

Marcias Martinez

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Research Objective

Development of a Holistic Structural Integrity Process for Mechanical and Aerospace Structures.

Current Research Objective

Development and evaluation of Load and Structural Health Monitoring (SHM) systems for the aerospace industry.

Education

Ph.D. in Mechanical Engineering

Carleton University, Ottawa, Ontario, Canada

January 2000 – October 2006

Research: Developed an in-house finite element analysis code to study the behavior of piezoelectric structures in composites materials.

Thesis title: Finite Element Model of Structures with Piezoelectric Elements.

Master in Mechanical Engineering

Carleton University, Ottawa, Ontario, Canada

September 1997 – November 1999

Research: Numerical modeling of the formation of dendrites during the solidification of tertiary alloys composed of Aluminum, Copper and Silicon. The computer model is based on the finite difference method and concentration differences of the three elements to calculate the morphology of the dendrite.

Thesis title: Three Dimensional Computer Modeling of Dendrite Growth in Tertiary Al-Cu-Si Alloys.

Bachelor in Mechanical Engineering

Carleton University, Ottawa, Ontario, Canada

September 1991 – November 1995

Thesis Project: Developed a custom software package to predict austenization time for complete formation of austenite from pearlite, without unnecessary grain growth.

Research Experience

Associate Professor

Clarkson University, Potsdam, NY, USA

August 2015 – To Present

- Principal Investigator on the development of a physics based model known as HoSIP (Holistic Structural Integrity Process), with a primary goal of estimating remaining component life of critical aerospace components.
- Development of a physics based understanding of guided Lamb wave propagation in complex metallic and composite structures.
- Development of a physical understanding of the impact that Environmental Operational Conditions have on the performance of lamb wave based Structural Health Monitoring systems.

Assistant Professor

Delft University of Technology, Delft, The Netherlands

August 2012 – July 2015

- Application on the use of MEMS and Fibre Optic Distributed Sensing Systems for shape and load monitoring of Aerospace Structures. The primary impact of this research has been the utilization of smart sensors for the evaluation and estimation of strain distribution, even in regions where the application of sensors is difficult. Thus, providing the structural integrity research groups an ability to estimate damage growth and its impact on the life of the structure.
- Experimental and numerical study on the effect of variable residual stress fields on the crack growth phenomenon.
- Design and development of an amphibious solar power UAV with incorporated smart sensing technology.
- Secured funding for over €100,000, through a European Union Marie Curie Integration Grant (MASS – Monitoring Aerospace Structural Shapes).
- Secured funding from FLOW, to cover the salary of a Post-Doc Researcher for 2 years for development of load monitoring of wind turbine blades.
- Received a fully paid Ph.D. candidate to work under my supervision from the Brazilian Air Force to study the effects of temperature in variable amplitude loading in composite materials.
- Secured funding from the Rijksmuseum in Amsterdam, for a Ph.D. researcher in order to study the effect of transport on 18th century pastel paintings.
- Secured a permanent contract in the Faculty (Equivalent to Tenure in the USA/Canada)

Research & Industrial Experience

My research and academic experience at Delft University of Technology and Carleton University has always been combined with my full time working experience in industry and government research institutes.

Associate Research Officer

National Research Council of Canada

September 2005 – July 2012

- As primary researcher in the field of Structural Health Monitoring (SHM), I have evaluated and developed sensor technologies and systems for aerospace applications in order to help maintain the structural integrity of civilian and military aircrafts. With the help of my students, I have evaluated the capabilities of the Acellent System, Microstrain Wireless Technology, Surface Mountable Crack Sensor, strain gauges and MEMS for SHM and load monitoring applications.
- Secured customer research funding in the excess of \$1.5 million (CAD) over 5 years, for developing SHM platforms to help evaluate SHM system under realistic load and service conditions.
- Program manager and primary researcher on the use of the Smart Patch software®. The program consisted in the development of technology to determine the load carrying capabilities of a bonded patch and evaluation of sensors to detect disbonding in adhesive joints and repairs.
- Worked as a Program Manager and primary researcher on health monitoring systems for

- rotary wing (CH-149) and fixed wing aircrafts (CF-18).
- Developed Finite Element Analysis software in C and C++ for smart material (piezoelectric composites) applications. The in-house FEA code was validated with ABAQUS. It is also important to note that the in-house FEA software attracted attention of the Ottawa Hospital for the design of smart material sensors for biomedical applications.

CMP Design Inc., Ottawa, Canada

Thermal Analyst,

2000 – July 2005

- Manager of the Zimac Laboratories division at Chateaugay Metal Products Inc.
- Primary research engineer in charge of sustaining and improving the design of equipment used in patch bonding technology for aircraft structures such as CF18 and F16. The developed equipment was also used to perform retrogression re-aging, RRA, of aluminum structures. RRA is used as a means for increasing the corrosion resistance of the material while sustaining the strength of the structure through a specialized in-situ heating process thus providing large savings to the different fleet managers.
- Designed Midplanes/Backplanes and other PCB cards using PCB tools (Pro-E 2000i) for high-speed telecommunication systems while optimizing their design utilizing CFD/Thermal Analysis tools for efficient air ventilation and heat removal using Flotherm V3.1 while considering EMI containment issues.

WorldHeart, Inc. Ottawa, Canada

Process Engineer,

1998–2000

- Assisted in the design, characterized and qualified using ISO 9000 standards for an axial flow pump for a left ventricular assist device (artificial heart).
- Test Engineer responsible for performing theoretical analysis on electrical, mechanical and hydraulic efficiencies followed by experimental verification.
- Designed fixtures and surgical tools using Pro-Engineer version 19 and 2000i, for Medical Doctors in charge of implanting a left ventricular assist device (LVAD).

