Ali Abdul-Aziz, PhD, PE, Fellow ASME, ASNT, IAAM

https://scholar.google.com/citations?user=PrONC6QAAAAJ&hl=en
http://www.kent.edu/caest
https://www.kent.edu/amlci/ali-abdul-aziz
https://www.linkedin.com/in/ali-abdul-aziz-phd-p-e-fellow-asme-asnt-64795783
https://www.researchgate.net/profile/Ali_Abdul-Aziz

PROFESSIONAL SUMMARY

Interest in applied general engineering practice and taking on duties in Management, leadership roles and research, nondestructive evaluation (NDE), quality assurance, experimental testing, safety, and compliance. Excellent background in materials characterizations and composites, structural analysis, finite element, experimentation, and computer applications.

Current Position: Associate Professor: High interested in higher education, teaching and developing applied engineering courses in aerospace, aero-propulsion, thermal-fluids, finite element and instrumentation/diagnostics laboratory related subjects.

Aerospace Engineering, Kent State University
College of Aeronautics and Engineering,
Aeronautics & Technology Building, 228D
P.O. Box 5190, Kent, Ohio 44242
Office (330) 672-1032
Email: aabdula3@kent.edu

Education:

- PhD. Mechanical Engineering, Cleveland State University, Ohio, Aug. 1985
- MS. Mechanical Engineering, Cleveland State University, Ohio, Dec. 1981
- BS. Mechanical Engineering, Cleveland State University, Ohio, Dec. 1980

PROFESSIONAL EXPERIENCE & CAREER HIGHLIGHTS

- Associate Professor and Graduate Coordinator ; **Kent State University; August 2016-Present**
  Associate Professor of Aerospace *Engineering in the College of Aeronautics and Engineering. Responsible for developing/teaching courses* in Aerospace Engineering, Aircraft Propulsion applied engineering laboratory and thermal sciences.

  Current activities & Core Qualifications:

  - Teach undergraduate courses in Aerospace engineering and advanced aero-propulsion.
  - Conduct external field research in coordination with department colleagues and administrators.
  - Assist in drafting and updating engineering program curriculum requirements and guidelines.
  - Provide individual mentoring and advice to students as required.
  - Extensive breadth of experience in engineering instruction at the university level.
  - Strong ability to deliver course material through a variety of teaching methods.
  - Excellent presentation and communication skills.
  - Superior creative and critical thinking abilities.
  - High multitasking ability to balance teaching and administrative duties.
  - *Involve in developing laboratory classes, which includes interacting with educational resources and vendors to acquire needed equipment and instrumentation that are in line with the curriculum offering*.
  - *Responsible for developing course in several areas of engineering related to the aerospace engineering curriculum which includes thermal sciences, aero*-propulsion etc…
  - *Assist in updating the current course road map of the Aerospace Program by offering advice, input and changes on the course syllabi and course descriptions to fulfill requirements of ABET Accreditation.*

NASA Glenn Research Center, September 2023-Present

Sabbatical Research Project – Next-Generation Environmental Barrier Coatings (EBCs)

Conducted advanced research on the development of next-generation EBC systems to enhance the durability of ceramic matrix composites (CMCs) for aerospace propulsion.

- Focused on reducing thermally grown oxide (TGO) growth rates as a logical pathway to extend EBC lifespan under high-temperature oxidative conditions.
- Investigated the role of modifier oxides in suppressing TGO formation by altering silica-based TGO structure and reducing its porosity to oxygen ingress.
- Designed and executed coupled analytical and experimental studies to assess how modifier oxides integrate into SiO_2 matrices and influence microstructural evolution.
- Developed structure–property insights into oxide-doped TGOs that inform the design of more oxidation-resistant multilayer EBC architectures.
- Contributed to knowledge transfer through scholarly presentations and supported manuscript preparation for peer-reviewed dissemination.

