CURRICULUM VITAE

RASHAD IBRAHIM BADRAN
B.Sc., M. Sc., Ph.D

Professor of Physics
Specialization: Nanocrystalline and Amorphous Semicondcutors

PERSONAL INFORMATION

FULL NAME: *RASHAD IBRAHIM BADRAN*
ADDRESS: *Professor of Physics*
Faculty of Science,
The Hashemite University,
Zarqa, Jordan
E-Mail: rbadran@hu.edu.jo
rbadran55@gmail.com

Work Phone: *00962-5-3903333 Extn. 4203*

MARTAIL STATUS: *Married with two children*

NATIONALITY: *Jordanian*

Former Designation: *Dean of Faculty of Science 2017-2020.*
Current Designation: Board of Trustees Member of Petra University, Nov. 2017- Present

EDUCATIONAL BACKGROUND

HIGHER EDUCATION:

1. **B.Sc.** Physics, Physics Department, Faculty of Science, Basra University (Jan. 1973- July 1978). Average Grade: Very Good.

2. **M.Sc.** Physics, Physics Department, Faculty of Science, Kuwait University (Sept. 1982- Mar. 1986) (Courses and Research). Average Grade in Course work A^{-}.

Thesis Submitted:

Strong Absorption Analysis of the Elastic Li^{7} + Fe^{54} and He^{4} + Ni^{58} and the Transfer Fe^{56} (Li^{7} + He^{4}) Co^{59} Nuclear Reactions.

3. **Ph.D.** Semiconductor Physics , Physics Department Nottingham University, UK (Sept. 1987 - Dec. 1991).

Thesis Submitted:

Studies of Orbital Doublet and Modeling of Orbital Triplet Jahn-Teller Systems in III-V Semiconductors.

Research and Academic Awards:

- Research Awards from Hashemite University, 2012, 2013, 2014, 2015. 2016 and 2017
- Our Accepted article in "Vacuum" journal has been chosen by Elsevier among the top 25 articles in the period between April to June 2009
- Distinguished Research Award from King Abdulaziz University, Nov. 2009
- Distinguished Research Award from King Abdulaziz University, Dec. 2010
- Part-time teaching assistantship from Physics Department, University of Nottingham (Oct. 1990 - June 1991).
- Kuwait University Academic Assistantship (Sept. 1982- Mar. 1986).

PROFESSIONAL EXPERIENCE:

Academic Career Track and Teaching Experience:

Sept. 1979 - Sept. 1982:

Research and teaching assistant at Physics department, Basra University.

Oct. 1982 - Mar. 1986:

University of Kuwait Post-graduate Research Scholarship (M.Sc.), carrying out research on nuclear physics (theoretical work on Heavy-Ions Collisions). Marking course work and demonstrating in the Physics laboratories for undergraduate courses at the Physics Department.

May 1986 - Aug. 1987:

Research and lecturer assistant, Physics department, Kuwait University

1. Conducting research work in nuclear physics and electron microscopy.
2. Carrying out teaching duties at physics department.

Oct. 1990 - June 1991:

Marking undergraduate course work at physics department-Nottingham University.

Jan. 1993 - Aug. 1993:

Part-time Lecturer, Physics Department, Jordan University teaching the following courses:

1. First year courses 101, 112 Mechanics, Electricity and Magnetism.
2. Second year course 222 Waves and Vibrations.
3. Forth year course 471 Solid State Physics
4. Post-graduate course (Seminars in various topics of physics)

Sept. 1993 – Aug. 1995:

Assistant Professor, Faculty of Science, University of Petra (previously Jordan University for Women) teaching first year courses for Science, Pharmacy and medical Technology Students.

Sept. 1995- Oct 2003:

Assistant Professor, Faculty of Science and Arts, The Hashemite University, teaching most of undergraduate physics courses like Mathematical Physics I & II, Classical Mechanics, Electronics, Electricity and Magnetism, Quantum Mechanics I, Material science, Solid State Physics, Semiconductors Physics in addition to General Physics I & II (teaching and course coordination). Supervising several senior students in their final year projects.

