

الأبحاث العلمية المنشورة

Publications: (2016-2019)

1. H.A. Albrithen, A.M. El-Naggar, K. Ozga, H. Alshahrani, A. Alanazi, E. Alfaifi, J. Labis, A. Alyamani, A. Albadri, M.H. Alkahtani, Z. A. Alahmed, J. Jedryka and A.O. Fedorchuk, Giant increase of optical transparency for Zn-rich $CaxZn_{1-x}O$ on Al_2O_3 (0 0 0 1) grown by pulsed laser deposition, *Optical Materials* 52 (2016) 1 - 5. DOI: 10.1016/j.optmat.2015.11.045
2. Z. A. Alahmed, A.H. Reshak, Suchada Chantrapromma and Hoong-Kun Fun, "Investigation of structural, electronic, and optical properties of the monoclinic and triclinic polymorphs of hexamethylenetetraminium 2,4-dinitrophenolate monohydrate ($C_6H_{13}N_4^+.C_6H_3N_2O_5^-.H_2O$) compound: a DFT approach" *Materials Chemistry and Physics*, 172 (2016) 77-86. DOI: 10.1016/j.matchemphys.2015.12.063
3. Muhammad Hammad Aziz, M. Fakhar-e-Alam, Mahvish Fatima, Fozia Shaheen, Seemab Iqbal, M. Atif, Muhammad Talha, Syed Mansoor Ali, Muhammad Afzal, Abdul Majid, Thamir Shelih Al. Harbi, Muhammad Ismail, Zhiming M. Wang, M. S. AlSalhi, and Z. A. Alahmed, "Photodynamic Effect of Ni Nanotubes on an HeLa Cell Line" *PLoS ONE*, 11 (2016) e0150295. DOI: 10.1371/journal.pone.0150295
4. W. A. Farooq, M. Al Saud, and Z. A. Alahmed, Structural and Optical Properties of Laser Irradiated Nano Structured Cadmium Oxide Thin

- Film Synthesized by Sol-Gel Spin Coating Method, *Optics and Spectroscopy*, 120 (2016) 745–750. DOI: 10.1134/S0030400X16050088
5. A. Reshak, Zeyad Alahmed, Jiri Bila, Victor Atuchin, Bair Bazarov, Olga Chimitova, Maxim Molokeev, Igor Prosvirin, Alexander Yelisseyev, "Exploration of the Electronic Structure of Monoclinic α -Eu₂(MoO₄)₃: DFT-Based Study and X-ray Photoelectron Spectroscopy" *The Journal of Physical Chemistry*. DOI: 10.1021/acs.jpcc.6b01489
 6. A. H. Reshak, N. A. M. A. Hambali, M. M. Shahimin, M. H. A. Wahid, N. E. Anwar, Z. A. Alahmed, and J. Chysky. Single brillouin frequency shifted s-band multi-wavelength brillouin-raman fiber laser utilizing fiber bragg grating and raman amplifier in ring cavity. *Optical Materials*, 60 (2016) 38–44. DOI: 10.1016/j.optmat.2016.07.008
 7. A. H. Reshak, O. V. Parasyuk, H. Kamarudin, I. V. Kityk, Z. A. Alahmed, N. S. AlZayed, S. Auluck, A. O. Fedorchuk, and J. Chysky. Experimental and theoretical study of the electronic structure and optical spectral features of PbIn₆Te₁₀. *RSC Advances*, 6 (2016) 73107–73117. DOI: 10.1039/C6RA12734G
 8. H.A. Albrithen, M. Elnaggar, K. Ozga, M. Szota, Z.A. Alahmed, A.Q. Alanazi, H. Alshahrani, E.Alfaifi, M.A. Djouadi, J.P. Labis. Structural transition in SrZnO laser pulse deposited alloy, *Arch. Metall. Mater.*, 62 (2017), 211–216. DOI: 10.1515/amm-2017-0030
 9. Sergey F. Solodovnikov, V.V. Atuchin, Zoya A. Solodovnikova, O.Y. Khyzhun, M.I. Danylenko, T.A. Gavrilova, A.P. Yelisseyev, A. H. Reshak, Z. A. Alahmed, Nadir F. Habubi, Synthesis, Structural, Thermal, and Electronic Properties of Palmierite-Related Double Molybdate α -Cs₂Pb(MoO₄)₂, *Inorg. Chem.*, 56 (2017), 3276–3286. DOI: 10.1021/acs.inorgchem.6b02653

