

## Abdulaziz N. AlHazaa

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### EDUCATION

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- **Ph.D. Mechanical & Manufacturing Engineering** **Nov 2009**  
University of Calgary, AB, Canada  
Thesis title: Diffusion bonding of Al7075 to Ti-6Al-4V  
GPA: 4/4
- **Ms. Physics** **Aug 2003**  
University of Texas at Austin, TX, USA  
Thesis title: Ultraviolet Photoelectron Spectroscopy (UPS)  
GPA: 3/4
- **Bsc. Physics** **July 1997**  
King Saud University, Riyadh, Saudi Arabia  
GPA: 4.85/5 (1<sup>st</sup> class honors-ranked 1<sup>st</sup> in the department, 5<sup>th</sup> in the University)

### EMPLOYEMENT

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- **Associate professor** **Dec 2017-Present**  
Physics dep. College of Science, King Saud University,  
Riyadh, Saudi Arabia
  - **Vice Dean for technical affairs** **Jan 2015-Present**  
King Abdullah Institute for Nanotechnology,  
King Saud University  
Riyadh, Saudi Arabia
  - **Assistant Professor** **July 2012-Nov 2017**  
Physics dep. College of Science, King Saud University,  
Riyadh, Saudi Arabia
  - **Lead Scientist & Section Head** **Dec 2009-June 2012**  
Analytical Technology Department, SABIC  
Riyadh, Saudi Arabia
  - **Analyst** **Oct 1998-Dec 2009**  
Analytical Technology Department, SABIC  
Riyadh, Saudi Arabia
  - **Researcher** **July 1997-Nov 1998**  
Energy Institute, King Abdulaziz for Science & Technology  
Riyadh, Saudi Arabia
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## **CURRENT FIELDS OF INTEREST**

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- **Advanced joining technologies for dissimilar materials**
  - 1- Diffusion bonding, spark plasma sintering for joining dissimilar materials
  - 2- Femtosecond laser applications in joining micro/nano materials
- **Alloying of soldering/brazing materials**

Development of new soldering/brazing alloys for high/low temperature applications
- **Nanomaterials for energy applications**
  - 1- Thin film coatings of solar cells for H<sub>2</sub> production
  - 2- Investigation of nanoparticles using SEM/TEM/XPS

## **TEACHING**

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### **Teaching award and training**

- SEDA Learning & Teaching and Assessing award, 2013, awarded by staff and educational development Association (SEDA), UK.

### **Course taught**

- General Physics (103 Phy) for 2<sup>nd</sup> year Engineering student
- Solid State Physics(371 Phy) for 3<sup>rd</sup> year Physics major students
- Graduation project (499 Phy) for Bsc students.
- Materials Science (574 Phy) for graduate students

## **INDUSTRIAL EXPERIENCES**

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### **Technical team leader**

**Dec 2009-Jun 2012**

- SABIC R&T, Riyadh, Saudi Arabia
- Responsibilities included: Supervising the surface and catalyst characterizations labs, Running X-ray Photoelectron Spectroscopy (XPS) and X-ray diffraction (XRD), contribute in research projects by offering analytical tools for characterizations.

### **Analyst**

**Oct 1998-Nov 2009**

- SABIC R&T, Riyadh, Saudi Arabia
- Running FTIR, FT-Raman, XRD and interpreting the results for research purposes

## **SKILLS**

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- **Management skills**

Ability to manage and run labs for research and service purposes, experiences in establishing infrastructure for scientific laboratories.
- **Materials Characterizations**

X-ray Photoelectron Spectroscopy (XPS), X-ray Diffraction (XRD), Focused Ion Beam (FIB), microhardness testing, shear testing.
- **Materials Processing**

Advanced welding techniques, heat treatments, coatings by thermal evaporation method, Physical Vapor deposition, electro-deposition.
- **Computer skills**