June 1999- Sept. 1999:
Visiting Research Assistant, EPI center, UAD, Dundee, Scotland, UK.

June 2000- Sept. 2000:
Visiting Research Assistant, EPI center, UAD, Dundee, Scotland, UK.

June 2001- Sept. 2001:
Visiting Research Assistant, EPI center, UAD, Dundee, Scotland, UK.

June 2003- Aug. 2003:
Visiting Research Assistant, Julich Research Center and Oldenburg University, Germany.

Nov.2003- Aug. 2006:
Associate Professor, Faculty of Science, The Hashemite University, teaching most of undergraduate physics courses and graduate courses (like Advanced Mathematical Physics, Advanced Solid State Physics and Semiconductor Physics).

Sep.2006- Aug. 2010:
Associate Professor, Faculty of Science, King Abdulaziz University. (On leave from the Hashemite University). Courses being taught are: **a**) Undergraduate Courses like General Physics, Classical mechanics I & II, Mathematical physics I & II and **b**) Graduate Courses like Mathematical Physics, Advanced Course in Numerical Methods, Special Topics in Theoretical Physics and Advanced Semiconductor Physics.

Sep.2010- Nov. 2010:
Associate Professor, Faculty of Science, The Hashemite University

Nov. 2010
Submit an application for second promotion
(One year earlier than expected date of application)

Oct. 2011 (Aquired early promotion to professorship due to distinguished publications during past 4 years after the first promotion))

Sep. 2011-Aug 2012:
Professor, School of Natural Resources Engineering and Management, German-Jordanian University, Amman, Jordan

Feb. 2012-Aug. 2012
Professor, School of Natural Resources Engineering and Management, German-Jordanian University, Amman, Jordan

Feb. 2012- Present:
Professor, The Hashemite University, Jordan

Sep. 2017-Present:
Dean of Faculty of Science, The Hashemite University

Research Interests:

1. The studies of photoelectrical and optical properties of amorphous and nanocrystalline thin films semiconductor using the Steady-State Photocarrier Grating (SSPG) technique and sepectrophotometry. This includes a specific study of the minority carrier properties and the optical constants. The experimental studies are accompanied with the implementation of different theoretical approaches. Furthermore, the study of electrical properties of ZnO nanowires, nanorods and nanosheets fabricated as heterojunction diodes, is another interest.

2. The study of electrical properties of semiconductors, via the transient photoconductivity (TPC) and the modulated photoconductivity (MPC) on nanocrystlline and amorphous semiconductors samples is conducted where the numerical methods of Fourier and Laplace transforms are used to determine the density of states in the mobility gap.

3. The analysis of noise in semiconductor devices is also conducted. The analysis of generation-recombination noise in amorphous semiconductor devices based on multiple-trapping-state regime using the equivalent circuit model of Chaplin is the main theme of this work. The spectral noise is calculated and compared to the theoretical results of other models. Monte-Carlo simulation programs are also developed to calculate the spectral noise and these results are compared to the above mentioned theoretical results and experimental data.

4. Research work in nuclear physics involving heavy ion collisions is of one of my interests. The first part of this research deals with the analysis of elastic scattering of heavy nuclei at low energies. While the second part involves the incomplete fusion, and transfer reactions of different heavy nuclei at various energies. Different numerical models are developed and employed in this theoretical work.

5. The theoretical studies of the transition metal ions as impurities in the crystalline group III-V semiconductors is the main theme of my research work in solid state physics. The analytical method of unitary transformation followed by an energy minimization is used to study the E⊗ e Jahn-Teller system in the strong coupling limit. The inversion splitting and reduction factors are obtained analytically. The Schrödinger equation is solved for this complex system and the perturbation theory is used. This work also involves the modeling of the transition metal ion V^{3+} as impurity in the GaAs, GaP and InP semiconductors. In particular, the analysis of the structure of the zero-phonon lines of transitions within V^{3+} ions, in the above-mentioned hosts, under the effects of spin-orbit coupling, uniaxial stress and external magnetic field which are accompanied by Jahn-Teller effects, are studied.