- 10.** N. A. Noor, S. M. Alay-e Abbas, M. Hassan, I. Mahmood, Z. A. Alahmed, and A. H. Reshak. The under- pressure behaviour of mechanical, electronic and optical properties of calcium titanate and its ground state thermoelectric response. *Philosophical Magazine*, 97 (2017) 1884–1901. DOI: 10.1080/14786435.2017.1320440
- 11.** Y. Chen, M. S. Molokeev, V. V. Atuchin, A. H. Reshak, S. Auluck, Z. A. Alahmed, and Z. Xia. Synthesis, crystal structure, and optical gap of two-dimensional halide solid solutions $\text{CsPb}_2(\text{Cl}_{1-x}\text{Br}_x)_5$. *Inorg. Chem.*, 57 (2018) 9531-9537. DOI: 10.1021/acs.inorgchem.8b01572
- 12.** A. H. Reshak, Z. A. Alahmed, and J. Bila. Phase transition in BaThO_3 from Pbnm to Ibmm turn the fundamental energy band gap from indirect to direct. *Journal of Alloys and Compounds*, 771 (2019) 607–613. DOI: 10.1016/j.jallcom.2018.08.134
- 13.** Alanoud A. Aloufi, Zeyad A. Alahmed, Amel Laref, H. A. Albrithen. Strain effects on structural, electronic, and optical properties of BeO by DFT. *Materials Research Bulletin*, 114 (2019) 52-60. DOI: 10.1016/j.materresbull.2019.02.015
- 14.** M. Aljaafreh, S. Prasad, M. AlSalhi, Z. Alahmed. Ultrafast Dynamics of Laser from Green Conjugated-Oligomer in Solution, *Polymer* 169 (2019) 106–114. DOI: 10.1016/j.polymer.2019.02.022
- 15.** A. Laref, M. Alsagri, Z. A. Alahmed, and S. Laref, *RSC Advances* 9, (2019) 16390–16405. DOI: 10.1039/c8ra10101a
- 16.** M. J. Aljaafreh, S. Prasad, M. S. AlSalhi, Z. A. Alahmed, and M. M. Al-Mogren, *Polymers* 11 (2019). DOI:10.3390/polym11101534

- 1.K. Sathishkumar, M. S AlSalhi, E. Sanganyado, S. Devanesan, A. Arulprakash, A. Rajasekar Sequential electrochemical oxidation and bio-treatment of the azo dye Congo red and textile effluent. Journal of Photochemistry and Photobiology B: Biology, 200 (2019), 111655.**
- 2. S Devanesan, F AlQahtani, MS AlSalhi, K Jeyaprakash, V Masilamai. Diagnosis of thalassemia using fluorescence spectroscopy, auto-analyzer, and hemoglobin electrophoresis—A prospective study. Journal of infection and public health. 12(2019), 585-590.**
- 3. YA Alsabab, AT Elden, MS AlSalhi, AA Elbadawi, MA Siddig, Structural and optical properties of A₂YVO₆ (A= Mg, Sr) double perovskite oxides. Results in Physics 15 (2019), 102589.**
- 4. W.A. Farooq, A.S. Al-Johani, M.S. AlSalhi, W. Tawfik, R. Qindeel. Analysis of polystyrene and polycarbonate used in manufacturing of water and food containers using laser induced breakdown spectroscopy. Journal of Molecular Structure. 1201 (2020), 127152.**
- 5. M. J Aljaafreh, S. Prasad, M. S AlSalhi, Z. A Alahmed, M. M Al-Mogren. Optically Pumped Intensive Light Amplification from a Blue Oligomer. Polymers 11(2019), 1534**
- 6. K. E AlZahrani, S. Devanesan, V. Masilamani, F. Al Qahtani, M.S AlSalhi, D. Canatan, K. Farhat. Facile spectroscopy and atomic force microscopy for the discrimination of α and β thalassemia traits and diseases: A photodiagnosis approach. Photodiagnosis and photodynamic therapy. 27 (2019), 149-155.**