NASA Glenn Research Center, September 2016-December 2018:

Duties: Providing consultation and research support service under a **NASA Glenn Research Center** funded contracts,

1. **Propulsion Health Monitoring System Development and Instrumentation**, July 2018-September 2018.
    - This effort is for the development and validation-testing microwave-based blade tip-timing sensors that are being investigated for propulsion health monitoring under the Transformational Tools and Technologies Project.
    - This will involve working with prototype sensors in the spin rigs in B6 to determine the optimum set up and assess their capability in making blade tip-deflection measurements along with further refining the methodology required to extract deflection measurements from the raw data acquired from the sensors.
2. **Boundary Layer Ingestion Propulsion**: September 2016- April 2017
    - The focus of this project is the identification and development of structural health monitoring techniques related to conducting spin experiments on subscale turbine-engine rotor like disks.
    - Perform analytical calculations to verify and correlate test results into meaningful relations in attempt to develop physics-based model for crack detections methodology and support the need for advanced on-board detection & health monitoring. In addition, this task is to cover the work associated with the checkout, calibration, installation, and operation of the capacitive blade tip clearance and optical blade tip timing probes (light probes) required for **the Boundary Layer Ingestion Test Program**.
    - Part I work on this project was completed in April 2017. Part II is currently on hold until late 2018-early 2019.

- Dual Post as Senior Research scientist, August 1985-August 2016
    - *NASA Glenn Research Center; Optics and photonics Branch, Cleveland, Ohio.*
    - *Cleveland State University-Department of Mechanical Engineering, Cleveland, Ohio. Oct. 1999-August 2016.*

- Senior Research Associate, Ohio Aerospace Institute-NASA Glenn Research center, Cleveland, Ohio. Jan. 1998- Sept. 1999
- Senior Project Engineer, NASA Glenn Research Center/NYMA, Inc. Jan. 1994-Dec. 1997
- Senior Research Engineer, NASA Glenn Research Center/Sverdrup Technology, Inc. Aug.1988-Dec. 1993.
- Part-time Faculty, College of Engineering, Cleveland State University, Cleveland, Ohio. Jan. 1986- March. 1991.

Professional Activities, Management & Technical Leadership:

- Project Engineer: Wind Tunnel project responsible for the Boundary Layer Ingesting Inlet –Distortion Tolerant Fan (BLI2DTF) and spin rig testing support. Duties includes products design-ordering and identifying test phases, data collection, data analyses. Accountable for light and blade cap probes calibration, installation, functionalities and operation. Control project plan by

reviewing design, specifications, and plan and schedule changes; recommending action. Confirms product performance by conducting tests.

- **Lead Research Scientist** responsible for overseeing activities in the Rotordynamics Spin Rotor Test Facilities:

- Conducted applied research and supervise precision-controlled spin tests that can facilitate the application of various sensing technologies for in situ detection of rotor damage. It included performing systematic evaluations of crack detection techniques through the implementation of highly controlled crack initiation and growth tests on subscale spinning rotors up to 46 cm (18 in.) and 15000 rpm under centrifugal force and motion mechanics loads. Collecting, analyzing and evaluating test data, update, improve maintain data acquisition system, develop supportive analytical finite models for studying deformation behavior of the disk in undamaged and damaged (i.e., notched) states. Assess potential for detecting damage based on virtual and experimental data.

- Managed lab safety issues and compliance, safety permit, equipment maintenance, develops, promotes, and maintains safety standards, practices, and procedures including purchasing….etc.… Ensure that the laboratory meets full compliance with OSHA, NASA and other safety statutes, regulations, and directives. Write laboratory manual describing measures and controls for the safe operation of the facilities and protection of Center personnel and property.

- Performed analytical studies and experimental durability and structural tests on advanced aerospace specimens, components and materials (CMC'S, EBC, TBC…) in support of various research tasks. This included studying the mechanical behavior of high temperature structural composites, ceramics, environmental-thermal barrier coatings (EBC-TBC), and super alloys under complex thermo-mechanical loading conditions, and the integration of related analytical software, conducting finite element analyses, thermal and structural, validating test data, and characterization of fatigue life models.

