

FACULTY FULL NAME: Dr. AMANI RACHED

POSITION: Assist

Assistant Professor

Personal Data

Nationality | Tunisian

Date of Birth | 23/08/1983

Department | Physics

Official UoD Email | amrached@iau.edu.sa

Office Phone No. | 37482

Language Proficiency

Language	Read	Write	Speak
Arabic	V	V	V
English	V	V	V
French	V	V	V

Academic Qualifications (Beginning with the most recent)

Date	Academic Degree	Place of	Address
		Issue	
2017	PHD	University	University of Monastir-5000-
		of Monastir	Monastir-Tunisia
2010	Master	University	University of Monastir-5000-
		of Monastir	Monastir-Tunisia
2008	Bachelor in Fundamental Physics	University	University of Monastir-5000-
	-	of Monastir	Monastir-Tunisia
2006	Diploma in Mathematics and	University	University of Monastir-5000-
	Computer Science	of Monastir	Monastir-Tunisia

PhD, Master or Fellowship Research Title: (Academic Honors or Distinctions)

PhD	Study of electronic transport in resonant tunneling diodes based on nitride Semiconductors.
Master	Energy band structures and optical proprieties of InGaN/GaN single quantum and multi-quantum wells.



Professional Record: (Beginning with the most recent)

Job Rank		Place and Address of Work		
Researcher and	College	Imam Abdulrahman Bin Faisal	KSA	From
Assistant	of	University		15/09/2018
Professor	Science			
Researcher	College	University of Monastir	Tunisia	2017-2018
	of			
	Science			
Assistant	College	University of Gafsa	Tunisia	2016-2017
Professor	of			
	Science			

Administrative Positions Held: (Beginning with the most recent)

Administrative Position	Office	Date
Head of Unit	Statistical and Analysis Measurement Unit, College of Science, IAU	From 11/2020

Scientific Achievements

Published Refereed Scientific Researches

(In Chronological Order Beginning with the Most Recent)

#	Name of Investigator(s)	Research Title	Publisher and Date of Publication
1	Imen Massoudi, Ridha Hamdi, Amani Rached , Zainah A AlDhawi, Fatimah M Alobaidan, Hawra M Alhamdan, Ghadeer A Almohammed Ali, Fatimah E Almuslim, Amor Ben Ali	Vanadium Pentoxide Nanoparticles Doped ZnO: Physicochemical, Optical, Dielectric, and Photocatalytic Properties	International Journal of Biomaterials, Volume2023, (11/2023)
2	Rabeb Belghouthi, Amani Rached , Michel Aillerie, Ramdani Mohammed, Rajat Gujrati, Jean- Paul Salvestrini	N-Face Semi-Bulk Absorber Boosts Conversion Efficiency of InGaN Solar Cell	Journal of Electronic Materials, 0361-5235 (09/2023)
3	Ridha Hamdi, Amani Rached , Amal L Al–Otaibi, Imen Massoudi, Shouq Alkorbi, Amor Saidi Ben Ali	Physical, Static, and Kinetic Analysis of the Electrochemical Deposition Process for the Recovery of Heavy Metal from Industrial Wastewater.	Scientifica, Volume2023, (01/2023)
4	R. Hamdi, A. Rached , I. Massoudi, R. Al-Zuraie, K. Al-Hamadah, A. Al- Otaibi, T. Flemban, N. Alonizan and T. Ghrib	Electrodeposition Study of Silver: Nucleation Process and Theoretical Analysis.	Journal of Electronic Materials 50 (10), 5507-5513 (2021)