Workshops and Training Courses:

1. Regional workshop on Nanotechnology, organized by Sultan Qaboos University, between 12^{th}- 14^{th} January 2008 at Muscat, Oman.

2. First Yarmouk school for computational condensed matter and Nano systems, organized by center for theoretical and applied physical sciences, Yarmouk University, between 31st Oct.-Nov. 4th , 2010, Irbid, Jordan.
3. Training Course in UNIX systems organized by AST Computer Company, Jordan held at its main office in Amman, Feb. 1-5, 2000.
4. IT Premier workshop on Basic Web technology skills for courseware development held at Yarmouk University, Irbid, Jordan, Feb. 11-15, 2001. This workshop is collaboratively organized by UNESCO-Cario Office, Yarmouk University and co-sponsored by UNDP.
5. IT Premier workshop on Basic Web technology skills for courseware development held at The Hashemite University, Zarqa, Jordan, Dec. 1 to Feb. 2, 2003.

Online Courses:

1. Mathematical Physics II
2. Solid State Physics

   These two courses have been prepared using front page, web CT and blackboard basic web technology. They have been launched over the website of the Hashemite University since the academic year 2003/2004.
3. Online interactive course (General Physics I), prepared in E-format using Office Mix software, is launched on Massively Empowered Classrooms (MEC) of Microsoft company.

Research Grants:

1. Theoretical analysis of elastic and transfer nuclear reactions of heavy ions at intermediate and low energies. This research is supported by the Hashemite University Deanship for Scientific Research. Total fund awarded JD 20000 on May 18, 1999.
2. Modeling of geothermal energy processes for future application in Jordan. This is funded by Shouman Foundation on Nov. 2000. Total fund awarded 15000JD.
3. Analytical treatment of the steady state small signal photocarrier grating differential equation using Galerkin Method. This work is funded by the Hashemite University Deanship for Scientific Research. Total fund awarded JD 5300 on Nov. 25, 2014

Presented Seminars:

1. Nanocrystalline semiconductors: A new era of Photovoltaic applications, April 24, 2009, Physics Department, King Abdulaziz University, Jeddah, KSA.
2. A comprehensive study of nanocrystalline silicon semiconductors, March 19, 2008, Physics Department, King Abdulaziz University, Jeddah, KSA.
3. Theoretical work on electronic properties of microcrystalline semiconductors, Nov. 1, 2006, Physics Department, King Abdulaziz University, Jeddah, KSA
4. Generation-Recombination Noise in Amorphous Semiconductors, July 27, 2003 GRECO, Physics Department, Oldenburg University, Germany.
5. Incomplete Fusion of $^{7}Li + ^{56}Fe$ at Incident Energies of 50 and 68 MeV, April 4, 2003, Physics Department, The Hashemite University.
6. Perturbation Theory as Applied to Complex Systems, Sept. 1994, Physics Department, University of Applied Sciences, Jordan.
7. Jahn-Teller Effects in Crystalline Semiconductors, May 15 1995, Physics Department, Mu'ta University, Jordan.

8. Some Aspects of Vibronic Interactions in Complex Molecules and Crystalline Solids. Jan, 9, 1993, Physics department, Jordan University.
9. Theoretical Studies of Heavy Ions at Intermediate Energies using The Diffraction Model, Oct. 11, 1986, Group of Nuclear Physics, Kuwait Institute of Scientific Research, Kuwait.