- 7. M. S. AlSalhi, A. Sakthisabarimoorthi, S. Devanesan S. A. Martin Britto Dhas, M. Jose. Study on photocatalytic and impedance spectroscopy investigations of composite CuO/ZnO nanoparticles. Journal of Materials Science: Materials in Electronics. 30(30), 13708–13718.**
- 8. B.A. Al-Asbahi, S. M.H Qaid, M. Hafizuddin H. Jumali, M. S. AlSalhi, A. S Aldwayyan. Long-range dipole–dipole energy transfer enhancement via addition of SiO₂/TiO₂ nanocomposite in PFO/MEH-PPV hybrid thin films. Journal of Applied Polymer Science. 136(2019), 47845.**
- 9. M Atif, A Ali, MS AlSalhi, Magnus Willander. Effect of Urea on the Morphology of Fe₃O₄ Magnetic Nanoparticles and Their Application in Potentiometric Urea Biosensors. Silicon. 11 (2019), 1371-1376.**
- 10. M. J Aljaafreh, S. Prasad, M. S AlSalhi, Z. A Alahmed. Ultrafast dynamics of laser from green conjugated-oligomer in solution. Polymer. 169(2019), 106-114.**
- 11. W. Bi, E. Jahrman, G. Seidler, J. Wang, G. Gao, G. Wu, M. Atif, M. S. AlSalhi, G. Cao. Tailoring Energy and Power Density through Controlling the Concentration of Oxygen Vacancies in V₂O₅/PEDOT Nanocable-Based Supercapacitors. ACS applied materials & interfaces. 11(2019), 16647-16655.**
- 12. M. S. AlSalhi, K Elangovan, AJA Ranjitsingh, P Murali, S Devanesan. Synthesis of silver nanoparticles using plant derived 4-N-methyl benzoic acid and evaluation of antimicrobial, antioxidant and antitumor activity. *Saudi Journal of Biological Sciences*.29 (2019), 970-978.**
- 13. N. Mustapha, M. S. AlSalhi, S. Prasad. Energy transfer-enhanced external power conversion**

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17. M. Kavin, A. Ayeshamariam, R. Boddula, A. Prabhakarn M. S. AlSalhi, J Theerthagiri, S. Prasad, J Madhavan, A. M. Al-Mayouf. Assembled composite of hematite iron oxide on sponge-like BiOCl with enhanced photocatalytic activity. *Materials Science for Energy Technologies*, 2 (2019), 104-111

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19. M. S. AlSalhi, S. Devanesan, Khalid E AlZahrani, M. AlShebly, F. Al-Qahtani, K. Farhat, V. Masilamani. Impact of Diabetes Mellitus on Human Erythrocytes: Atomic Force Microscopy and Spectral

Investigations. International Journal of environmental research and public health, 15 (2018), 2018: 2368.

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Morphological, Optical, and Magnetic Properties in Aerobic Oxidation of Benzyl Alcohol. Journal of Superconductivity and Novel Magnetism. 31(2018),1219-1225.

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30. M Atif, A Ali, M.S. AlSalhi, M Willander. Effect of Urea on the Morphology of Fe₃O₄ Magnetic Nanoparticles and Their Application in Potentiometric Urea Biosensors. Silicon. 11 (2018), 1371–1376.