Unit Instruments, Inc., Yorba Linda, CA, USA

Manufacturing Engineering,

June 1995– July 1997

- Project Manager in charge of qualifying, validating for manufacturing and implementing new manufacturing processes for two mass flow controllers (UFC-8100 and UFC 8260). The estimated time to perform this task was six months; however I was able to complete the task in three months.
- Evaluated and improved utilizing statistical process control (SPC) the cleaning procedures of stainless steel components used in the manufacturing of mass flow controllers. This helped the company increase quality, throughput and efficiency. Utilizing process improvement tools, cleanliness levels in stainless steels parts were increased from 900 ppb. to less than 100 ppb.

Teaching &
Supervision
Experience at
Clarkson
University

Associate Professor

Clarkson University, Potsdam NY, USA

August 2015 – To Present

Recipient of the 2016-2017 Clarkson University Student Association Outstanding Teacher Award. This award is given annually by the Clarkson University Student Association to a professor who makes a significant contribution to education and teaching at Clarkson University.

Since 2015, as an Associate Professor I am in charge of teaching the following undergraduate/graduate courses:

Multidisciplinary Design Course – HoUse in a Box (HUB)

January 2017 – Present

Clarkson University, Potsdam NY, USA

This course consisted in providing a challenge of designing a House that can fit into a box for people that have been affected by a natural disaster. The HUB project/course provided an opportunity for the development of a multidisciplinary team consisting of the following majors: Aeronautical Engineering, Mechanical Engineering, Electrical Engineering, Engineering Management, Communication and Media, Sustainability and Supply Chain. This multidisciplinary course forced the students to operate a CAPSTONE style project in a realistic industrial environment.

Introduction to Aeronautical Engineering

January 2017 – Present

Clarkson University, Potsdam NY, USA

This courses consists in providing 2nd Year students the basics of flight mechanics, aerodynamics, structural analysis and controls. The students are evaluated via assignments, midterms and one final exam.

Aircraft Design II

January 2016 – May 2016

Clarkson University, Potsdam NY, USA

This course challenged the students to design an Amphibious Solar Powered UAV for surveillance of the coast of Puerto Rico. The course culminated in a presentation of their design with industry partners. **The student's feedback and evaluation on the instructor was 4.3 out of 5 (2016)**

Holistic Structural Integrity Process (HoSIP)

January 2016 – To Present

Clarkson University, Potsdam NY, USA

The course discussed a Holistic Structural Integrity Process (HoSIP) founded upon the primary idea that all failure mechanisms involved in the degradation of the structure are interconnected and should not be analyzed as merely the sum of individual mechanisms. In reality many failure mechanisms interact synergistically and are much more complex and challenging to understand, and thus the requirement for a holistic physics based analysis and design approach to structural integrity problems. The final goal of this holistic approach is to more accurately assess the reliability and structural integrity of aerospace and wind energy structures while maintaining and achieving higher safety conditions. Although the topic is primarily focused on Aerospace and Mechanical Engineering applications, the reality is that the holistic philosophy can be applied to a variety of structural integrity problems.

The student's feedback and evaluation on the instructor was 5 out of 5 (2016)

Stability and Control of Aeronautical Vehicles
Clarkson University, Potsdam NY, USA

August 2015 – To Present

Lectured senior engineering students on the basic principles of Aircraft Stability and Control. Encouraged the students to develop X-Plane models to model the behavior of an aircraft as part of the course evaluation.

The student's feedback and evaluation on the instructor was 4.6 out of 5 (2015), 4.3 (2016)

Thesis Supervised by Dr. Martinez at Clarkson University

Mr. Alessandro Baldassarre - Status: In progress

Ph.D. Thesis: Fatigue of Composite Structures.
Clarkson University, January 2016- to present

Francesco Falcaltelli - Status: In progress

Supervisors: Dr. Enrico Troiani, Dr. Marcias Martinez
M.Sc. Thesis: Modeling and simulation of Lamb Wave propagation behavior.
Clarkson University & University of Bologna, December 2017- to May 2018

Matteo Marcantoni- Status: In progress

Supervisors: Dr. Alessandro Ceruti, Dr. Marcias Martinez
M.Sc. Thesis: Morphing Wing of a Trailing Edge
Clarkson University & University of Bologna, June 2017- to May 2018

Nicolo Facciotto - Status: Completed

Supervisors: Dr. Enrico Troiani, Dr. Marcias Martinez
M.Sc. Thesis: Source Identification and Classification of Acoustic Emission Signals by a SHAZAM inspired pattern recognition algorithm.
Clarkson University & University of Bologna, September 2014- to March 2017

Mr. Facciotto, was sent to study his M.Sc. research project by the University of Bologna, under my supervision at Clarkson University. He was self-supported for the entire duration of his stay (6 months - Equivalent of \$37,500).

Mr. Jacob Miller - Status: Completed

Supervisors: Dr. Marcias Martinez, Dr. Kerop Janoyan
M.Eng. Thesis: SLAM algorithm for flying UAVs through complex structures.
Clarkson University, September 2015- to May 2017.

Honor Thesis Supervised by Dr. Martinez at Clarkson University

- Sean Gauntt – Lamb Wave study in composite materials.