External Examiner Committee:

1. Served on the M.Sc. graduate committee of Rawan Alshehry, Department of Physics, University of Jordan, June, 2015.
2. Served on the M.Sc. graduate committee of Sajedah Alrawashdeh, Thesis Title:" Time dependent formulation of the energy loss by an accelerated electron beam propagating in the laser driven RF-gun of free electron laser", Department of Physics, The Hashemite University, Zarqa, Jordan, June. 2014.

3. Served on the M.Sc. committee of Reem al-Mtairy, Thesis title “Quantum Dots in Heisenberge Model”, King Abdulaziz University, Saudi Arabia, Nov. 2009
4. Served on the PhD graduate committee of Ayman Sandouqa, Dissertation Title: "Spin-polarization of ^{3}He-HeII mixture: microscopic study, Department of Physics, Jordan University, Jordan, Aug. 2005.
5. Served on the M.Sc. graduate committee of Manar Al-Obied, Thesis Title:" Time dependent formulation of the energy loss by an accelerated electron beam propagating in the laser driven RF-gun of free electron laser", Department of Physics, The Hashemite University, Zarqa, Jordan, Dec. 2005.
6. Served on the M.Sc. graduate committee of Belal Kamal Ahmed Al-Rawi, Thesis Title: "Study of the stability in optical data storage system (Azo-Dye doped polymer), Department of Physics, Al-al-Bayt University, Jordan, Jan. 2004.
7. Served on the M.Sc. graduate committee of Omar Tayseer Ahmed Al-Obeidat, Thesis Title: "Generalized density functional theory, Calculations of the electronic structure of semiconductors", Department of Physics, Yarmouk University, Irbid, Jordan, Dec. 2003.

Supervision of Postgraduate Students:

1. Supervising Anwar Issa, MSc student at HU, in her research work: Analytical solutions of nonlinear differential equations for problems in semiconductor physics using approximation methods (2016)

2. Supervising Wafa Mashaqbeh, MSc Student at HU, in her research work: Analysis of a set heavy-ion of nuclear reactions at different energies and above Coulomb barrier based on Regge pole and strong absorption models (2015).

3. Supervising Amani Estaiti, MSc Student at HU, in her research work: Regge pole analysis of elastic scattering of α-particles on different target nuclei at incident energies above Coulomb barrier (2014).

4. Supervising Dana Al-Masry, MSc Student at HU, in her research work: Numerical modeling and analysis of nuclear reactions of heavy ions at different energies using parameterization models (2012).

5. Supervising Huda Al-Amodi, MSc Student at KAU-Saudi Arabia, in her research work: Analysis of optical and photoelectronic properties of nanocrystalline materials (2011).

6. Supervising Hind Badahdah, MSc Student at KAU-Saudi Arabia, in her research work: Analysis of angular distribution of elastic scattering reactions for heavy nuclear ions based on the diffraction model (June, 2009).

7. Supervising Reem Al-Khalidi, MSc. Student at HU, in her research work: "A theoretical study of the elastic scattering of nuclear heavy ions by using the strong absorption model", (July 2006).

8. Supervising Noor Al-Awaad, MSc. Student at HU, in her research work: "Theoretical analysis of the electronic properties of microcrystalline and amorphous semiconductors", (May 2005).

Community Service and Other Extracurricular Activities:

1. Served as evaluator for different applications of promotions to rank of associate professor and professor of physics at different regional Universities
2. Served as a project evaluator at Mayar International School-Amman, Jordan for projects of students presented At "Science Fair", held on May 2012, and on May 2013.
3. Nominee by Saudi Physical Society in collaboration with ARAMCO-SA and King Fahd University for petroleum and minerals (KFUPM) to contribute in summer teaching program to teach special oriented topics in physics for intellectual students (graduate and postgraduate levels) and physics teachers in SA schools and teaching assistants at Saudi Universities at summer scientific school held at KFUPM, Dhahran, 2007-2008.
4. Served as member of the qualifying exam committee, ministry of higher education, for the academic year 2005-2006.
5. Served as member on the organizing committee for the cultural and scientific day held at the Hashemite University held on April 27, 2004.
6. Served as member on the organizing committee of the seventh Petra School of Physics held by the Jordan Council for scientific research on Sept., 17-22, 2000 at Jordan University.
7. Served as member on the organizing committee for the elections of the students Council at the Hashemite University held on April 18, 1999.
8. Attending meetings of the society for friends of scientific research as a member of this society, Amman, Jordan, 2001/2005.