31. M. S. AlSalhi, A. R. Almotiri, S. Prasad, M. J Aljaafreh, Ahmad HS Othman, V. Masilamai A

Temperature-Tunable Thiophene Polymer Laser. Polymers. 10(2018), 2018:470

32. M. S. AlSalhi, S. Prasad, M. J. Aljaafreh, Ahmad HS Othman. Broadband Frequency-Tunable Whispering-Gallery-Mode Superradiant Light from Quantum Dots in Colloidal Solution. Journal of Nanomaterials. , 3754307 (2018), 1- 9.

33. Saradh Prasad, G Durai, D Devaraj, M. S. AlSalhi, J Theerthagiri, Prabhakarn Arunachalam, M Gurulakshmi, M Raghavender, P Kuppusami. 3D nanorhombus nickel nitride as stable and cost-effective counter electrodes for dye-sensitized solar cells and supercapacitor applications. RSC Advances, 8(2018), 8828-8835.

34. A Elzupir, K Ibnaouf, H Idriss, M Ibrahim, S Prasad, M Alrajhi, M. S. AlSalhi, A Alaamer. Synthesis and Characterization of an Efficient New Liquid Laser Dye Material-Chalcone (DMAPP). Acta Physica Polonica A. 133(2018),121-125.

List of Granted Patents

1. M.S.AlSalhi, S.Devanesan "Synthesis of silver nanoparticles from Abelmoschus Esculentus Extract". Grant No: US 10059601 B1, Aug 2018

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3. M.S. AlSalhi, S. Devanesan, Akram Ahmed Alfuraydi, Mysoon AlAnsari . Green synthesis of silver nanoparticles using sesame (Sesamum indicum) oil cake and cytotoxicity study on MCF-7 Cell Line "Publication number: US 20180333433, Nov 2018.

- 4. V. Masilamani, M.S.AISalhi, S.Devanesan Spectral Method For Quantifying Hemoglobin Fragility Caused By Smoking. Grant No: US 9726679 B2, Aug 2017**
- 5. S. Prasad, M.S. AISalhi, V. Masilamani. Temperature tuned conjugated polymer laser. Grant No: US 9698561 B1, Jul 2017**
- 6. V. Masilamani, M.S.AISalhi, Karim H. Farhat, Danny Rabah, S. Prasad, S.Devanesan "Method of detecting bladder cancer by optical analysis of bodily fluids" Grant No: US 9733187 B2, Aug 2017**
- 7.M. S. AISalhi, V. Masilamani, Farjah H. Gahtani "Method of detecting thalassemia by optical analysis of blood components. Grant No: US 9347885 B2, May,24,2016.**
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- 10.M.S. AISalhi, Akram Ahmed Alfuraydi, S. Devanesan "Green Synthesis of Silver Nano Particles from Pimpinella Anisum Seed Extract" Grant No: US 9144544 B1, Sep 29,2015**
- 11. V. Masilamani, M. S. AISalhi, Danny M. Rabah "Method for Discriminating Between Benign and Malignant Prostate Tumors" Grant No: US 8213005 , B2. Jul 03, 2012.**
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Selected Publications:

- 1. S. Qaid, A. S. Aldwayyan, I. Bedja, M. Hezam and M. K. Nazeeruddin "Simple Hydrothermal Synthesis of Brookite TiO₂ Nanowires and their Application in Dye-sensitized and Perovskite Solar Cells" Proceedings of 6th International Conference on Hybrid and Organic Photovoltaics (HOPV14), Ecublens, Switzerland, May (2014).**
- 2. N. Arora, M. I. Dar, M. Hazem, W. Tress, G. Jacopin, T. Moehl, P.Gao, A. S. Aldwayyan, D. Benoit, M. Grätzel, and M. K. Nazeeruddin " Photovoltaic and amplified spontaneous emission studies of high quality formamidinium lead bromide films" Adv. Funct. Mater. 26,17, 2846–2854 (2016).**
- 3. Hamid M. Ghaithan, Saif M. H Qaid, Mahmoud Hezam, Joselito P. Labis, Mohammad Alduraibi, Idriss M. Bedja, A. S. Aldwayyan, "Laser induced photocurrent and photovoltage transient measurements of dye-sensitized solar cells based on TiO₂ nanosheets and TiO₂ nanoparticles", Electrochimica Acta, Vol. 212 (2016).**
- 4. S. M. H. Qaid , M. S. Al Sobaie, M.A. Majeed Khan, I. M. Bedja, F. H. Alharbi , M. Khaja Nazeeruddin and A. S. Aldwayyan " Band-gap tuning of lead halide perovskite using a single step**