- Performed nondestructive evaluation (NDE) research and quality checks and use specialized software for automating the generation of finite element and rapid prototyping models based on 3D imaging data sets as obtained from Computed Tomography (CT), Magnetic Imaging (MRI), Digital Correlation Image Camera (DIC) and Ultrasound. Utilize various NDE tools/software to visualize and segment regions of interest from any volumetric 3D data (e.g. MRI, CT, Micro. CT). Exploited and customized related software available i.e. **ScanFE/ScanIP** to enhance interpretation of NDE data and coordinate findings for better characterization of cycled tested aerospace components such as disks, blades, rings, flywheels etc.…

Computer Expertise:

- Experience in most scientific computer software, such as**, Sigma Plot, Microsoft Office, Windows** etc…and Computer operating systems such as**, UNIX, and PC's**. Hand on knowledge and experience in using **MARC, ANSYS Workbench finite element code, Solidworks, MSC/PATRAN Graphics, to Pre and Post Process** finite element models for various geometries. Experience with **ScanIP/FE** image processing software and familiar with LabVIEW National Instruments.
- Outstanding proficiency in **MS Office including PowerPoint Access Word and Excel**.

Teaching Experience:

Kent State University (8/17-Present), College of Aeronautics and Engineering, Department of Aerospace Engineering, Kent, Ohio**.**

Courses Taught (8/16-present); Intro to Aerospace Engineering, Advanced Aero-Propulsion, Engineering Statics, Applied Flight Dynamics II, Thermal fluids, thermal fluids laboratory, Intro to Finite Element.

Part-Time Faculty (1/86 to 12/91): College of Engineering, Department of Engineering Technology, Cleveland State University, Cleveland, Ohio.

Courses Taught: Thermodynamics I and II, Heat Transfer, Thermal Environmental Engineering.

Research and Teacher Assistant (6/80 to 8/85): Department of Mechanical Engineering, Cleveland State University, Cleveland, Ohio.

Research assistant (1/82-6/85): NA**SA Glenn Research Center**; worked under a cooperative agreement between NASA and Cleveland State University at the **Fuel Cells Laboratory**. Developed and designed an experimental research project to investigate the applicability of various cooling systems in phosphoric acid fuel cell power plants.

Mentoring and Partnering

- Serve on a master's Thesis Degree Graduate Committee as a voting member, Kent State University, College of Aeronautics and Engineering.
- Actively involved in mentoring summer students including both college and high School students, as well as summer faculty fellows.
- Served on Awards, editorial committees (ASNT), software assurance, program committee and communications teams for International Society of Optical Engineers (SPIE) conferences.
- Held duties that included supervise visiting graduate interns from universities, direct, and set up work plans.
- Interacted-directed visiting universities faculty members and collaborated on conducting combined research activities.
- Planed seminars, Organized, chair technical sessions, setup discussion groups for presenting and reporting relevant findings.
- Additional assignments included evaluating research proposals and reviewing technical papers as well as directing visiting universities scholars.

Professional service highlights

- American Society of Non-Destructive Testing (ASNT), Research Council member, (2021-present).
- American Society of Non-Destructive Testing (ASNT), Materials Evaluation Committee.2003-present.
- The International Society for Optics and Photonics (SPIE), Smart Structures/NDE Conference Organization Program Committee. 2000-present.
- Program committee; Smart Materials and Nondestructive Evaluation for Energy Systems II, 2010-present.
- Provost Promotion Committee (2020).
- Dean College Advisory Committee (CAC) (2018-2021).
- College Undergraduate Curriculum Committee (CCC) (2017-Present).
- International Student Scholar Integration Council (ISSIC), 2018, 2020,
- University Diversity Advisory Council. (UDAC). (2018-2020)
- Center for Teaching and Scholar Integration Committee (TLC) (2019).
- Academic Hearing Panel (2018-2019)
- Center for Teaching and Learning Advisory Council
- Provost Promotion Council (2019-present).
- Provost Advisory Council (2021-present)
- College Undergraduate Curriculum Committee (CCC).
- University Diversity Advisory Council. (UDAC)
- Center for Teaching and Scholar Integration Committee (TLC).
- Academic Hearing Panel (AHP).
- Aeronautical Systems Engineering Technology (AESE) Lead faculty.
- Aeronautics Tenure Track Rep. (2018-2019),
- Served on the committee of Division of Graduate Studies as a reviewer for the 2017-18 Graduate Student Fellowships and Awards. March 2017.