Teaching &
Supervision
Experience at
TU Delft

Associate Professor (Dual Appointment)

Delft University of Technology, Delft, The Netherlands

August 2012 – Present

In order to continue supervising my Ph.D. students at Delft University of Technology, the Faculty of Aerospace Engineering at TU Delft has allowed me to remain connected to the department as an Associate Professor of the Structural Integrity and Composite group.

Assistant Professor

Delft University of Technology, Delft, The Netherlands

August 2012 – August 2015

Since 2012, as an Assistant Professor, I supervise M.Sc. and Ph.D. candidates performing state of the art research in Structural Health Monitoring and Smart Structures. In addition, I teach several undergraduate and graduate courses within the department of structural integrity and composites.

Statics

Delft University of Technology, Delft, The Netherlands

September 2012 and 2013

Lectured over 440, first year engineering students on the basic principles of Statics/Mechanics. The student's feedback and evaluation on the course was 4.31 out of 5 (2012), 4.36 out of 5 for (2013) and 4.41 out of 5 (2014).

Tutor for the Design and Synthesis Exercise

Unmanned Aerial Vehicle Cargo Delivery System (UAV-CDS)

2013 -2014

Lead a design team on the development of UAV Cargo Delivery System. The primary objective of this design was to provide humanitarian support for the International Red Cross.

Tutor for the Design and Synthesis Exercise

Solar Powered Amphibious Unmanned Aerial Vehicle (UAV)

2012 -2013

Lead a design team on the development of an amphibious solar powered UAV for maritime surveillance operations. The results of this design are the basis for a research and development project within the faculty of aerospace. The feedback from the students on our approach was evaluated very positively (9.33 out of 10).

Thesis Supervised at Delft University of Technology:

Miss Leila Sauvage

Supervisors: Dr. Marcias Martinez, Dr. Bill Wei

Ph.D. Thesis: Life Assessment of 18th Century Pastel Paintings under Transport Loading
Delft University of Technology, September 2014- to present

Mr. Cornelis de Mooij

Supervisors: Dr. Marcias Martinez,

Ph.D. Thesis: Load Monitoring of Aerospace Structures through an Inverse Finite Element Method.
Delft University of Technology, September 2014- to present

Mr. Fabricio Ribiero

Supervisors: Dr. Marcias Martinez, Dr. Calvin Rans

Ph.D. Thesis: Fatigue of composite delamination under variable amplitude loading with temperature effects.

Delft University of Technology, February 2014- to present

Miss Maria Barroso Romero

Supervisors: Dr. Marcias Martinez, Dr. Roger Groves

Ph.D. Thesis: Time Reversal Methodology in Damage Detection for Structural Health Monitoring Applications

Delft University of Technology, September 2012- to Present

Mr. Ewoud Aaij - Status: Completed

Supervisor: Dr. Marcias Martinez,

M.Sc. Thesis: Lamb Wave Propagation in Sandwich Composite Structures

Delft University of Technology, March 2013-to be completed April 2016

Dr. Aubryn Cooperman - Status: Completed

Supervisor: Dr. Marcias Martinez,

Post-Doctoral Study: Load Monitoring of Wind Energy and Aerospace Structures through Shape Sensing.

Delft University of Technology, September 2013-to be completed August 2015

Mr. Alexandru Vargalui - Status: Completed

Supervisor: Dr. Marcias Martinez,

M.Sc. Thesis: A.E. implementation on a UAV Wing.

Delft University of Technology, March 2014-to be completed May 2015

Mr. Rutger Stottelaar - Status: Completed

Supervisors: Dr. Marcias Martinez and Dr. Behnam Asharif (NRC)

M.Sc. Thesis: Effects of Humidity on the development of CNT Sensor.

Delft University of Technology, January 2014- January 2015

Mr. Maurice Boon - Status: Completed

Supervisors: Dr. Marcias Martinez and Dr. Daniel Gagar (Cranfield University),

M.Sc. Thesis: Temperature and Load Effects in Modeling and Experimental Verification on Acoustic Emission Signals for Structural Health Monitoring Applications

Delft University of Technology, September 2013-July 2014

Miss Patricia Martinez – Status: Completed

Supervisor: Dr. Marcias Martinez

M.Sc. Thesis: Development of an Instrumented UAV Wing

Delft University of Technology, September 2013-March 2014

Mr. Tom Lotz - Status: Completed

Supervisor: Dr. Marcias Martinez, Dr. Rene Alderliesten,

M.Sc. Thesis: Crack Growth Study on thick aluminum components with variable residual stress fields

Delft University of Technology, The Netherlands, October 2012 to January 2014

Mr. Darun Barazanchy - Status: Completed

Supervisors: Dr. Marcias Martinez, Dr. Bruno Rocha (NRC)

M.Sc. Thesis: Modeling of Lamb Waves in Composite Structures using the Time Reversal Approach for SHM applications

Delft University of Technology, The Netherlands, January 2013 to August 2013

**Supervision
Experience at
Carleton
University**

Carleton University, Ottawa, Canada

2008 - Present

Since 2008, as an Adjunct Professor, I supervise M.Sc. and Ph.D. candidates performing state of the art research in Structural Health Monitoring and Smart Structures.

4th Year Unmanned Air Vehicle (UAV) Project MECH 4907 / AERO 4907, 2009-2011

Carleton University, Ottawa, Canada

- As an Adjunct Professor, I have served as an external advisor to undergraduate students in the development and design of a Structural Health Monitoring System for a UAV. As the lead engineer, I supported the structures team in the development of the composite structure of the aircraft.