Member of Editorial Board and Reviewer for International Journals:

1. **"Journal of Nanoelectronics and Optoelectronics"** (***Associate Editor***)
http://www.aspbs.com/jno/jno_editorial.htm (American Scientific Publishing**)**

2. ***Science of Advanced Materials*** (Editorial Board Member)
http://www.aspbs.com/sam/(American Scientific Publishing**)**

3. **Journal of Material Science and Technology Research** (Editorial Board Member)
http://www.avantipublishers.com/editorial-board-member-jmstr/
(AvantiPublishers, USA**)**
4. **Journal of Nanoengineering and Nanomanufacturing** (Editorial Board Member)
http://www.aspbs.com/jnan/editorial_jnan.htm (ASP company)

5. ***Materials* Focus** (Editorial Board Member)
http://www.aspbs.com/mat/editorial_mat.htm(American Scientific Publishing**)**

6. **Review in Advanced Sciences and Engineering** (Editorial Board Member)
http://www.aspbs.com/rase/editorial_rase.htm (ASP Company, USA)

7. **Sensor Letters** (Editorial Board Member)
http://www.aspbs.com/sensorlett/editorial_sensorlett.htm (American Scientific Publishers, USA**)**

Journal Referee to:
1. **Journal of Nanoscience and Nanotechnology**
2. **Journal of Non-Crystalline Solids**
3. **Journal of Alloys and Compounds**
4. **Materials Science in Semiconductor Processing**
5. **Materials Science and Engineering B**
6. **Nanomaterials and Nanotechnology**
7. **International Journal of the Physical sciences**
8. **Journal of Material Science and Technology Research**
9. **Science of Advanced Materials**

- **Referee to several International peer-reviewed conferences**
- **Reviewer and Evaluator** of research proposals, promotion applications to different academic ranks for King Saud, Umm-AlQura, King Abdulaziz and Tabuk Universities in Saudi Arabia; Arab-American University in Palestine, Sultan Qaboos University-Oman and University of Bahrain,… etc.

Special Skills Areas:

- Computer programming in FORTRAN, BASIC and PASCAL.
- Working experience with VAX, IBM, UNIVAC and DOS operating systems and networking applications.
- Working knowledge with several computer software like MS word, Excel, Easyplot, Origin and Power Point.
- Some experience on SUN 250 server.
- Some experience on WebCT, Blackboard and Front page.
- Some experience on MATHEMATICA.

Languages:

Arabic: Native
English: Very good at reading, writing and speaking.
French: Fair at reading, writing and speaking.

Major Academic Committees:

I. King Abdulaziz University:

Member and consultant of the academic accreditation committee, 2009-2010

II. The Hashemite University:

1. Member, Faculty of Science and arts Council, 1995-1996.
2. Member, Deposit Fund Committee, The Hashemite University, 1998-1999.
3. Member, Faculty of Science Library Committee, 1995- 2005.
4. Member, Faculty of science and Arts Social Committee, 1999-2000.
5. Member, Faculty of science and Arts Council, 1999-2000
6. Member, Faculty of Science and Arts Cultural Committee, 1998-1999.
7. Member, Faculty of science and Arts Checking Marks Committee, 1997-1998.
8. Member of various Departmental and Faculty Committees including examination and scheduling committee, graduate studies and the scientific research committee, social committee, checking marks committee, library committee, 1995-2003.
9. Member, Faculty of Science and Arts, Cultural Committee 2003-2004.
10. Member of Graduate Studies committee, Department of Physics, 2005-2006
11. Member, Faculty of Science Cultural Committee, 2010-2011
12. Memebr of Committee, Center of studies, Consultations and Community Service, 2010- 2011
13. Member of Hashemite University Council, Representative of Faculty of Science, 2010- 2011.
14. Member of Graduate Studies and Scientific Research Committee, Department of Physics, 2012-2014
15. Member of the Academic Developing Committee in Hashemite University, 2015-2016.
16. Member of Curriculum Committee in Hahsemite University, 2017/2018-2019/2020.
17. Member of Decision Making Committee for Students Affairs in Hashemite University, 2017/2018-2018/2019.
18. Member of Students Marks Committee in Hashemite University, 2017/2018-2018/2019. Head of this committe 2019/2020
19. Member of Disciplinary Appeals Board of Member of Academic Staff in Hashemite University, 2016/2017, 2017/2018 and 2019/2020
20. Chairperson of Disciplinary Appeals Board of Employees in Hashemite University, 2016/2017, 2017/2018.
21. Head of team working for international accreditation (ABET) for the programs of Faculty of Science

III. Petra Private University (previously Jordan University for Women):

- Member, Faculty of Science Council, 1993 - 1995.
- Member, Faculty of Science Social Committee, 1994 - 1995.

- Board of Trustees Member of Petra University, Nov. 2017- Present (For Four years)

Membership:

-Graduate member of the Institute of Physics (IOP)-London.
-Member of the Jordanian scientific research society, Amman, Jordan.
- Member of the Hashemite University Personnel Club.

PUBLICATIONS:

1. "Analytical solution of phototransport problem under the presence of a small- signal photocurrent based on method of weighted residuals".
   Results in Physics, 17, 103079 (2020)
   R.I. Badran
   https://doi.org/10.1016/j.rinp.2020.103079

2. "Electrical properties of Ga-doped ZnO nanowires/Si heterojunction diode ".
   Materials Express (2020), accepted (in Press).
   Y. Al-Hadeethi, **R.I. Badran**, A .Umar, S.H. Al-Heniti, B.M. Raffah, and S. Al-Zahrani.

3. "ZnO Nanowalls/Si Substrate Heterojunction Assembly: Morphological, Optical and Electrical Properties".
   Journal of Nanoelectronics and Optoelectronics, (2020), accepted (in Press).
   Y. Al-Hadeethi, A .Umar, S.H. Al-Heniti, B.M. Raffah, and **R.I, Badran**,

4. **"**Temperature-dependent heterojunction device characteristics of *n*-ZnO nanorods/*p*-Si substrate assembly".
   Materials Express 10, 29-36**.** (2020).
   R.I. Badran, Y. Al-Hadeethi, A. Umar, S.H. Al-Heniti, B. M. Raffah, S. Ansari, and A. Jilani**.**
   DOI: https://doi.org/10.1166/mex.2020.1595
5. "Growth of *n*-Ga doped ZnO nanowires interconnected with disks over *p*-Si substrate and their heterojunction diode application".
   Materials Express 10, 21-28 (2020).
   Y. Al-Hadeethi, **R.I. Badran**, A .Umar, S.H. Al-Heniti, B.M. Raffah, and A.M. Alharbi.
   DOI: https://doi.org/10.1166/mex.2020.1594
6. "Fabrication and Temperature Dependent Electrical Characterization of *n*-ZnO Nanowires/*p*-Si Substrate Heterojunction Diodes".
   Journal of Nanoelectronics and Optoelectronics 12, pp. 1162–1166, (2017)
   H. Algarni, R. I. Badran, M. A. Khan, F.J. Hassen, S. H. Kim, and A. Umar.
   DOI: 10.1166/jno.2017.2140
7. "Fabrication of ZnO Nanorods Based *p–n* Heterojunction Diodes and Their Electrical Behavior with Temperature"
   Journal of Nanoelectronics and Optoelectronics 12, pp. 731–735, (2017)
   S. H. Kim, **R. I. Badran**, Ahmad Umar
   DOI:https://doi:10.1166/jno.2017.2134