Facilities Construction:

- Designed, constructed, and managed Spin laboratory at NASA.

Certifications, Honors and Additional Professional Activities:

- Elected as Member Quality Control Grants reviewer, **The European Commission of Research and Innovation.** Brussels, Belgium, October 2022-present
- Elected as Member Expert peer reviewer, **The European Commission of Research and Innovation.** Brussels, Belgium, April 2015-October 2022
- Professional Engineer License, State of Ohio Seal # E-52686.
- Fellow, American Society Nondestructive Testing (ASNT).
- Fellow, American Society of Mechanical Engineers (ASME).
- As a principal investigator, received numerous awards throughout career, won 4 International Journal and branch articles of the year, recognition, appreciation, excellence…etc…
- Published over 175 articles/papers/NASA Technical Memorandum/Conference Proceedings, lectures…etc…)

Other Duties pertain to supporting research programs such as;

Selected List:

March 1999- March 2018

- Boundary Layer Ingestion Turbo Fan
- Aeronautical Science
- Intelligent Vehicle Health Monitoring (IVHM)
- Aviation Safety Program (AVSP).
- Striling Engine Technology and Heater Head Design
- High Operating Temperature Propulsion Components (HOTPC)
- Revolutionary Aero propulsion Concepts (RAC)
- Flywheel Energy Storage (FES), Reusable space launch (RLSV)
- High Temperature Structural Testing and Analytical Modeling Of Advanced Composite Materials
- High Speed Research Program (HSR)
- Enabling Propulsion Materials (EPM).
- Ultra Engine Efficient Technology (UEET)
- Space Shuttle Main Engine Durability (SSME)
- Hot Section Engine Technology (HOST)

Grants-Contracts Awards;

- **NASA Research Announcement (NRA): NNC13TA90T:** (Research and Technology Directorate); awarded NASA Glenn Research Contract in the amount of approximately $34,000 for the period of September until December 2018. The project entitled;" **Propulsion Health Monitoring System Development and Instrumentation**"; The research pertains to supporting NASA Glenn in "**The focus of this project is the identification and development of structural health monitoring techniques related to conducting spin experiments on subscale turbine engine rotor like disks**".

- **NASA Research Announcement (NRA): NNC13TA90T:** (Research and Technology Directorate); awarded NASA Glenn Research Contract in the amount of approximately $114,000 for the period of September 2016 until October 2017. The research pertains to supporting NASA Glenn in "**performing testing and analytical modeling in support of the wind tunnel facilities and the rotor dynamics laboratory**".
- **Kent State Foundation): Awarded a grant** in the amount of approximately $30,000 for the period of March 2017. The proposed work pertains to acquire **Equipment Supporting the Instrumentation Laboratory Course with a combination of unique set of robust Devices for use in the Aerospace/aeronautics Laboratory** - Kent Campus

- **NASA Research Announcement (NRA): NNC07ZRP001N** (Research and Technology Directorate), "***Optical Instrumentation, Non-Destructive Evaluation, High Temperature Materials and Structures and Numerical Modeling for Advanced Aerospace Application*",** July 2007-December 31, 2012. Total Amount Awarded $1,303,000.00

- **Co-Investigator with Professor S.N. Tewari;** Awarded NASA Grant under announcement NNH06ZEA001N-Sup; ***Entitled" Impact Resistant Barrier Coatings for Si-Based Ceramics, SiC and Si_2N_4***" January 2007-December-2009. Total amount awarded $619,608.00

Editorialships & Editorial Activities;