Feedback and Control Systems, MAAE 4500, 2004-2008

Carleton University, Ottawa, Canada

- Lectured 4th year undergraduate students on the principles and applications of feedback and control systems including the design of PID controllers using Matlab.
- Student course evaluation: Fall 2007-2008 (4.12/5), Fall 2006-2007 (4.02/5), Fall 2005-2006 (4.22/5), Fall 2004-2005 (4.08/5)

CAD/CAM, MECH 4705, 2000-2001

Carleton University, Ottawa, Canada

- Lectured students on the use CAD/CAM technology using Pro/Engineering CAD package as a mechanical design-engineering tool.
- Student course evaluation (4.22/5)

Thesis Supervised at Carleton University:

Mr. Prem Anand – Status: Completed

Supervisors: Prof. Jeremy Laliberte and Prof. Marcias Martinez

M.a.Sc. Thesis: SHM utilizing Rayleigh Backscattering

Carleton University, Ottawa, Canada, May 2015 to May 2017.

Dr. Christian Garcia – Status: Completed

Supervisors: Prof. Marcias Martinez and Prof. Andrei Artemev

Ph.D. Thesis: Modeling of Residual Stress Fields and their Effects on Fatigue Crack Growth

Carleton University, Ottawa, Canada, January 2011 to be completed in May. 2015.

Dr. Shashank Pants – Status: Completed

Supervisors: Prof. Jeremy Laliberté, Prof. Marcias Martinez

Ph.D. Thesis: Detection and Characterization of Low Velocity Impact Damage on Foam-Core Carbon Fiber Sandwich Composite Structures.

Carleton University, Ottawa, Canada, September 2009 to June 2014.

Mr. Ghazi H. Alsuruji – Status: Completed

Supervisors: Prof. Andrei Artemev & Prof. Marcias Martinez

M.a.Sc. Thesis: Cellular Model Simulations of Solidification Structures in Binary Alloys

Carleton University, Ottawa, Canada, September 2011 - May 2013

Mr. Fady Habib – Status: Completed

Supervisors: Prof. Marcias Martinez & Prof. Andrei Artemev

M.a.Sc. Thesis: Structural Health Monitoring of Bonded Composite Joints
Carleton University Ottawa, Canada, May 2009 to December 2011

Mr. Robert Kernaghan – Status: Completed

Supervisors: Prof. Marcias Martinez & Prof. Andrei Artemev

M.a.Sc. Thesis: Finite Element Analysis of Morphing Structures
Carleton University Ottawa, Canada, September 2008 to December 2011

Mr. Terrence Cheung – Status: Completed

Supervisors: Prof. Marcias Martinez & Prof. Andrei Artemev

M.Eng. Project: Delamination Growth Prediction in Composite Patched Repairs
Carleton University Ottawa, Canada January 2008 to December 2011

Undergraduate Student Supervision: I have supervised a total of 7 undergraduate student, since September 2005, as part of an industrial experience program at the National Research Council of Canada.

Book Chapters

1. **M. Martinez**, M. Yanishevsky, B. Rocha, N.C. Bellinger, "21 - Maintenance and monitoring of composite helicopter structures and materials", Published by Woodhead Publishing, UK, May 2015. DOI: <http://dx.doi.org/10.1016/B978-0-08-100137-0.00021-3>.
<http://store.elsevier.com/product.jsp?isbn=9780081001370>
2. N.C. Bellinger and **M. Martinez**, "Environmental Monitoring of Aircraft", in Encyclopaedia of Structural Health Monitoring, Boller, C., Chang, F. and Fujino, Y. (eds), John Wiley & Sons Ltd, Chichester, UK, DOI: 10.1002/9780470061626.shm191, pp. 1523-1530. September 2009.

Refereed Publications

1. Fabricio N. Ribeiro, **Marcias Martinez**, Calvin Rans, Rinze Benedictus, "Evaluation of mode II fatigue disbonding using central cut plies specimen and distributed strain sensing technology", Submitted for the consideration of the Journal of Adhesion, GADH-2017-0161, November 2017.
2. **M. Martinez**, S. Pant, M. Yanishevsky, D. Backman; "Residual Stress Effects of a Fatigue Crack on Guided Lamb Waves", Published in the journal of Smart Materials and Structures, 26(11),115004, September 2017.
3. T. Zhao, G. Palardy, I. Fernandez Villegas, C. Rans, **M. Martinez**, R. Benedictus; "Mechanical Behaviour of Thermoplastic Composites Spot-Welded and Mechanically Fastened Joints: A Critical Comparison"; Published in the Journal of Composites Part B, December. 2016
4. S. Pant, J. Laliberte, **M. Martinez**, and B. Rocha, "In-situ characterization of isotropic and transversely isotropic elastic properties using ultrasonic wave velocities", Published in the Journal of ASTM International, Material Performance and Characterization. MPC-2015-0021. March 2016.
5. C. Garcia, T. Lotz, **M. Martinez**, A. Artemev, R. Alderliesten, R. Benedictus, "Fatigue Crack Growth in Residual Stress Fields", Published in the International Journal of Fatigue, 87, pp. 326-338. DOI: 10.1016/j.ijfatigue.2016.02.020, February 2016.
6. P. Martinez-Bueno, **M. Martinez**, C. Rans, R. Benedictus, "Strain Monitoring using a Rayleigh Backscattering System for a Composite UAV Wing Instrumented with an Embedded