8. "Analytical Solution of Steady-State Transport Equation for Photocarriers in CdTe Photovoltaics Under Bias-Dependent Photoluminescence"
   Journal of Nanoelectronics and Optoelectronics 12, pp. 1–7, (2017)
   A. S. Issa, Ahmad Umar, and **R. I. Badran**
   DOI:http://doi:10.1166/jno.2017.2093
9. "Analysis of elastic scattering of ^{4}He+ ^{58}Ni and ^{4}He+ ^{60}Ni using semiclassical models"
   AIP Conference Proceedings **1809**, 020007 (2017)
   R. I. Badran and A. I. Istaiti
   DOI: **http://dx.doi.org/10.1063/1.4975422**
10. "The use of a combined parametrised model for analysis of elastic scattering processes of ^{28}Si by different targets of ^{232}Th, ^{209}Bi and ^{197}Au at laboratory energy of 179MeV".
    AIP Conference Proceedings 1809 (1), 020008 (2017)
    R. I. Badran
    DOI: **http://dx.doi.org/10.1063/1.4975423**
11. "Fabrication of Heterojunction Diode Based on n-ZnO Nanowires /p-Si Substrate: Temperature Dependent Transport Characteristics"
    Journal of Nanoscience and Nanotechnology, 17, 581 (2017)
    R. I. Badran and A. Umar
    DOI: https://doi.org/10.1166/jnn.2017.12436
12. "An Analysis of Heavy-Ion Elastic Scattering Processes Using Numerical Model Based on the Partial-Wave Parametrised S-Matrix with Regge Pole Factor"
    Brazilian Journal of Physics, 46, 341-354 (2016).
    R. I. Badran and I. H. Al-Lehyani
    DOI: **http://dx.doi.org /10.1007/s13538-016-0418-3**
13. "Temperature-Dependent Electrical Properties of Sn-Doped ZnO Nanowires"
    Science of Advanced Materials, 7, (2015) 2684-2691
    S. H. Al-Heniti**, R. I. Badran** and A. Umar
    DOI:http://dx.doi.org/10.1166/sam.2015.2708
    **[This paper is highlighted on the cover library page of Science of Advanced Materials Journal.(See the link http://www.aspbs.com/sam/sam712.pdf)]
14. "Regge Pole Analysis of Elastic Scattering of α Particles by Even Isotopes of Ni Target at Incident Energies Above Coulomb Barrier"
    International Journal of Modern Physics E, 24, 1550082-23 (2015)
    R. I. Badran, A. I. Istaiti, W. N. Mashaqbeh, I. H. Al-Lehyani
    DOI:http://dx.doi.org/10.1142/S0218301315500822
15. "Synthesis and Properties of Aligned ZnO Nanorods on Si Substrate and Their Applications for p-Si/n-ZnO Heterojunction Diode"
    Journal of Nanoelectronics and Optoelectronics, 10, 688–693 (2015)
    S. H. Kim, A. Umar**, R. I. Badran**, H. Algarni
    DOI: http://dx.doi.org/10.1166/jno.2015.1721
16. "Fabrication and Characterization of n-ZnO HexagonalNanorods/p-Si Heterojunction Diodes:Temperature-Dependant Electrical Characteristics"
    Journal of Nanotechnology and Nanoscience, 15, 4969-4975 (2015)
    A. Umar, **R. I. Badran**, A. Al-Hajry, S. Al-Heniti
    DOI:http://dx.doi.org/10.1166/jnn.2015.9892