- Technical Editor, 2025-2026; Special Focus Issue, **Mathematics; Special Issue: Advances in Finite Element Modeling and Optimization for Engineering".**
- Technical Editor, 2023-2024; Special Focus Issue, **Metals, MDPI**, "**A Comparative Analysis of Fatigue Behavior between Superalloys and Ceramic Matrix Composites under Extreme Conditions".**
- Technical Editor, 2023-2024; Special Focus Issue, **Recent Progress in Materials**, "**Ceramic Matrix Composites: Performance Evaluation and Application**".
- Technical Editor, 2022-2024; Special Focus Issue, **Journal Process**, MDPI; "**Recent Advancements and Trends in Structural Health Monitoring", November 2022-2024.**
- Technical Editor, 2020-2022; Special Focus Issue, J. Journal of Materials Evaluation; the American society of Nondestructive Testing; **Materials Evaluation Technical Focus Issue on DIC, November 2022.**
- Guest Technical Editor, 2020-2022; Special Issue, J. Metals; "**Single Crystal Super Alloy Material Fatigue Behaviour Compared to Ceramic Matrix Composites for Aerospace and Turbine Engine Applications**". https://www.mdpi.com/journal/metals/special_issues/Single_Crystal_Super_Alloy
- Review Board, **J. Of Materials,** MDPI; https://www.mdpi.com/journal/materials/submission_reviewers.
- **Guest Technical Editor,** 2020-2022; **J. Recent Progress in Materials**, A Special Issue " **Research on Durability of Composites".** https://www.lidsen.com/journals/rpm.
- Member, Committee Member in the European Composite Materials Congress, December 2019. https://www.advancedmaterialscongress.org/cmc20/.
- **Technical Editor,** January 2018; **Journal of Materials, MDPI**, Special Issue "Damage Detection and Characterization of High-Performance Composites**";** A special issue of ***Materials*** (ISSN 1996-1944). This special issue belongs to the section "**Advanced Composites**"; Volume 12 (2019). https://www.mdpi.com/journal/materials/special_issues/Detection_Composites?view=compact&listby=date#editors
- Editorial board; "***The Scientific Pages of Electronics and Communication***" Journal; July 2016-Present; http://thescientificpages.org/page/engineering-science/ebj.php?jid=electronics-and-communication.
- Associate Technical Editor, Editorial Board of the American Society of Non-Destructive Testing (ASNT), **Journal of Materials Evaluation**, April 2006-Present. https://www.asnt.org/me.
- **SPIE**; **international society for optics and photonics**; Visiting Lecturer, April 2011-Present; http://spie.org/x48674.xml
- **Guest Technical Editor,** January 2008, for the **Journal of Materials Evaluation,** Sponsored a Special Focus Issue on "***Finite Element Analysis and NDT***", Volume 66-Issue 1, January 2008.
- **Guest Technical Editor,** May 2005, for the **Journal of Materials Evaluation,** Sponsored a Special Focus Issue "*on* ***NDT of Ceramics***", Volume 64-Issue 1, January 2006.
- **Continuous Post; March 1999-present**; **Program Committee member** and Multi-sessions Chairman, "NDE Of Materials And COMPOSITES"; SPIE'S-The International Society for Optical Engineering, 4th, 5th, 6th, 7th, 8th, 9th, 10th , 11th etc…. and the upcoming 17th Annuals International Symposium on NDE and Health Monitoring of Aerospace Materials and Composites", Portland, Oregon, March 1999-2017.
- **Peer Technical Reviewer (selected List**; The American Society of Testing and Materials (ASTM), Journal of Materials Evaluation, International Journal of Power and Energy Systems, Journal of Composite Materials, Materials Bulletin, Metallurgical Transactions, Advances in Mechanical Engineering, Aerospace Science and Technology, Journal of Aerospace and Computing, International Journal of Solids & Structures, journal of *materials research innovations*; Sensors, Applied Science, Symmetry, Coatings, Mathematics, Energies, Crystals, Algorithms, Electronics, metals, Materials, Sustainability, Infrastructures, Journal of Manufacturing and Materials Processing, ASTM-Journal of Testing and Evaluation, British Journal of Applied Technology,

Engineering Fracture Mechanics, Enterprise Information System, Journal of Composites, Journal of Sensors, Materials, Materials Bulletin, Measurements, Mechanical system and signal Processing, Science Domain International, Machines, European Union Commission and many more…..Also, Reviewer for NASA Small Business Innovation Research (SBIR).