- Optical Fiber", Published in the Journal of Advanced Materials Research Vol. 1135 (2016) pp. 1-19. doi:10.4028/www.scientific.net/AMR.1135.1, ISSN: 1662-8985, Nov. 19-2015.
7. S. Pant, J. Laliberte, **M. Martinez**, B. Rocha, and D. Ancrum, "Effects of composite lamina properties on fundamental Lamb wave mode dispersion characteristics", published in the Journal of Composite Structures. doi:10.1016/j.compstruct.2015.01.017, January 2015.
 8. D. Barazanchy, **M. Martinez**, B. Rocha, M. Yanishevsky; "A Hybrid Structural Health Monitoring System for the Detection and Localization of Damage in Composite Structures", Published in the Journal of Sensors, September 2014.
 9. A. Cooperman, **M. Martinez**, "Load Monitoring for Active Control of Wind Turbines – A Review Article", Published in the Journal of Renewable & Sustainable Energy Reviews, doi: 10.1016/j.rser.2014.08.029, August 2014.
 10. S. Pant, J. Laliberte, **M. Martinez**, B. Rocha, "Derivation and experimental validation of Lamb wave equations for an n-layered anisotropic composite laminates", Published in the Journal of Composite Structures, January 2014, <http://dx.doi.org/10.1016/j.compstruct.2014.01.034>
 11. **M. Martinez**, B. Rocha, M Li, A. Beltempo, R. Rutledge, and M. Yanishevsky, "Load Monitoring of Aerospace Structures utilizing Micro-Electro Mechanical Systems (MEMS) for Static and Quasi-Static Loading Conditions", Published in the Journal of Smart Materials and Structures, 21 (2012) 115001 (11pp), doi:10.1088/0964-1726/21/11/115001, September 14 2012.
 12. F. Habib, **M. Martinez**, A. Artemev, M. Brothers, "Structural Health Monitoring of Bonded Composite Repairs Based on Acoustic Lamb Waves", Published in the Journal of Composites Part B., November 2012.
 13. B. Ashrafi, L. Johnson, Y. Martinez-Rubi, **M. Martinez**, N. Mrad, "SWCNT-Modified Epoxy Thin Films for Continuous Crack Monitoring of Metallic Structures", Published in the Journal of Structural Health Monitoring, Vol. 11, Issue 5 September 2012 pp. 589 – 601.
 14. V. Wickramasinghe, Y. Chen, **M. Martinez**, F. Wong, R. Kernaghan, "Design and Verification of a Smart Wing for an Extreme-Agility Micro-Air-Vehicle", *Smart Mater. Struct.* Vol. 20, 125007, 2011, [doi:10.1088/0964-1726/20/12/125007](https://doi.org/10.1088/0964-1726/20/12/125007). **(IOP Editor's Choice Recognition)**
 15. **M. Martinez**, A. Artemev, "A Novel Approach to a Piezoelectric Sensing Element"; Published in the Journal of Sensors, vol. 2010, Article ID 816068, 5 pages, 2010, doi:10.1155/2010/816068.
 16. M. Yanishevsky, **M. Martinez**, C. Mandache, M. Khan, A. Fahr, D. Backman, "Artificial Seeding of Fatigue Cracks in NDI Reference Coupons", Published in Insight – Non-Destructive Testing and Condition Monitoring, Journal of The British Institute of Non-Destructive Testing, October 2010.
 17. **M. Martinez**, R. Kernaghan, A. Artemev, "Finite Element Analysis of Broken Fibre Effects on Hollow Active Fibre Composites", *Journal of Intelligent Material Systems and Structures*, Vol. 21, January 2010, pp. 107-113.
 18. **M. Martinez**, A. Artemev, "Finite Element Analysis of Broken Fibre Effects on the Performance of Active Fibre Composites", *Journal of Composites Structures* 2008. Available online 20 June 2008, [Vol. 88, Issue 3](#), May 2009, Pages 491-496.
 19. M. Genest, **M. Martinez**, N. Mrad, G. Renaud, "Pulsed Thermography for Non-destructive Evaluation and Damage Growth Monitoring of Bonded Repairs", JA-SMPL-2007-0088, *Journal of Composites Structures* 2008, February 2008.
 20. **M. Martinez**, A. Artemev, "Three Dimensional Computer Model of Dendrite Growth in Al-Si-Cu tertiary alloys", The Scientific Committee, 12th ICMCM Chicago, USA, Mathematical modeling and Scientific Computing Vol. 13, No. 3, Page 247, 2001.