5	Q Mahmood, T Ghrib, A Rached , A Laref, MA Kamran	Probing of mechanical, optical and thermoelectric characteristics of double perovskites Cs2GeCl/Br6 by DFT method.	Materials Science in Semiconductor Processing 112, 105009(2020)
6	T Ghrib, A Rached , Eman Algrafy, Ibtessam A Al-nauim, Hind Albalawi, MGB Ashiq, Bakhtiar Ul Haq, Q Mahmood	A new lead-free double perovskites K2Ti (Cl/Br) 6; a promising material for optoelectronic and transport properties probed by DFT.	Materials Chemistry and Physics 264, 124435(2021)
7	R Belghouthi, M Aillerie, A Rached, H Mejri	Effect of temperature on electronic and electrical behavior of InGaN double hetero-junction pin solar cells	Journal of Materials Science: Materials in Electronics 30 (4), 4231- 4237 (2019)
8	A Rached , A Bhouri, S Sakr, JL Lazzari, H Belmabrouk Superlattices and Microstructures 91, 37-50	Self-consistent vertical transport calculations in Al _x Ga _{1-x} N/GaN based resonant tunneling diode	Superlattices and Microstructures 91, 37-50 (2016)
9	A Bhouri, A Rached , JL Lazzari	Resonant tunneling transport in Al _z Ga ₁₋ $_zN/In_xGa_{1-} _xN/Al_zGa_{1-}$ $_zN/In_yGa_{1-} _yN$ quantumstructures	Journal of Physics D: Applied Physics 48 (38), 385102 (2015)

Scientific Research Papers Presented to Refereed Specialized Scientific Conferences

#	Name of Investigator(s)	Research Title	Conference and Publication Date
1	A. Rached , A. Bhouri, H. Belmabrouk and JL. Lazzari	Resonant Tunneling Transport in Alo.5Gao.5N/ InxGa1 xN/Alo.5Go.5N/Ino.1Gao.9N quantum structures	Nanotech MEET Tunisia 2014 International Conference Proceeding, 2014



Contribution to Scientific Conferences and Symposia

#	Conference Title	Place and Date of the Conference	Extent of Contribution
1	SETCOR Nanotech MEET Tunisia 2014, Hammamat, TUNISIA	Tunisia, Avril 24-26, 2014	Resonant Tunnelling Transport in Al0.5G0.5N/InxGa1- xN/Al0.5G0.5N/In0.1Ga0.9N quantum structures
2	International Conference on Multifunctional Materials and their Applications (MAP- 2016),	TUNISIA, May 6-8, 2016	Self-consistent vertical transport calculations in AlxGa1-xN/GaN based resonant tunneling diode, Oral
3	1st Regional Virtual - Symposium on Physics Advances 2020	Bahrain, Mai 2020	Computational modelling and optimization of transmission coefficient in GaN and GaAs based resonant tunneling diodes using the TMM, Oral
4	1st Regional Virtual - Symposium on Physics Advances 2020	Bahrain, Mai 2020	Electrodeposition study of silver electrodeposits: Nucleation process & theoretical analysis, Poster
5	The International Webinar on Science, Sustainable Development and Ecosystems in Saudi Arabia (SSDE`21)	KSA, March 2021	Modelling and Performance optimization of InGaN based PIN Solar cells, Oral
6	The International Webinar on Science, Sustainable Development and Ecosystems in Saudi Arabia (SSDE`21)	KSA, February2021	Design of an application interface to model quantum wells based optoelectronic devices



Current Researches

#	Research Title	Name of Investigator(s)
1	New Transparent Semiconducting Oxides for Solar Cell Applications	Imen Massoudi; Alotiaibi Amal, Rached Amani Fouzri AfifHamdi, Ridha

Teaching Activities

Undergraduate

#	Course/Rotation Title	No./Code	Extent of Contribution (no. of lectures/Tutorials. Or labs, Clinics)
1	Electricity and Magnetism	PHYS301	Lectures, Coordinator and Course Instructor
2	Practical Physics	PHYS407N	Labs, Course Instructor
3	Quantum Physics	PHYS411N	Lectures, Coordinator and Course Instructor
4	Computational Methods in	PHYS405	Lectures and Labs, Coordinator and
	Physics I		Course Instructor
5	Summer Training	PHYS408	Labs and Lectures
6	Computational Methods in	PHYS506	Lectures and Labs, Coordinator and
	Physics II		Course Instructor
7	Physics Project Seminar	PHYS509	Lectures and Labs, Course Instructor
8	Experimental Physics	PHYS303	Labs, Course Instructor
9	Modern Physics and Introduction to Quantum Mechanics	PHYS401	Lectures, Course Instructor



Brief Description of Undergraduate Courses Taught: (Course Title – Code: Description)

