepted at Transactions on Systems, Signals and Devices, Issues on Sensors, Circuits & Instrumentation, June, 2014.

Conferences Published Papers:

1. "Stroboscopic Analysis of Chevron Expander Dynamic". Paper 22, Conf. Proc., 3rd Int. Conf. on Magnetic Bubbles, California (1979).
2. "Fabrication and Characterization of Constituent thin films of P-Cu₂S/n-CdS". 1st Regional Symposium on Materials Science, Alexandria University, Egypt, Dec. (1987).

3. "Some Aspects of Alloying and Crystallization of Amorphous Silicon Germanium Thin Films". 1st Conference on Materials Science, Mu'tah Univ., Jordan, 1-4 Nov. (1997).
4. "The Photo-Electric and Thermal Properties of Vacuum Deposited CdS Thin Films". 6th Arab International Conference on Solar Energy (AISEC-6) Muscat-OMAN, 29-1 April (1998).
5. "The Electrical Characteristics of Mixed CdS + CdSe Thin Films". Proceeding of the sixth scientific conference for foundation of Technical Institutes, Baghdad, 23-24 March (1998).
6. "Photoelectrical Properties of Silicon Germanium Thin Films". 3rd Jordanian Conference in Electrical Engineering, Mu'tah University, Vol. 12(3), P.134 (1997).
7. "Fabrication & Characterization of Indium Doped Silicon (n) Structure" Accepted for Presentation in The Scientific Research Outlook in The Arab World, Science & Technology, University of Sharjah, AUE, 24-26, April (2000).
8. "The Electrical and Photoelectrical Properties of In-doped CdTe/Si (p) Heterojunction" World Renewable Energy Congress-VII, Cologne-Germany, (2001).
9. "Theoretical and Practical Investigations of In-doped Silicon (N) Structure", Renewable Energy Congress-VII, Cologne-Germany, (2001).
10. "The Effect of Deposition Parameters on Hall Mobility and Carrier Concentrations". 3rd International Conference on Eng. Math. & Phys., Cairo – Egypt, 23-26 Dec, (1997).
11. "Low Cost PC Data Acquisition system for the Distribution Substation Monitoring and Control function", Second Scientific Conference of Saddam University, 30-31 Sep. (2002).
12. "Photovoltaic Properties of In-Doped CdTe Thin Films Deposited on Metallic Substrate", Proceeding of International symposium on Renewable Energy, Kuala Lumpur, Malaysia 14-17 Sep. (2003).
13. "Memorization Behaviors of Different MIOS Structures", Third International Conference on Signals, Systems and Devices, Vol. 5, p. 251, March 2005.
14. "The Effect of Annealing Temperature and Aging Time on the Photovoltaic Properties of CdS / Cu₂S Heterojunction Solar Cell "World Renewable Energy Congress-IX, Ref: Acc/paper/F, Florence, Italy, 19-25/ August 2006.
15. "Fast Energy Loss Computation and Fuzzy – Based Shunt Capacitor Insertion", 8th Annual International Middle Eastern Simulation and Modeling Conference (MESEM 2006), Ref: ELEC 08, Alexandria, Egypt, August 28-30, 2006.
16. " The effect of Coating & Interfacial Layer on the Electronics Properties of Schottky Barrier Photo detector", - The Arab Regional Solar Energy Conference (ARSEC-06), 5-7 Nov., 2006, University of Bahrain, Kingdom of Bahrain.
17. "New Analysis to Measure the Capacitance & Conductance of MOS Structure Toward Small Size of VLSI Circuits", International Conference on Communications, Computer & Power (ICCCP07), Feb 19-21, 2007, Sultan Qaboos University, Oman.
18. "Behaviors of MOS Structures as a Memory Cells", International Multi-Conference Systems, Signals & Devices (ISSD10), 27-30 June 2010, Philadelphia University, Amman, Jordan.
19. "Some Aspects of Electronic Properties of Schottky Barrier Diode", International Multi-Conference Systems, Signals & Devices (ISSD11), 22-25 March, 2011- Sousse, Tunisia.
20. "Maximum Power Point Neuro-Fuzzy Tracker for Photovoltaic Arrays" International Multi-Conference Systems, Signals & Devices (ISSD11), 22-25 March, 2011- Sousse, Tunisia.
21. "Optoelectronic Characteristics of Modified Schottky Barrier Photodiode", World Renewable Energy congress- October 17- 19, 2011, Bali, Indonesia.

22. "Investigations of Annealing Temperature and Aging Time on Energy Conversion Efficiency of Cu₂S/CdS Solar Cells" IEEE SSD'12, 9th International Multi-Conference Systems, Signals & Devices (ISSD12), March 20 - 23, 2012, Chemnitz, Germany.
23. "Fabrication and Investigation of MOS Modified Schottky Barrier Photodetector" Wagah F. Mohammed, Munther N. Al-Tikriti, Nada N. Khatib, 2012 Sixth International Conference on Sensing Technology, December 18 to 21, 2012 at Kolkata, India.
24. "Optoelectronic Properties of Silicon Photodetector Doped With Indium or Aluminum" 11th International Multi-Conference Systems, Signals & Devices (ISSD14), Conference on Sensors, Circuits & Instrumentation Systems, February 18-22, 2014, Barcelona, Spain.
25. "Theoretical models and simulation of optoelectronic properties of a-Si-H PIN photosensors" 8th International Conference on Sensing Technology, Liverpool, UK, p. 578- 582 September 2-4, 2014.
26. "Exploitation the waste energy in hybrid cars to improve the efficiency of solar cell panel as an auxiliary power supply" International Symposium on Mechatronics and its Applications, December 8-10, 2015, -Alsharjeh American University, Alsharjeh, UAE.
- 27- "Novel electronic approach for efficient energy harvesting from Cu₂S/CdS solar cell' 12th International Multi-Conference on Systems, Signals & Devices' SSD2015, Saffax, Tunisia, March 16-19, 2015.
- 28- "Technologies and applications of Photovoltaic solar cell" 12th International Multi-Conference on Systems, Signals & Devices' SSD2015, Saffax, Tunisia, March 16-19, 2015.
- 29- "Current Control to Improve COP of Thermoelectric Generator and Cooler for PV Panel Cooling" The International Multi-Conference on Systems, Signals and Devices SSD16, March 21 - 24, 2016 - Leipzig, Germany.
- 30- Investigation and analysis of optoelectronic properties of amorphous silicon-germanium photodetectors, to be published.
- 31- Crystallization and optoelectronic properties of amorphous silicon-germanium solar cell, to be published.