

Curriculum Vitae

Name: Abdullah S. Al-Dwayyan

Nationality: Saudi

Academic Rank: Professor

Specialty: Physics of Photonics

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University Education:

B.Sc. : Physics, King Saud University, Riyadh, Saudi Arabia (1982).

M. Sc. : **Laser Physics**, Essex University , U.K (1984).

Ph.D. : **Semiconductor Lasers**, University of Wales College of Cardiff (UWCC), U.K (1989).

Employment & Administrative History:

- Head of the M.Sc. program of "Applied Science and Nanotechnology " at KSU (2021-2023).
- Representative of the College of Science at the Scientific Council of KSU (2018-).
- Vice dean for development & quality, College of Science, King Saud University (20014- 2018).
- Member in the foundation board of King Abdullah Institute for Nanotechnology (2008-2013).
- Head of Nanotechnology Unit/KSU (2008- 2009).
- Head of Physics & Astronomy Dept. College of Science, King Saud University (2004 -2006)
- Professor- Physics Dept. College of Science, King Saud University (2013-).
- Associate Professor- Physics Dept. College of Science, King Saud University (2002-2012).
- Assistant Professor- Physics Dept. College of Science, King Saud University (1989–2002).

Recent Research Activities:

Link of Google Scholars: <https://scholar.google.com/citations?user=Yo1nRHsAAAAJ&hl=ar&oi=ao>

Selected Published Work Since 2023:

1. Bawazir, HS ; Qaid, SMH ; Ghaithan, HM ; AlHarbi, KK ; Bin Ajaj, AF ; **Aldwayyan, AS** "Phase State Influence on Photoluminescence of MAPb(BrxI1-x)(3) Perovskites towards Optimized Photonics Applications", *Photonics* 10 (1) , (2023).
2. Qaid, SMH ; **Aldwayyan, AS** , " Aprotic Solvent Effect in Preparation of Organo Lead Iodide Perovskite Nanowires by Two-Step Spin-Coating Procedure" , *ECS JOURNAL OF SOLID STATE SCIENCE AND TECHNOLOGY* 12 (2) , (2023).
3. Qaid, SMH ; Ghaithan, HM ; Bawazir, HS ; **Aldwayyan, AS** " Simple approach for crystallizing growth of MAPbI3 perovskite nanorod without thermal annealing for Next-Generation optoelectronic applications" *MATERIALS CHEMISTRY AND PHYSICS* 298 (2023).
4. Qaid, SMH ; Ghaithan, HM ; Bawazir, HS ; Bin Ajaj, AF ; AlHarbi, KK ; **Aldwayyan, AS** "Successful Growth of TiO2 Nanocrystals with {001} Facets for Solar Cells" , *NANOMATERIALS* 13 (5) , (2023).
5. Mantey, K; Rao, S; Nayfeh, A; Palleschi, S; Elhalawany, N; Abuhassan, L; **Aldwayyan, S**; Alsalhi, M; Nayfeh, MH " Enhancement and localization of atomistic polarity and polarizability memory in light scattering upon hydrogenation of luminescent spherical 1 nm Si nanoparticles" *AIP Advances*, 13 (8) , 92023).
6. H. M. Ghaithan, S. M. H. Qaid, Z. A. Alahmed, H. S. Bawazir and **A. S. Aldwayyan** "Electronic Structure and Optical Properties of Inorganic Pm3m and Pnma CsPbX3 (X = Cl, Br, I) Perovskite: A Theoretical Understanding from Density Functional Theory Calculations" *Materials* 16, Aug. (2023).
7. Qaid, SMH ; Ghaithan, HM ; Ghaithan, **Aldwayyan, AS** "Investigation of the Amplified Spontaneous Emission Threshold of Cesium Lead Bromide Perovskite Quantum Dots at Different Excitation Wavelengths" *ECS J. Solid State Sci. Technol.* 12, Vol 5 (2023).
8. R. Gupta, H. Shaikh, A. Imran, I. Bedja, A.F. Ajaj, A. S. **Aldwayyan**, A. Khan and R. Ayub "Electrical transport properties of [(1 - x)succinonitrile:xpoly(ethylene oxide)]-LiCF3SO3-Co[tris-(2,2'-bipyridine)]3(TFSI)2-Co[tris-(2,2'-bipyridine)]3(TFSI)3 solid redox mediators" *RSC Adv.* 14, 539-547 (2024).
9. Q. Ain , J. Munir , H. M. Ghaithan , A. A. A. Ahmed , **A. S. Aldwayyan** , S.M.H. Qaid "Effect of bandgap tunability on the physical attributes of potassium-based K2CuBiX6 (X = I, Br, Cl) double perovskites for green technologies" *Inorganic Chemistry Communications*, Volume 162, April, 112206 (2024).
10. S.Dahbi, S. M. H. Qaid, H. M. Ghaithan, A. A. A. Ahmed , **A. S. Aldwayyan** "Iodine-based triple halide perovskites for photovoltaic and photocatalytic applications: a ab-initio study" *Optical and Quantum Electronics*, Volume 56, article number 702, (2024).
11. E.M. Mkawi , Saif M.H. Qaid, E. Bekyarova **A. S. Aldwayyan**"The influence of precursor solutions containing an amount of silver bismuth sulfide nanoparticles (AgBiS2 NPs) on the characteristics of CH3NH3PbI3 perovskites" *Processing*, V. 185, 108988 (2025).
12. H Murtaza, Q Ain, AS Jbara, J Munir, **AS Aldwayyan**, HM Ghaithan "The prediction of hydrogen storage capacity and solar water splitting applications of Rb2AlXH6 (X= In, Tl) perovskite halides: A DFT study" *Journal of Physics and Chemistry of Solids* 198, 112427(2025).
13. SMH Qaid, I Mursaleen, Q Ain, H Murtaza, **AS Aldwayyan**, HM Ghaithan "Correction: Predictive analysis of the physical characteristics of mechanically stable Cs2Rb B' I6 (B' = Al, Ge, Tl) for photovoltaics and optoelectronic " *Journal of Materials Research*, 1-1 (2025).
14. Q Ain, J Munir, H Murtaza, **AS Aldwayyan**, HM Ghaithan, AAA Ahmed " A DFT Based Screening of the Electronic, Structural, Transport, Thermodynamic, and Optical Features of Potassium-based K2InAsCl6 Double Perovskites for ... " *Crystal Research and Technology* 60 (2), 2400184 (2025).
15. M Akhtar, J Munir, H Murtaza, Q Ain, **AS Aldwayyan**, HM Ghaithan " The quest of novel materials for renewable energy: A DFT approach of tuning the physical attributes of KInX3 (X= F, Cl, Br, I) perovskites" *Physica B: Condensed Matter*, 416937 (2025).
16. I Mursaleen, Q Ain, J Munir, **AS Aldwayyan**, HM Ghaithan, AAA Ahmed "The influence of bandgap tunability on the physical features of Rb2LiSbX6 (X= Cl, Br) double perovskites in the context of green technologies" *Physica B: Condensed Matter* 697, 416695 (2025).
17. SA Alawsh, SMH Qaid, NN Asemi, AAA Ahmed, **AS Aldwayyan** "Synthesis, morphology and dosimetric properties of Cr3+ activated Ca2Al2SiO7 nanophosphor prepared via sol-gel route " *Radiation Physics and Chemistry* 226, 112175 (2025).
18. Hudabia Murtaza, Junaid Munir, Quratul Ain, **A. S. Aldwayyan**, Abdullah Ahmed Ali Ahmed, Saif M.H. Qaid " Pressure-induced modifications in the structural, thermodynamic, electronic, optical and mechanical attributes of CaTiF6 perovskite halide for optoelectronic applications" *Solar Energy*, Vol.290, 113360 (2025).