- 1 Electrical and magnetic phenomena in nature, including the concepts of electrical charges, electric and magnetic fields, the application of Gauss' Laws, electric potential, conductors and insulators, currents, basic circuits, and induction
- 2 Practical Physics
- 3 Quantum Mechanics
- 4 Application of numerical methods and computer programming to several fields of physics
- 5 Prepare projects in physics computational skills which serve the community using appropriate computation and laboratory skills with limited guidance.
- 6 Topics include statistics, diffusion Monte-Carlo simulations; numerical solutions of partial differential equations in classical and quantum mechanics, and numerical diagonalization of quantum one-body and many-body Hamiltonians. The MATLAB programming language will be used.
- 7 Develop learning skills and strategies of analysis, learn about communication and networking skills, Develop information literacy skills for researching topics, assessing and citing sources, Develop critical-thinking skills by discussing and critically evaluating various topics in theoretical and experimental physics.
- 8 Concepts of electromagnetic fields, Alternating current circuits and verification the basic laws in DC circuits, Basic electronics, diode, transistor and op-amp circuitry, amplifiers, oscillators and digital logic applications
- 9 Principles of nonrelativistic quantum mechanics: Black body emission, photoelectric effect, Compton scattering, photons, the Bohr atom, electron diffraction, and wave-particle duality of matter and light. Theory of relativity. Introduction to wave mechanics: postulates of quantum mechanics; De Broglie waves, wave packets, and the uncertainty principle; Schrodinger theory and its applications; Interpretation of the wave function, probability density and current, expectation values of observables, eigenvalues and Eigen functions; The simple harmonic oscillator; Operator algebra; Angular momentum and commutation relations; Orbital angular momentum

Postgraduate

#	Course/Rotation Title	No./Code	Extent of Contribution (no. of lectures/Tutorials. Or labs, Clinics)
1	Computational Physics	PHYS518	Lectures and Labs, Coordinator and Course Instructor
2			

Course Coordination

#	Course Title and	Coordinati	Co-	Undergr	Postgrad	From	То
	Code	on	coordination	ad.	•		



Computational Methods in Physics I	V	V		2018	Up to date
Computational Methods in Physics II	V	V		2019	Up to date
Electricity and Magnetism	V	V		2020/ 2021	2020 /202 1
Computational Physics	V		V	2018/ 2019	2019 /202 0
Quantum Mechanics	V	V		2018/ 2019	2019 /202 0

Student Academic Supervision and Mentoring

#	Level	Number of Students	From	То
	Master	1	2017	2018
	Bachelor	13	2020	2023

Supervision of Master and/or PhD Thesis

#	Degree Type	Title	Institution	Date
1	Master	Influence of intrinsic defects on electronic transport in resonant tunneling diodes	College of Science – University of Monastir Tunisia	2017
2	PhD	Physical and Dielectric properties of modified metal oxide nanostructures and evaluation of their antimicrobial activity against human pathogens	College of Science – Imam Abdulrahman Bin Faisal University,KSA	Since 2023

Administrative Responsibilities, Committee and Community Service (Beginning with the most recent)

Administrative Responsibilities

#	From	То	Position	Organization
	10/2020	Up to Date	Head	Statistical Analysis and measurement Unit





Committee Membership

#	From	То	Position	Organization
1	Sep 2018	June 2019	President	Security and Safety Committee, Department of
				Physics
2	Sep 2018	Up to date	Member	The Undergraduate Academic Development
	•	•		Committee
3	Sep2019	June2020	President	Examining Committee, Department of Physics
4	Sep2019	June2020	Member	The Postgraduate Academic Development
	•			Committee
5	Sep 2020	June 2022	President	Learning Outcomes Measurement Committee
6	From Sep	Up to date	Member	Quality and Academic Accreditation,
	2022			Department of Physics

Volunteer Work

#	From	То	Type of Volunteer	Organization
	1 Jan 2021	31 March 2021	Mentorship	Research Apprenticeship
	31 Jan 2020	31 March 2020	Mentorship	Science Talent Development Program
	2020	2021	Mentorship of talented students from Al- Khobar Education	Office Al-Khobar Education Office

Personal Key Competencies and Skills: (Computer, Information technology, technical, etc.)

- **1** Programmer of MATLAB and have a high level of information technology skills.
- 2 Prepare Statistical reports: SPSS
- **3** User of Microsoft Office (Word, Excel, Access, Power Point), Internet, Origin, Winelli, etc.

Last Update

12/12/2023