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5. Javed Alam, M. Hoshan, A. Shukla, Idass, M. Ramamoorthy, M. Hussain and A. S. Aldwayyan "Atomic Layer Deposition of TiO₂ Film on a Polyethersulfone Membrane: Separation Applications" *Journal of Polymer Research* 23. 9, (2016).
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 7. Saif M.H. Qaid, M. Naziruddin Khan, Abdulaziz Alqasem, Mahmoud Hezam, Abdullah Aldwayyan "Aestraining effect of film thickness on the behaviour of amplified spontaneous emission from methylammonium lead iodide perovskite" *IET Optoelectronics*, Aug. (2018).
 8. Saif M.H. Qaid, Mukhtar Hussain, Mahmoud Hezam, M.A. Majeed Khan, Hamad Albrithen, Hamid M. Ghaithan , Abdullah S. Aldwayyan "Structural and Optical Investigation of Brookite TiO₂ Thin Films Grown by Atomic Layer Deposition on Si (111) Substrates" *Materials Chemistry and Physics* Vol. 225, 55–59, (2019).
 9. Bandar Ali Al-Asbahi, Saif M. H. Qaid, Mohammad Hafizuddin Hj. Jumali, Mohamad Saleh AlSalhi, Abdullah S. Aldwayyan "Long-range dipole-dipole energy transfer enhancement via addition of SiO₂/TiO₂ nanocomposite in PFO/MEH-PPV hybrid thin films" *J. APPL. POLYM. SCI.*, DOI: 10.1002/APP.47845, (2019).

Conferences:

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Perovskite Solar Cells" Int. Conf. on Hybrid Inorganic-Organic Photovoltaics (HOVP 14), May (2014), Lausanne, Switzerland.

- 1. Saif M. Qaid, Mukhtar Hussain, Abdulaziz Alqasim, Mahmoud Hezam and Abdullah Aldwayyan " Effect of Solvent on the Optical and Structural Properties of Single-step MAPbI₃ Perovskite Thin Films" 1st Int. Conf. on Perovskite Solar Cells and Optoelectronics, Sep.(2015), Lausanne, Switzerland.**
- 2. Hamid M. Ghaithan, Saif M. Qaid, Mahmoud Hezam, Muhemmad B. Siddique, Idriss M. Bedja, Abdullah S. Aldwayyan," Invoking the frequency dependence in square modulated light intensity techniques for the measurement of electron time constants in dye sensitized solar cells" SPIE , Aug. (2015), San Diego, California, USA.**
- 3. Saif M Qaid, M.A. Majeed Khan , Mahmoud Q Hezam, A. S. Aldwayyan, I. M Bedja, F. H.Alharbi and Md. K. Nazeeruddin " Effect of methylammonium concentrations on optical properties of lead halide perovskites" 7th Int. Conf.on Hybrid and Organic.Photovoltaics, Rome, 10 -13 May (2015), Italy.**
- 4. Saif. M. H. Qaid, Mahmoud Hezam, M. Naziruddin Khan, Abdulaziz Alqasem, Abdullah Aldwayyan, Restraining Effect of Film Thickness on the Behavior of Amplified Spontaneous Emission from Methylammonium Lead Iodide Perovskite, SIOE,¹⁸, March (2018) Cardiff, UK.**

My research interests include:

- Preparation of nanocomposite thin films: metal oxides nanostructures, polymer/metal oxide, polymer/perovskite,.....etc.
- Investigation of energy transfer in donor/acceptor systems
- OLEDs fabrication and characterization
- Investigation of photophysical & optoelectronic properties of thin films
- laser emission