Conference

1. Leila Sauvage, W. (Bill) Wei, and **Marcias Martinez**; "When conservation meets

Papers

- engineering: predicting the damaging effects of vibrations on pastel paintings", Studies in Conservation, Princeton, NJ, Nov 2017, USA.
2. Nicolò Facciotto, **Marcias Martinez**, Enrico Troiani, Source Identification and Classification of Acoustic Emission Signals by a SHAZAM Inspired Pattern Recognition Algorithm, IWSHM Conference 2017, September 2017, Palo Alto, California, USA.
 3. C. de Mooij; **M. Martinez**; R. Benedictus; "Sensor Fusion for Shape Sensing: Theory and Numerical Results", Proceedings of the International Conference of Adaptive Structure and Technologies (ICAST), Lake George, NY, USA, Oct. 2016.
 4. F. Ribeiro, **M. Martinez**, C. Rans, Evaluation of Mode II Fatigue Durability of Bonded Composite Repairs using the Central Cut Plies Specimen, Proceedings of the Meeting on Aeronautical Composite Materials Structures, MACMS 2015, Sao Paulo, Brazil, December 3rd-4th, 2015.
 5. A. Vargalui, **M. Martinez**, D.S. Zarouchas, S. Pant, Temperature effects on an acoustic emission based SHM system - Applied to composite materials-, International Conference of Adaptive Structure and Technologies – ICAST, Kobe, Japan, October 2015.
 6. H. Truong, **M. Martinez**, O. Ochoa and D. Lagoudas, Experimental and Computational Investigation of Hybrid Interfaces in Hybrid Composite Laminates, 30th American Society for Composites, East Lansing, MI, September-2015.
 7. Hieu T.X. Truong, **Marcias J. Martinez**, Ozden O. Ochoa and Dimitris C. Lagoudas, An Investigation on Hybrid Interface using on-line monitoring experiment and finite element analyses, 20th International Conference on Composite Material (ICCM), Copenhagen, July 19th-24-2015.
 8. A. Cooperman, **M. Martinez**, MEMS inertial sensors for load monitoring of wind turbine blades, Proceedings of SPIE Smart Structures/NDE 2015, San Diego, California, 03/2015.
 9. A. Cooperman, **M. Martinez**, MEMS for structural health monitoring of wind turbine blades, Proceedings of the International Conference on Adaptive Structure and Technologies, The Hague, Netherlands, October 2014.
 10. J. Sodja, R. de Breuker, **M. Martinez**, "Experimental Evaluation of the Morphing Leading Edge Concept", Accepted for publication in the Proceedings of the American Institute of Aeronautics and Astronautics Science and Technology Forum 2015, June 2014.
 11. D. Gagar, **M. Martinez**, P. Foote, "Development of generic methodology for designing a Structural Health Monitoring installation based on Acoustic Emission Technique", Submitted for the consideration of the Proceeding of the 3rd International Conference on Through-life Engineering Services, 4-5th November 2014
 12. M.J.G.N. Boon, D. Zarouchas, **M. Martinez**, D. Gagar, R. Benedictus, P. Foote, Temperature and Load Effects on Acoustic Emission Signals for Structural Health Monitoring Applications, Submitted for the consideration in the Proceedings of the 7th European Workshop on Structural Health Monitoring, July 8th-11th 2014, Nantes, France.
 13. Maria Barroso-Romero, Darun Barazanchy, **Marcias Martinez**, Roger M. Groves, Rinze Benedictus, Time Reversal of Lamb Waves for Damage Detection in Thermoplastic Composites, Proceedings of the International Conference on Adaptive Structure and Technologies, Aruba, 2013.
 14. Jeremy Bussieres, **Marcias Martinez**, Darun Barazanchy, Dimitri Debruyne, Pascal Lava, "Load monitoring using a Rayleigh backscattering fibre optic system", Proceedings of the International Conference on Adaptive Structure and Technologies, Aruba, 2013.
 15. S. Pant, J. Laliberte, **M. Martinez**, "Structural Health Monitoring (SHM) of Composite Aerospace Structures Using Lamb Waves" Proceedings of the 19th International Conference on Composite Materials', July 28,2013.
 16. **M. Martinez**, D. Bürger, C. Rans, F. Habib, A. Artemev, "Structural Health Monitoring of

- Bonded Repairs", Accepted for publication in the proceedings of the ICCE-21, Tenerife, Spain 2013
17. D. Gagar, **M. Martinez**, M. Yanishevsky, B. Rocha, J. McFeat, P. Foote, P. Irving, "Detecting and locating fatigue cracks in a complex wing-box structure using the acoustic emission technique: A verification study", Submitted for publication in the proceedings of the International Workshop on Structural Health Monitoring, Palo Alto, California 2013. DOI: 10.13140/2.1.1548.3844
 18. S. Pant, J. Laliberte, **M. Martinez**, "Development of a Structural Health Monitoring (SHM) System for Aerospace Structures", Submitted to the CASI 60th Aeronautics Conference and AGM, 22nd CASI Aerospace Structure and Materials Symposium, April 30th till May 2nd 2013, Toronto, Ontario, Canada.
 19. Rocha, B., Yanishevsky, M., Beltempo, A., Rutledge, R., Bellinger, N. and **Martinez, M.**, "Global Framework for the Assessment, Development and Demonstration of Structural Health and Load Monitoring Systems", CASI 60th Aeronautics Conference and AGM, 22nd CASI Aerospace Structure and Materials Symposium, Montreal, Canada. 2013
 20. D. Backman, **M. Martinez**, "Validation of a Structural Health and Loads Monitoring Platform ", Published in the 27th ICAF Symposium, 5-7 June 2013, Jerusalem, Israel.
 21. **M. Martinez**, B. Rocha, M. Li, G. Shi, A. Beltempo, R. Rutledge, M. Yanishevsky, "Load Monitoring of Aerospace Structures using Micro Electro Mechanical Systems (MEMS)", SMASIS 2012, ASME 2012 Conference of Smart Materials, Adaptive Structures and Intelligent Systems, Stone Mountain, September 2012, Georgia, USA
 22. F. Habib, **M. Martinez**, A. Artemev, M. Genest, M. Brothers, "Structural Health Monitoring of Bonded Composite Repairs", Published in the proceedings of the International Conference of Adaptive Structure and Technologies (ICAST), October 10-12, 2010, Corfu, Greece.
 23. A. Liu, C. Cheung, **M. Martinez**, "Use of artificial neural networks for helicopter load monitoring". In Proc. 7th DSTO Intl Conference on Health and Usage Monitoring, March 2011. Melbourne, Australia.
 24. **M. Martinez**, A. Artemev, "Piezoelectric Sensing Element for Hydrostatic Pressure Measurements", Published in the proceedings of the International Conference of Adaptive Structure and Technologies (ICAST), October 4-7, 2010, State College, PA, USA.
 25. F. Habib, **M. Martinez**, A. Artemev, M. Genest, M. Brothers, "Damage Detection and Quantification using the Acellent ScanGenie Acusto-Ultrasonic System", Published in the proceedings of the International Conference of Adaptive Structure and Technologies (ICAST), October 4-7, 2010, State College, PA, USA.
 26. Banerjee, S., Beard, S.J., Habib, F., **Martinez, M.**, "Damage Quantification using SmartPatch System for Hot Spot Monitoring", to be published in the proceedings of SPIE Smart Structures and Materials + Non-destructive Evaluation and Health Monitoring, 7-11 March 2010, San Diego California, USA.
 27. Wickramasinghe, V., Chen, Y., Martinez, M., Kernaghan, R., Wong, F. "Design and Verification of a Smart Wing for a Micro-Air-Vehicle", 50th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference, 4-7 May 2009.
 28. **Martinez, M.**, Chen, Y., Wickramasinghe, V., Wong F. "Adaptive Airfoil Wing for Micro UAV Flight Control", 19th International Conference on Adaptive Structures and Technologies, 6-9 October 2008, Ascona Switzerland.
 29. Wickramasinghe, V., Chen, V., Nejad-Enasn, M., **Martinez M.**, and Wong, F. "Verification of a Smart Wing Design for a Micro-Air-Vehicle through Simulation", CANSMART 2008: 11th International Workshop on Smart Material and Structures, 23-24 October 2008.
 30. **Martinez M**, Gang Li, Backman D., Oudovikine AI, and Bellinger N. "Crack Detection on