Comsol Multiphysics, Maple, Tecplot, AutoCad, Origin

## SCHOLARLY ACCOMPLISHMENTS

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### JOURNAL PAPERS

- 1- A. AlHazaa, M. Shar, A. Atieh and H. Nishikawa, Transient Liquid Phase bonding of magnesium alloy AZ31 using Cu coatings and Cu coatings with Sn interlayers, *Metals*, 8, 60, 2018.
- 2- M.A. Majeed Khan, Wasi Khan, Avshish Kumar, Abdulaziz N. Alhazaa, Plasma enhanced chemical vapour deposition growth and physical properties of single-walled carbon nanotubes, *materials letters*, 2018.
- 3- M.A.Majeed Khan, Sushil Kumar, Tansir Ahamad, Abdulaziz N. Alhazaa, Enhancement of photocatalytic and electrochemical properties of hydrothermally synthesized WO<sub>3</sub> nanoparticles via Ag loading, *Journal of Alloys and Compounds* 743, 2018, 485-493.
- 4- M. Gaidi , K. Trabelsi, A. Hajjaji , M. L. Chourou, A.N. AlHazaa, B. Bessais and M. A. El Khakani, optimizing the photochemical conversion of UV-Vis light of silver-nanoparticles decorated TiO<sub>2</sub> nanotubes based photoanodes, *Nanotechnology*, 2017.
- 5- M.A. Majeed Khan, Wasi Khan, Maqsood Ahamed, Abdulaziz AlHazaa, Microstructural properties and enhancement in photocatalytic performance of Zn doped CeO<sub>2</sub> nanocrystals, *Scientific Reports*, 2017.
- 6- Abdelaleem Al-Obaisi, Ehab Adel El-Danaf, Adham Ezzat Ragab, Mahmoud S Soliman, and Abdulaziz AlHazaa, Statistical Model for the Mechanical Properties of Al-Cu-Mg-Ag Alloys at High Temperatures, *Advances in Materials Science & Engineering*, 2017.
- 7- Anas M. Atieh, Rula M. Allaf, Abdulaziz AlHazaa, Mahmoud Barghash, Hasan Mubaydin, Effect of pre-and post-weld shot peening on the mechanical & tribological properties of TIG welded Al 6066-T6 alloy, *Transactions of the Canadian Society for Mechanical Engineering*, Vol. 41, No. 1, 2017.
- 8- A. N. AlHazaa, Effect of bonding temperature on the microstructure and strength of the joint between magnesium AZ31 and Ti-6Al-4V alloys using copper coatings and tin interlayers, *Key Engineering Materials*, 2017.
- 9- A. N. AlHazaa , S. H. AlGharbi, H. Nishikawa, Effect of bonding temperature on the joining of Ti-6Al-4V alloy using Cu coatings and Sn interlayers, *Journal of Materials Engineering & Performance*, 2016.
- 10- Tansir Ahamad, M. A. Majeed Khan, Sushil Kumar, Maqsood Ahamed, Mohammed Shahabuddin, Abdulaziz N. Alhazaa, CdS quantum dots: growth, microstructural, optical and electrical characteristics, *Appl. Phys. B* (2016) 122:179.
- 11- Hiroshi Nishikawa, Abdulaziz N. AlHazaa, Siliang HE , Addulhakim A. Almajed and Mahmoud S. Soliman, Interfacial reaction between Sn-Ag-Cu-Mg solder and ENIG substrate, *Key Engineering Materials*, Vol 701, 216-219, 2016.
- 12- Shahid Mahmood Ramay, Asif Mahmood, Shahid Atiq, Abdulaziz AlHazaa, Study of divalent elements (Mg, Sr and Ba)-doped LaMnO<sub>3</sub> nano-manganites. *International Journal of modern physics B* 30(6), 2016.
- 13- A. N. AlHazaa, Khalil A. Khalil and Muhammad A. Shar, Transient Liquid Phase bonding of Magnesium alloys AZ31 using nickel coatings and high frequency induction heat sintering, *Journal of King Saud University (Science)*, Volume 28, Issue 2, 152–159, 2016.
- 14- Asif Mahmood, Shahid Mahmood Ramay, Yousef S. Al-Zaghayer, Abdul-Aziz N. AlHazaa, Waheed A. Al Masary & Shahid Atiq, Au doping effect on the electrical and magnetic properties of Fe<sub>3</sub>O<sub>4</sub> nanoparticles. *Modern Physics Letters B* 29(33), 2015.

- 15- Asif Mahmood, Shahid Mahmood Ramay, Yousef S. Al-Zaghayer, Abdul-Aziz N. AlHazaa, Waheed A. Al Masary & Shahid Atiq, Synthesis and investigation of photocatalytic properties of Au/Fe<sub>3</sub>O<sub>4</sub> nanocomposite materials for degradation of methylene blue, Desalination and Water Treatment, 1-7, Oct. 2015.
- 16- Bouraoui Ilahi, Manel Souaf, Mourad Baira, Jawaher Alrashdi, Larbi Sfaxi, Abdulaziz AlHazaa, and Hassen Maaref, Evolution of InAs/GaAs QDs Size with the Growth Rate: A Numerical Investigation, Journal of Nanomaterials, Volume 2015 (2015), Article ID 847018, 6 pages.
- 17- A. N. AlHazaa, El-Sayed M. Sherif, Hany S. Abdo Galvanic Corrosion in 3.5 wt. % NaCl Solutions of Magnesium alloy AZ31 Coupled with Ni after Different Bonding Periods of Time, Int. J. Electrochem. Sci, 10 (2015) 5420 – 5433.
- 18- A. N. AlHazaa, El-Sayed M. Sherif, Corrosion Behavior of Al7075, Ti-6Al-4V, and Sn-3.6Ag-1Cu Alloys in 3.0 wt.% Sodium Chloride Solutions Using Potentiodynamic Polarization Measurements, Int. J. Electrochem. Sci., 10 (2015) 4193 - 4207.
- 19- A. N. AlHazaa and T. I. Khan, Diffusion bonding of Al7075 alloy to Ti-6Al-4V alloy using Cu coatings and Sn-3.6Ag-1Cu interlayers, Journal of Alloys and Compounds, 2010
- 20- A. N. AlHazaa, T. I. Khan and I. Alhaq, TLP bonding of Al7075 alloy to Ti-6Al-4V alloy using copper interlayers, Journal of Materials Characterizations, 2010.