Publications in last 2 years:

1. B. A. Al-Asbahi, Saif M. H. Qaid, Hamid M. Ghaithan, M. S. AlSalhi, Abdullah S. Al dwayyan. 2019. Optical and Structural Properties of CsPbBr₃ Perovskite Quantum Dots/PFO polymer composite thin films. Journal of colloid and interface science. (Under Review).
2. Fuzi, S. A., Hj. Jumali M. H., Al-Asbahi, B. A. 2019. Photophysical and energy transfer mechanism studies of PFO/F7GA/MEH-PPV ternary organic blend films. Thin Solid Films. 683: 90-96.
3. Al-Asbahi, B. A. Saif M.H. Qaid, Hj. Jumali M. H, AlSalhi, M. S., Al-Dwayyan, A. S. 2019. Long-range dipole–dipole energy transfer enhancement via addition of SiO₂/TiO₂ nanocomposite in PFO/MEH-PPV hybrid thin films. Journal of Applied Polymer Science. 47845: 1-11.
4. Al-Asbahi, B. A. 2018. Influence of SiO₂/TiO₂ Nanocomposite on the Optoelectronic Properties of PFO/MEH-PPV-Based OLED Devices. Polymers. 10(7)800.
5. Al-Asbahi, B. A. 2017. Energy transfer mechanism and optoelectronic properties of (PFO/ TiO₂)/Fluorol

7GA nanocomposite thin films. Optical Materials. 72: 644-649.

6. Fuzi, S. A., Haji Jumali, M. H., Al-Asbahi, B. A. Kok. K. Y.& Saidin, N. U. 2017. Photoluminescence study of Poly (9,9-di-n-octylfluorenyl-2,7-diyl)/Flourol7GA/ Poly[2-methoxy-5-(2-ethylhexyloxy)-1,4-phenylenevinylene] blends. AIP Publishing. 1838: 020021.

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8. Abumosa, R. A., Al-Asbahi, B. A. & AlSalhi, M. S. 2017. Optical properties and amplified spontaneous emission of novel MDMO-PPV/C500 hybrid. Polymers.

9(2)71. 9. Al-Asbahi, B. A. 2017. Influence of anatase titania nanoparticles content on optical and structural properties of amorphous silica. Materials Research Bulletin. 89: 286-291.

1- Synthesis of Dye sensitized solar cells (DSSC) and Quantum dot sensitized solar

cells (QDSSC) for energy harvesting.

2- Effects of IR, Visible and UV lasers exposure on DSSC and Nano structured thin films of different materials.

3- Elemental analysis of polymers, biomaterials and Nano structured using Laser Induced Breakdown Spectroscopy (LIBS) with Nd:YAG laser.

4- LIBS technique for trace element and impurity detection for industrial samples.

5- Measurements of linear and nonlinear properties of Nano particle embedded polymers using Z-Scan technique are in process.

6- Laser Applications in spectroscopy and materials detection

7- Investigation of energy transfer in donor/acceptor systems

8- OLEDs fabrication and characterization • Investigation of photophysical &

Optoelectronic Properties of thin films

9- Study the spectroscopic properties of new photonic materials. An example of such material

Is the Organic-Inorganic Halide (OIH) Perovskites.

10- Study the optical and lasing properties of some nanoparticles and Nano

Composites.

11- Photo thermal deflection spectroscopy (PTDS) on different atoms such as Na and Rb using two-photon absorption.

12- Detection technique for PTDS that has a significant improvement in the signal-to-noise ratio and in the frequency bandwidth compared with those available with current techniques.

13- Studying chemical potentials and formation energy of a vacancy in perovskite structure using first-principles calculation method.

14- Investigating effects of in-plane strains on structural, electronic, and electrical

Properties of polar semiconductors using first-principles calculation.

15- Investigating structural, electronic, and optical properties of several organic

And inorganic compounds using first-principles calculations.