Composite and Metallic Aerospace Structures", 4th European Workshop on Structural Health Monitoring, 2-4 July 2008, Crakow, Poland.

31. **M. Martinez**, T. Marincak, T. Benak and N.C. Bellinger, "Prototype Installation of a Surface Mountable Crack Sensor", Aging Aircraft Conference 2008, 20-24 April 2008, Phoenix, AZ, USA.
32. **Martinez, M.**; Jodoin, A.; Backman, D.; Marincak, T.; Li, G.; "Development study of an in-flight damage monitoring system", CANCOM 2007 The Sixth Canadian-International Composites Conference From 14-Aug-2007 To 17-Aug-2007, Winnipeg, Manitoba, Canada.
33. Renaud, G., **Martinez, M.**, and Backman, D., Finite Element Design and Analysis of a Damage Prone Bonded Patch for Disbond Sensing Applications, 22nd Annual Technical Conference of the American Society for Composites, 17-19 September 2007.
34. Schnackenburg, K., **Martinez, M.**, Laliberté, J. and Dawson, J. "Towards Better Artificial Insect Wings for Flow Visualization and Micro-Air Vehicles" 2007 International Conference on Adaptive Structures Technology (ICAST), Ottawa, ON, October 2007.
35. Backman D., **Martinez, M.**, Reaud G., Genest M., Chisholm, K., "Thermoelastic Stress Analysis to Detect Disbonding in a Composite Patch", Submitted for publication in the Society of Experimental Mechanics, 3-6 June 2007.
36. **Martinez, M.**, Renaud. G., Backman D., Genest M., Delannoy M., "Demonstration of an Instrumented Patch", 14th International Symposium on: Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring (SPIE Symposium), 18-23 March 2007.
37. **M. Martinez**, A. Artemev, F. Nitzsche and B. Geddes, "Finite Element Modeling of Actuated Fibre Composites" Proceedings of Third International Conference on High Performance Structures and Materials HPSM 2006. 3-5 May 2006, Ostend, Belgium. Published by WIT Press, Ed. C.A. Brebbia, 2006, p. 103-110.
38. M. Melnykowycz, **M. Martinez**, F. Nitzsche, M. Barbezat, and A. Artemev, "Active Airfoil Design and Finite Element Analysis of Smart Structures for Rotor Blade Applications" Proceedings of 16th International Conference on Adaptive Structures and Technologies, Paris, France, 9-12 October 2005, DEStech Publications, p. 182-189.
39. **M. Martinez**, M. Melnykowycz, A. Artemev, and F. Nitzsche, Finite Element Analysis of Actuated Fibre Composites. Proceedings of CANSMART 2005, International Workshop on Smart Materials & Structures. 13-14 October 2005, Toronto, Ontario, Canada. p. 231- 240.

Poster Presentation

1. Miller, J., Janoyan, K., Backus, E., Valyou, D. and **Martinez, M.**, "Infrastructure Inspection with Full-Field UAS, International Conference of Adaptive Structure and Technologies," ICAST 2016, Lake George, NY, USA (Oct. 2016).
2. Facciotto, Nicolò, **Martinez, M.** and Enrico, T., "Emission Signals by Time-Frequency Analysis," International Conference of Adaptive Structure and Technologies, ICAST 2016, Lake George, NY, USA (Oct. 2016).
3. Piccioni, F., **Martinez, M.** and Enrico, T., "Cure monitoring of uni-directional composite laminas utilizing a Distributed Sensing Rayleigh Backscattering System," International Conference of Adaptive Structure and Technologies, ICAST 2016, Lake George, NY, USA (Oct. 2016).
4. Leila Sauvage, **Marcias Martinez**, Bill Wei, "Fragile Handle with Care! The effects of vibrations on pastels in transport", International Association of Book and Paper Conservators, Berlin, Germany, 12-16th of October 2015.
5. Cornelis de Mooij, **Marcias Martinez**, Rinze Benedictus, Sensor Fusion Applied to Shape Sensing – Theory and Numerical Proof of Concept, International Conference of Adaptive

Structure and Technologies, Kobe, Japan, October 2015.