HONORS, AWARDS, ACTIVITIES, ORGANIZATIONS:

- **The International Association of Advanced Materials' award and recognition** (www.iaamonline.org/awards-recognitions) **committee has chosen you as this year's recipient of the 'Advanced Materials Lectures'** in recognition of your exceptional contributions to the fields of science, engineering, and technology, particularly in the realm of materials for multi-inter-trans disciplinary applications. April 18, 2023.
- College Dean's Service Award, April 2022
- SPIE Community Champion for outstanding volunteerism with the society in 2019. This distinction recognize your commitment to SPIE, its mission and the broader optics and photonics community. SPIE president January 2020.
- Certificate of Service as a Guest Editor for "Materials" an Open Access Journal by MDPI, June 2020.
- Certified Publons Academy Mentor, June 9th, 2020.
- Publon Peer Review Award 2018 for placing top 1% of Materials Science Reviewers for performance during 2017-2018.
- NASA Glenn Research Center Vehicle Integrated Propulsion Research (VIPR3) project Achievement Award, August 2017.
- Reviewer Recognition Certificate, Journal of *Aerospace Science and Technology*, **Elsevier publications**, September 27, 2016.
- Received **NASA Vehicle Integrated Propulsion Research (VIPR3) Project Group Achievement Award**, August 31st, 2016.
- **Awarded *Outstanding Reviewer* Status**! You are awarded this status as you are in the top 10th percentile in terms of the number of reviews completed for Journal of *Composites Part B* in the past two years. **Elsevier publications**, May 2015.
- **Awarded the prestigious membership grade** "**ASNT Fellow",** The America Society of Non Destructive Evaluation, April 2015.
- **Optics and Photonics Branch Paper of the year award,** 2014.
- **Letter Of recognition, Materials Evaluation,** November 2010.
- Cited by the **Optical Instrumentation and NDE Branch Chief** for the effective and timely upgrades of the rotor dynamics high precision spin rig. August 2009.
- Member of **Materials Evaluation Journal Outstanding Paper of the year Award selection committee**. *Recommended paper was chosen for the 2008 outstanding paper award.*
- **Letter of Recognition Being Prompt and Accurate Technical Reviewer from Metallurgical Transactions Editor, October 15, 2008,**
- **NASA Certificate of Recognition Advanced Stirling Convertor Team,** September 25th, 2008.
- **NASA Certificate of Appreciation, Educational Programs Office,** July 23, 2008.
- **NASA Special Achievement/Act Group Award** for exceptional performance in NDE for shuttle operations and for ARES welds under exploration and for in timely dissemination of information warrants recognition. August 15, 2007.
- NASA Glenn **certificate of appreciation for** outstanding contribution as a mentor to the 2007 Summer Internship Program. July 2007.
- Awarded the prestigious membership grade "**ASME Fellow",** The America Society of Mechanical Engineers, April 2005.
- The American Society for Nondestructive Testing, Inc. **2003 ASNT Outstanding Paper Award for Materials Evaluation**; Volume 60, Number 4, April 2002, ME.
- Life Prediction Branch, NASA Glenn Research Center at Lewis Field **Paper of the Year Award, 2003.**
- **NDE BEST Paper Award** SPIE'S 6th Annual International Symposium on NDE for Health Monitoring and Diagnostics, New Port

Beach, California, 4-8 March 2001.

- NASA Glenn **Certificate of Appreciation** for Outstanding Contribution as a Mentor to the 2002 College L.E.R.C.I.P Internship Program. Summer 2002.
- Turning Goals into Reality" **Award for outstanding contributions** to Enabling Propulsion Materials Team and Exceptional progress toward Revolutionary Technology Leaps, October 10, 2000.
- NASA Glenn **certificate of appreciation for** outstanding contribution as a mentor to the 1999 Summer Internship Program. August 1999.
- **Appreciation Award/Glenn** educational and Research Collaborative Internship program, 1999.
- **Certificate of Appreciation** for significant contributions toward achievement of the NASA High-Speed Research Program goals, 1999.
- NASA High Speed Research (HSR) Program Phase I Award. November 1995.

United States Army Commendation for participating in the investigation of the thermal aspects involved in the life analyses of the Black Hawk Helicopter replacement parts. July 1994.

NASA-Lewis Team AWARENESS Award for Significant Contribution to the Advanced Earth-to-Orbit Propulsion Team project, August 1993.