17. "Nanocrystalline and amorphous silicon as competing candidates for PV applications" Journal of Material Science and Technology Research, 1, (2014)
R. I. Badran
DOI:http://dx.doi.org/10.15377/2410-4701.2014.01.01.4
18. Growth and Properties of Sn-Doped ZnO Nanowires for Heterojunction Diode Application
Science of Advanced Materials 6, 1993-2000 (2014)
S. H. Al-Heniti, **R. I. Badran**, A. Umar, and H. M. Zaki
DOI:http://dx.doi.org/10.1166/sam.2014.2126
19. Synthesis and Characterization of Iron Oxide Nanoparticles for Phenyl Hydrazine Sensor Applications
Sensor Letters 12 (2014) 97-101
S. W. Hwang, A. Umar, G. N. Dar, S. H. Kim, and **R. I. Badran**
DOI:http://dx.doi.org/10.1166/sl.2014.3224
20. Exploring Diffractive Features of Elastic Scattering of ^{6}Li on Different Nuclei at Different Energies".
Canadian Journal of Physics, 91 (2013) 355-364
R. I. Badran and D. Al-Masri
DOI:http://dx.doi.org/10.1139/cjp-2012-0466
21. Analysis of Diffractive Features in Elastic Scattering of 7Li by Different Target Nuclei at Different Energies. AIP Conference Proceedings 1569, 81 (2013)
R. I. Badran and Dana Al-Masri
DOI:http://dx.doi.org/10.1063/1.4849233
22. "n-ZnO Based Nanostructure/p-Silicon Substrate Based Efficient p-n Heterojunction Diode"
Science of Advanced Materials, 5, (2013) 301-307
S. Al-Heniti, A. Umar, **R. I. Badran**, H. M. Zaki, A. Al-Hajry
DOI:http://dx.doi.org/10.1166/sam.2013.1526
23. "Electrical properties of solution processed p-SnS nanosheet/n-TiO_2 heterostructure assembly"
Applied Physics Letters 103, (2013) 101602
A. Umar, M. S. Akhtar, **R. I. Badran,** M. Abaker, S. H. Kim, A. Al-Hajry, S. Baskoutas
DOI:http://dx.doi.org/10.1063/1.4819838
24. "Temperature Dependent Structural and Electrical Properties of ZnO Nanowire Networks"
Journal of Nanotechnology and Nanoscience, 12 (2012), 68-74.
S. Al-Heniti, **R. I. Badran**, A. Umar, A. Al-Ghamdi, S. H. Kim, F. Al-Marzouki, A. Al-Hajry, S. A. Al-Sayari, and T. Al-Harbi
DOI:http://dx.doi.org/10.1166/jnn.2011.5117
25. "The Effect of Power Density on Diffusion Length and Energy Gap of a-Si:H and nc Si:H Thin Films Prepared by Plasma Enhanced Chemical Vapor Deposition Technique ".
Acta Physica Polonica A, 122 (2012) 576-581.
R. I. Badran, H. Al-Amodi, S.Yaghmour , S. Shaklan , R. Bruggemann, X. Han and S. Xiong
DOI:http://przyrbwn.icm.edu.pl/APP/PDF/122/a122z3p38.pdf
26. "The effect of Helium Dilution on Optical and Photoelectric Properties of a-Si: H Thin Films Prepared by Plasma Enhanced Chemical Vapor Deposition Technique".
The Arabian Journal for Science and Engineering (AJSE), (2012) 183-195

R. I. Badran.
DOI:http://dx.doi.org/10.1007/s13369-011-0147-4

27. "Electrical Properties of p-Si/ n-ZnO Nanowires Heterojunction Devices",
Advanced Materials Letters, 4 (2010) 24-28
S. Alheniti, **R. I. Badran**, A. A. Al-Ghamdi, F. Al-Aqel
DOI:http://dx.doi.org/10.1166/asl.2011.1196
28. "Synthesis and characterization of hexagonal zinc oxide nanorods on silicon for the fabrication of p-Si/ n-ZnO heterojunction devices".
Journal of alloys and compounds 508 (2010) 375-379
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