Selected Government Publications

1. **Martinez, M.**, Rocha, B., Li, M., Beltempo, A., Yanishevsky, M., and Rutledge, R.S., "Micro-Electro-Mechanical Systems (MEMS) for Static and Quasi-Static Load Monitoring Applications", LTR-SMPL-2011-0222, 9/26/2011.
 2. Beltempo, A., Yanishevsky, M., Shi, G., **Martinez, M.**, Rutledge, R., Rocha, B., Wickramasinghe, V., and Chen, E., "SHM Platform 1A Collaborator Information Package", LTR-SMPL-2011-0255, 11/17/2011.
 3. Liu, A., Cheung, C., and **Martinez, M.**, "Initial study using artificial neural networks for helicopter loads estimation", LTR-SMPL-2011-0198, 8/30/2011.
 4. **Martinez, M.**, Benak, T., and Delannoy, M., Surface Mountable Crack Sensor Installation Procedure, 6 March 2009, LM-SMPL-2009-0046.
 5. **Martinez, M.**, Genest, M., Renaud, G., Backman, D., Delannoy, M., and Brothers, M., Demonstration of an Instrumented Patch - Phase I, 14 December 2006, LTR-SMPL-2006-0226.
 6. **Martinez, M.**, and Delannoy, M., Bonded Health Monitoring of an Instrumented Patch on FT193, 23 August 2006, LM-SMPL-2006-0150.
- Since 2005, I have published over 25 internal lab technical reports at the NRC.

Invited Lectures & Keynote Speaker

Invited Lectures/Seminar:

1. **Martinez, M.**, "ALEX- The Medical Doctor of the Aerospace Industry", Invited Seminar, Penn State University, Nov 11th 2016.
2. **Martinez, M.**, "ALEX- The Medical Doctor of the Aerospace Industry", Invited Seminar, Clarkson University, October 2016.
3. **Martinez, M.**, "ALEX- The Medical Doctor of the Aerospace Industry", Invited Seminar, University of Vermont, Burlington VT, October 2016.
4. **Martinez, M.**, "The Aid Plane, A Cargo Delivery System", Invited Speaker on Sustainability, Clarkson University, September 2016.
5. **Martinez, M.**, "ALEX – The Medical Doctor of the Aerospace Industry", Invited Seminar, U.S. Army Research Laboratory, USA. November 2015.
6. **Martinez, M.**, "ALEX – The Medical Doctor of the Aerospace Industry", Invited Seminar Speaker, Sapienza University of Rome, Italy, May 5th 2015.
7. **Martinez, M.**, "ALEX – The Medical Doctor of the Aerospace Industry", Invited Seminar Speaker, University of Twente, The Netherlands, April 2nd 2014.
8. **Martinez, M.**, "ALEX – The Medical Doctor of the Aerospace Industry", Invited Seminar Speaker, Texas A&M, College Station, 20th of February 2014.
9. **Martinez, M.**, *et al.*, "Piezoelectric Sensing Element for Biomedical Applications", Invited talk at: The 20th IEEE International Symposium on Applications of Ferroelectrics, International Symposium on Piezoresponse Force Microscopy & Nanoscale Phenomena in Polar Materials, Vancouver, BC, Canada, July 24-27-2011.
10. **Martinez, M.** "Structural Health Monitoring Systems and Non-Destructive Evaluation", Invited speaker by Universidad del Zulia, Maracaibo, Zulia, Venezuela, November 2009.

Keynote Speaker:

11. **Martinez, M.**, "Structural Health Monitoring of Aerospace Structures", Invited speaker by Tecnológico de Monterrey – Congreso IGNIS 2010, Puebla, Mexico, October 21-23-2010.
12. **Martinez, M.**, "Structural Health Monitoring Systems and Non-Destructive Evaluations", Invited speaker by El Centro de Ingenieria y Desarrollo Industrial (CIDESI), Queretaro, Mexico, 22-23 of October 2009.

Conference Organization & Session Chair

1. Session Chair on SHM, International Conference on Adaptive Structures and Technologies, Lake George, USA, October 2016.
2. Session Chair of PHM in Wind Energy Applications, 2nd European Conference of the Prognostic and Health Management Society 2014, Nantes France.
3. Local Organizing Committee for the 25th Jubilee of the International Conference of Adaptive Structure and Technologies, ICAST, The Hague, The Netherlands, October 2014.
4. Local Organizing Committee for DeMEASS VI Conference, Ede, The Netherlands, May 2014.
5. Panel Sessions Chair for The 2nd European Conference of the Prognostic and Health Management Society, July 2014, Nantes France.
6. Session Chair of a Structural Health Monitoring and NDI Session at SAMPE 2010 in Seattle WA. USA. 2010
7. Deputy Chair of the International Conference of Adaptive Structure and Technologies, ICAST, Ottawa, ON. Canada, October 2007.

Associate Editor

Associate Editor of the Journal of Intelligent Material Systems and Structures.

National and International Memberships

Permanent member of the International Organizing Committee for ICAST – International Conference of Adaptive Structure and Technologies.

Languages

- Fluent in spoken and written English and Spanish
- Intermediate level of spoken French

References

Available upon request.