19. Inamul Mursaleen, Junaid Munir, Quratul Ain, Ibrahim Albrahee, Saif M. H. Qaid & **A. S. Aldwayyan** "The magneto-electronic, mechanical, structural, transport, and optoelectronic attributes of $A_2FeB'_6$ ($A = K, Na$; $B' = Ag, Au$) fluoroperovskites: Spin-polarized calculations" *Solar Energy*, (2025).
20. Hudabia Murtaza, Junaid Munir, Quratul Ain, **A. S. Aldwayyan**, Hamid M. Ghaithan, Abdullah Ahmed Ali Ahmed & Saif M. H. Qaid "First-Principles Prediction of the Optoelectronic, Mechanical, Thermodynamic and Hydrogen Storage Attributes of Double Perovskite Rb_2NaXH_6 ($X = Al, In$) Hydrides" *J. Inorg. and Org. Poly. and Mat.* Vol. 35, 2877–2888, (2025).
21. Zhigang Zang, Xin Yang, Xuyong Yang, Zhenyu Liu, Qingkai Qian, Saif M. H. Qaid, **A. S. Aldwayyan**, Baiqian Wang, Shuangyi Zhao "Excitation-Wavelength-Induced Dual-Band Fluorescence of Copper Halides for Multi-Mode Encryption and Anti-Counterfeiting Applications" *Advanced Optical Materials*, March (2025).
22. E.M. Mkawi, Saif M.H. Qaid, E. Bekyarova **A. S. Aldwayyan** "Impact of the Incorporation of Nitrogen-Containing Lewis Bases on the Enhancement of the Optoelectronic Properties of Hybrid MAPbI₃ Perovskite Solar Cells" *Energy Technology J. Sep.* (2025).
23. H. Murtaza, Q. Ul Ain, J. Munir, H. M. Ghaithan, A. A. Aziz, A. A. A. Ahmed, S. M. H. Qaid and **A. S. Aldwayyan** "Comprehensive Insights into the hydrogen storage, mechanical, structural, thermodynamics, electronic and optical attributes of (Li/Na/K)PH₆ for renewable energies" *Phys. Chem. Chem. Phys.* (2026).
24. R. Kumar Gupta, A. Imran, Aslam Khan, M. A. Shar, K. M. Alotaibi, I. Bedja and **A. S. Aldwayyan** "Impedance Spectroscopy Study of Solid Co(II/III) Redox Mediators Prepared with Poly(Ethylene Oxide), Succinonitrile, Cobalt Salts, and Lithium Perchlorate for Dye-Sensitized Solar Cells" *Polymers*, 18(1), 142 (2026).
25. H. Murtaza, J. Munir, Q. Ain, H. M. Ghaithan, A. A. A. Ahmed, S. M. H. Qaid, **A. S. Aldwayyan** "An in-depth analysis of the optoelectronics, phonon, mechanical, thermodynamic and transport attributes of lead-free K_2TlInX_6 ($X = I, Br$) double perovskites for green energies" *International Journal of Modern Physics B* (2026)
26. I. Mursaleen, J. Munir, Q. Ain, H. M. Ghaithan, A. A. A. Ahmed, S. M. H. Qaid, **A. S. Aldwayyan** "The spin-polarized computations on the mechanical, structural, electronic, magnetic, transport and optical traits of A_2BMoI_6 ($A = K/Rb$; $B = Rb/Li$) double perovskites for sustainable energy applications" *Modern Physics Letters B* VOL. 40, NO. 06 (2026).
27. S. M. H. Qaid, M. Jamil, J. Munir, H. M. Ghaithan, A. A. A. Ahmed, Q. Ain, Abdullah S. Aldwayyan "An insight into the optoelectronic, mechanical, thermodynamical, structural and thermoelectric attributes of Cesium based Cs_2ZTI_6 ($Z = K, Rb$) for sustainable energy applications" *Modern Physics Letters B* VOL. 40, NO. 06 (2026).

Patents:

- Abdullah Saleh Aldwayyan, Mohamad Saleh AlSalhi, Abdulrahman Mohammed Aldukhai, Mansour S. Alhoshan, Muhammad Naziruddin Khan, Ghassan K. Al-Chaar, and Munir H. Nayfeh; "Organosilicon nanosilicon composites and fabrication methods", USPTO # 20100234204 - Class: 501/12.
- Munir H. Nayfeh; Osama M. Nayfeh, Mohamad S. AlSalhi, and Abdullah S. Aldwayyan; "Coated spherical silicon nanoparticle thin film UV detector with UV response and method of making" US Patent 6,992,298.
- Saif Mabkhot Qaid, Sanad Abdullah Alsulaiman, Abdullah Saleh Aldwayyan "PEROVSKITE-BASED WHITE OR MULTI-WAVELENGTH LASER". Under consideration Applied through KSU Inv. Office (2024).

Funded Projects (in which Prof. Aldwayyan was the PI):

Several projects where prof. Aldwayyan was the sPI investigator, have been funded beside another funded projects, where Prof. Aldwayyan was a Co-PI.

Books: Editor and coeditor of 6 books on Laser Physics and Photonics.

Conferences: More than 40 local and international conferences have been attended by A. Aldwayyan.

Graduate Students: More than 40 grad. students have been supervised and co-supervised by Dr Aldwayyan.