Space Shuttle Main Engine Durability Team-NASA Group Achievement Award, June 1992.

NASA-Lewis Team AWARENESS Award For Significant Contribution on the HOST (Hot Section Engine Technology) Project, July 1987.

- Member of the American Society of Mechanical Engineers (ASME). (Since 1985), the American Society for Testing and Materials (ASTM). (Since 1988), and the American Society for Nondestructive Testing (ASNT). (Since 1998). International Society of Optical Engineers (SPIE) (since 2000).

Patents/NASA Tech briefs:

Ali Abdul-Aziz et al., NASA Case Number: **LEW-18758-1,** Titled: "***Integrating Multiple Data-Driven Anomaly Detection Techniques with Real Test Data from a Spinning Turbine Engine Like Rotor*** "; selected for publication in NASA's Tech Briefs magazine. May 2, 2011.

YouTube Publications-Video:

Propulsion Health Monitoring at the NASA Glenn Research Center; Published on Nov 5, 2014
The crew at Materials Evaluation visited Mark Woike and Ali Abdul-Aziz at the Glenn Research Center in Cleveland, Ohio to discuss their work with propulsion health monitoring. Their work is described in the Feature Paper of the October 2014 issue of Materials Evaluation. **https://www.youtube.com/watch?v=pSCL5PCMnOw.**

Books chapters Publications.

High Temperature Materials and Mechanisms
https://books.google.com/books?isbn=1466566469, science-2014.

Research & Technology 2001 - Page 134 - Google Books Result
https://books.google.com/books?isbn=1428918213

Research & Technology 1999 - Page 97 - Google Books Result
https://books.google.com/books?isbn=142891823X

Technical Publications:

Refereed conferences and Journal papers:

1. M. Onifade, Ali Abdul-Aziz; **"Experimental and Computational Evaluation of Inconel Alloy 718 Under Tensile Loading: A Combined FEA-DIC Approach";** ASNT Research Symposium, Indianapolis, Indiana, 23 - 27 June 2025
2. Ali Abdul-Aziz, Mubarak Onifade, Kang Lee;" **A parametric Study to Investigate the Effects of Modifier Oxides on A baseline EBC ($Si/Yb_2Si_2O_7$) on Reducing the TGO Growth Rate**" ; The 49th International Conference and Exposition on Advanced Ceramics and Composites, January 26-31, 2025, Daytona Beach, Florda, U.S.A.
3. Ali Abdul-Aziz, **Haley Dees**;" **Winglet shape aerodynamic impact on the Performance of an Aircraft; An Experimental and an Analytical Evaluation**"; Society of Women Engineers; WE Local: Detroit Conference, Huntington Place Convention Center, Detroit, MI, February 17th and 18th, 2023
4. Ali Abdul-Aziz**: "Damage Monitoring of Ceramic Matrix Composites Tested Under Tension Loading Via NDE based Digital Image Correlation Approach"; J. Journal of Materials Evaluation;** the American society of Nondestructive Testing, November 2022.
5. Ali Abdul-Aziz**; "Digital Image Correlation and Its Role in NDE"; J. Journal of Materials Evaluation;** the American society of Nondestructive Testing, November 2022.
6. Ali Abdul-Aziz, **Haley Dees**;" Winglet **shape aerodynamic impact on the Performance of an Aircraft; An Experimental and an Analytical Evaluation**"; Society of Women Engineers; WE Local: Detroit Conference, Huntington Place Convention Center, Detroit, MI, February 17th and 18th, 2023
7. Ali Abdul-Aziz**: "Damage Monitoring of Ceramic Matrix Composites Tested Under Tension Loading Via NDE based Digital Image Correlation Approach"; J. Journal of Materials Evaluation;** the American society of Nondestructive Testing, November 2022.
8. Ali Abdul-Aziz**; "Digital Image Correlation and Its Role in NDE"; J. Journal of Materials Evaluation;** the American society of Nondestructive Testing, November 2022.
9. Ali Abdul-Aziz, Stanley Nerkowski, Isaac Davanzati, **"Turbofan engine performance simulation study under selected failure scenarios of rotating and hot sections components**," Proc. SPIE 12047, Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation XVI, 1204718 (18 April 2022); https://doi.org/10.1117/12.2614953
10. Ali Abdul-Aziz, Stanley Nerkowski, Tristian Little, **"Engine rotor health monitoring: an experimental approach to fault detection using a machine fault simulator,"** Proc. SPIE 12047, Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation XVI, 1204716 (18 April 2022); https://doi.org/10.1117/12.2614950
11. Ali Abdul-Aziz, Samir Mustapha, Ali Fakha; "**Analytical and experimental verification of environmental barrier coating (EBC) covering crack propagation, failure mechanisms, and life modeling**". Proc. SPIE 11592, Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation XV, 115920R (22 March 2021); https://doi.org/10.1117/12.2585384
12. Ali Abdul-Aziz: "**Special Issue "Single Crystal Super Alloy Material Fatigue Behaviour Compared to Ceramic Matrix Composites for Aerospace and Turbine Engine Applications**"; Special Issue Editor, Metals. Mach 2020- March 2021. https://www.mdpi.com/journal/metals/special_issues/Single_Crystal_Super_Alloy.
13. **Ali Abdul-Aziz; "Ceramic Matrix Composites: Performance Evaluation and Application"; Special Issue Editor;** ***Recent Progress in Materials*** ; http://www.lidsen.com/journals/rpm/rpm-special-issues/Ceram-Matr-Compos; September 15, 2020.
14. Dimitri M. Saad[1], Samir Mustapha[1]*, Ahmad Firouzian[2], and Ali Abdul Aziz[3]; "**Propagation Behavior of Elastic Guided Waves in Bi-stable Composite Structures – Experimental and Numerical Investigation**"; Submitted; ***Journal of Wave Motion***, March 2020. ,[1] Department of Mechanical Engineering, American University of Beirut, Beirut, LEBANON,[2]