#### CONFERENCE PAPERS

- 1- A. N. AlHazaa, Effect of bonding temperature on the microstructure and strength of the joint between magnesium AZ31 and Ti-6Al-4V alloys using copper coatings and tin interlayers, ICAMR, <http://www.icamr.org/Hong%20Kong%20Schedule.pdf>, 2017.
- 2- Anas M. Atieh, Abdulaziz Alhazaa, Atta G. Attaelmanan, The Effect of Quenching Medium on The Microstructure and Mechanical Behaviour of Inconel 625 Welded Alloy, 26th Canadian Congress of Applied Mechanics (CANCAM), Victoria, BC, Canada, 29th May 2017.
- 3- Anas M. Atieh, Rula M. Allaf, Mohammad Ebrahim Nawaiseh, Abdulaziz AlHazaa, Mahmoud Barghash, Effect of Shot Peening on the Mechanical Properties & Weldability of TIG Welded Aluminum 6061-T6 Alloy, Conference: CSME International Congress, At Kelowna, BC, Canada, Jun 2016.
- 4- A. N. AlHazaa and T. I. Khan, Diffusion bonding of Al7075 to Ti-6Al-4V using eutectic interlayers, conference of Metallurgists, <http://toc.proceedings.com/08452webtoc.pdf> ,Winnipeg, Canada, 2008

#### SUPERVISED GRADUATE STUDENTS

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- Mahmoud AlGwati, PhD, Ag nanoparticles and nanowires joining using Femtosecond laser, under preparation for proposal submission.
- Ibrahim Al-Hwaimel, Msc Thesis, The effect of Zn coatings on the microstructure of the joint formed between Mg ally and Ti alloy, ongoing.
- Sultan AlGharbi, Msc thesis, Investigation of the Atomic diffusion and intermetallic formation IMC of Sn-Cu alloy coatings on Ti-6Al-4V alloy substrate, completed, 2017. (Principle supervisor).
- Ghazwa AlSubaie, Msc thesis, Interaction of Melanin With Ionizing Radiations, completed 2015. (co-supervisor).

- Amal Al-Dhubaib, Msc thesis, Computational investigation of InAs InP quantum dots emission energy tunability by in situ height control by, completed 2015, (co-supervisor).

## **SERVICES**

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- The head of the quality committee to achieve ISO17025 for KAIN laboratories, Sep '2017-present.
- The head of the physical standardization Committee at Saudi Standards, Metrology & Quality Organization (SASO), Jan 2014-Jun 2017
- Member of National Center for Assessments (Qiyas) at the Ministry of Education, March 2014-Present
- Member of the National Center for Nondestructive Tests (NCNDT) at King Abdulaziz City for Science & Technology (KACST), Jan 2015-Dec 2016.
- Member in the scientific committee at the 3<sup>rd</sup> Saudi International Conference in Advanced Materials Technology, 2015.
- Member in the scientific committee at the 4<sup>th</sup> Saudi International Conference in Advanced Materials Technology, 2018.
- The head of graduates and workforce committee at the Physics & Astronomy department from Sep 2017 to present.
- The head of condensed matter group at the physics & astronomy department from Jan 2013 to Dec 2013.

## **ATTENDED TRAINING AND WORKSHOP**

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### **Technical:**

- Fundamental of x-ray diffraction, ICDD x-ray clinics, USA, 2011.
- Polymer & composite analysis & operations, international center for training and development, UAE, 2004.
- Communication skills, Qudraat Establishment, Riyadh, 2004.
- Innovation & Creativity, Meric Training & Consulting, Riyadh, 2004.
- Basic First Aid and Heartsaver Course, Saudi Heart Association, Riyadh, 2001.
- Meeting and group discussions, Meric Training & Consulting, Riyadh, 2000.
- X-ray diffractometry, Philips Analytical, Netherlands, 2000.
- The Quality Advantage, SABIC, Riyadh, 2000.
- Introduction to Statistics, SABIC, Riyadh, 1999.
- Solar Radiation Resources Assessment, NREL, Riyadh, 1997.

### **Teaching:**

New Faculty Orientation and Preparation Program, 2013, organized by the Deanship of Skills development at King Saud University. The topics covered in this 36 hours program were:

- Course design and constructions (9 hours)
- Effective Teaching Skills for Higher Education (12 hours)
- Learning Outcomes Assessments (9 hours)
- Micro Teaching (6 hours)