Department of Mechanical Engineering, Isfahan University of Technology, Isfahan, IRAN,[3] College of Aeronautics and Engineering, Kent State University, Kent, Ohio, USA

15. Ali Abdul-Aziz, Samir Mustapha, Khaled Aboumerhi;" **Numerical Validation using Finite Element to Assess The Performance of Microwave Sensor in Detecting Blade Tip Displacement**"; *Proceedings Smart Materials and Nondestructive Evaluation for NDE and SHM for Energy Systems, Anaheim, California, United States, 26 - 30 April 2020. Proceedings SPIE 2020.* Proceedings Volume 11382, Smart Structures and NDE for Industry 4.0, Smart Cities, and Energy Systems; 1138202 (2020) https://doi.org/10.1117/12.2556194
16. Ali Abdul-Aziz;" Invited **Paper";** "Review of Environmental Thermal Barrier Coating Durability and Current Applications on Ceramic Matrix Composites"; **European Composite Materials Congress, 09 - 11 June 2020, Sweden.**
17. Ali Abdul-Aziz; Mark R. Woike; Robert C. Anderson; Khaled Aboumerhis; **"Propulsion health monitoring assessed by microwave sensor performance and blade tip timing**"; Proceedings Volume 10973, Smart Structures and NDE for Energy Systems and Industry 4.0; 109730Q (2019) https://doi.org/10.1117/12.2515450.
18. M. Fakih, Samir Mustapha, Ali Abdul-Aziz; "Robust Localization and Classification of Barely Visible Indentations in Composite Structures by Fusion of Ultrasonic Damage Indices"; A*SME J Nondestructive Evaluation*. Aug 2019, 2(3): 031004 (12 pages); **Paper No:** NDE-19-1016 https://doi.org/10.1115/1.4044177, **Published Online:** July 16, 2019.
19. Ali Abdul-Aziz, "Damage Detection and Characterization of High-Performance Composites"; **"Durability Modeling Review of Thermal and Environmental Barrier Coated Fiber Reinforced Ceramic Matrix Composites Part I". MDPI, J. Materials (2018),** Special issue of *Materials* (ISSN 1996-1944). This a special issue of *Materials* (ISSN 1996-1944). This special issue belongs to the section. "Advanced Composites". **April-2018.** http://www.mdpi.com/journal/materials/special_issues/Detection_Composite.
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