Curriculum Vitae

Personal Details

Name/Surname **Nikolaos A. Chrysochoidis**

Adress Ethnikis Antistaseos 31, 26504, Agios Vasileios, Patra, Greece

Phone +302610969445 Cell +306977083309

Fax +302610969417

E-mail(s) nchr@mech.upatras.gr
xrysoxoidis@upatras.gr
nikxrys@gmail.com

Nationality Greek

Date of Birth 30/09/1977

Studies

1996-2001 Diploma of Mechanical and Aeronautical Engineer from the Department of Mechanical and Aeronautical Engineering of the University of Patras

2002-2008 PhD from the Department of Mechanical and Aeronautical Engineering of the University of Patras.
Topic: Development of numerical tools for the self-monitoring of damage in smart piezoelectric composite structures
Supervisor: Prof. D. Saravanos

Personal skills and competences

Mother tongue **Greek**

Other language **English**
Fluent in spoken and written (Michigan University Certificate of proficiency in English March 2004)

Italian
Written and Speake Efficiency (B2/B2)

Research Interests

- Structural Dynamics
- Non Destructive Testing
- Vibration Mitigation in Oscillated Aeronautical Structures
- Composite Materials
- Lightweight Structures
- Development of FE Computational Tools

- Structural Health Monitoring
- Smart Materials and Structures
- Energy Harvesting

Working Experience

2/11/2015 – now	Research and Teaching Faculty in Department of Mechanical and Aeronautical Engineering/ University of Patras Topic: Computational and Experimental Methodologies in Structural Dynamics
1/11/2012 – 31/10/2015	Post Doctoral Researcher (Grandholder Cat-30) at the Joint Research Center of the European Union Topic: Damage detection in Composite Material Structures via Smart Piezoelectric Devices (STEC Project)
10/02/2009 – 31/10/2012	Mechanical Engineer/ Research Associate at the University of Patras
02/2002 – 4/2008	Research Assistant/ PhD Candidate at the University of Patras

Participation in Research Projects

2018-2021	Energy Autonomous System of Signal Processing and Wireless Transmission with Piezoelectric elements for Wind Turbine Applications, (EnAuSy) - GSRT –Research and Innovation Action
2018-2021	Distributed Smart Material Actuators for Low Frequency Broadband Active Noise and Vibration Suppression in Transport Vehicles and Light Structures - GSRT –Research and Innovation Action
2018-2021	Development and Manufacturing of Intelligent Lightweight Composite Aircraft Container, (INTELLICONT) - H2020-Clean Sky2
2016-2020	Technologies for Active Vibration and Acoustic Comfort (TAVAC) - H2020-Clean Sky2
2016-2019	CROR Blade-Out Impact Simulations and Sample Manufacturing (BLADEOUT) - H2020-Clean Sky2
2012-2017	Innovative wind conversion systems (10-20MW) for offshore applications (InnWind.Eu), FP7-ENERGY
2012-2012	Shape Memory Alloy Trailing Edge (SMyTE) FP7-CleanSky JTI-CS-2011-1-GRA-02-015
2011-2012	Wireless Integrated Strain Monitoring and Simulation System (WISMOS), CleanSky JTI-CS-2010-13-ECO-01-005
2010-2013	International Institute of Multifunctional Materials for Energy Conversion (IIMEC), http://iimec.tamu.edu/, NSF-USA, member
2009-2014	Optimisation for low Environmental Noise impact Aircraft (OPENAIR), FP7 – TRANSPORT
2008-2009	Preliminary Studies on Damage Tolerant Strategies for Composite Damage Detection and Health Monitoring; EOARD/AFOSR Grant
2005-2009	Integrated Wind Turbine Design; Int. Project; EU Research Framework FP6-Energy
2005-2007	International Collaboration on Predictive Methodologies for the Design of Lamb-Wave Piezoelectric Wafer Active Sensors for Structural Health Monitoring; National Science Foundation (NSF)
2002-2006	Smart Piezoelectric Composites with Damage Self-Monitoring Capabilities; Graduate Research Program - Heracleitos, Hellenic Ministry of Education; Principal Investigator
2000-2004	Wind Turbine Rotor Blades For Enhanced Aeroelastic Stability And Fatigue Life Using Passively Damped Composites-DAMPBLADE; 5th EU Research Framework - ENERGIE ENK6-CT2000-00320

Teaching Assistance

2015-Date In the undergraduate program of the Department of Mechanical and Aeronautical Engineering

1. Introduction to Finite Elements
2. Introduction to Programming
3. Programming
4. Finite Elements for Aeronautical Engineers
5. Structural Dynamics
6. Structural Dynamics for Aeronautical Engineers

Publications

Publications in Referee Scientific Journals

1. **Chrysochoidis, N.A.** and Saravanos, D.A., 2004. Assessing the Effects of Delamination on the Damped Dynamic Response of Composite Beams with Piezoelectric Actuators and Sensors. Smart materials and Structures , 13(4) pp.733-742. DOI: 10.1088/0964-1726/13/4/011

2. Saravanos, D.A., Varelis, D., Plagianakos, T.S. and **Chrysochoidis, N.A.**, 2006. A Shear Beam Finite Element for the Damping Analysis of Laminated Composite Blades. Journal of Sound and Vibration, 291(3-5), pp.802-823. DOI:10.1016/j.jsv.2005.06.045

3. **Chrysochoidis, N.A.** and Saravanos, D.A., 2007. Generalized Layerwise Mechanics for the Static and Modal Response of Delaminated Composite Beams with Active Piezoelectric Sensors. International Journal of Solids and Structures, 44, pp.8751-8768, DOI:10.1016/j.ijsolstr.2007.07.004

4. Chortis, D.I., **Chrysochoidis, NA** and Saravanos, DA, 2007. Damped structural dynamics of large wind-turbine blades including material and structural damping. Journal of Physics: Conference Series 75 (1), art. no. 012076, DOI:10.1088/1742-6596/75/1/012076

5. **Chrysochoidis, N.A.** and Saravanos, D.A., 2008. High Frequency Dispersion Characteristics of Smart Delaminated Composite Beams. Journal of Intelligent Material Systems and Structures, 20(9), pp. 1057-1068. DOI:10.1177/1045389X09102983

6. **Chrysochoidis, N.A.**, Barouri, A.K. and Saravanos, D.A., 2011. On the delamination detection in composite beams with active piezoelectric sensors using non-linear ultrasonics, Journal of Intelligent Material Systems and Structures 22 (18), pp. 2193-2206. DOI:10.1177/1045389X11428363

7. Chortis, D.I., **Chrysochoidis, N.A.**, Varelis D.S. and Saravanos, D.A. 2011. A damping mechanics model a beam finite element for the free vibration of laminated composite strips under in-plane loading. Journal of Sound and Vibration, 330 (23), pp. 5660-5677. DOI: 10.1016/j.jsv.2011.06.025

8. **Chrysochoidis, N.A.**, Assimakopoulou, T.T. and Saravanos, D.A. 2014. Nonlinear Wave SHM Method Using an Active Nonlinear Piezoceramic Sensor for Damage Detection in Composites. Journal of Intelligent Material Systems and Structures, 26 (15), 2108-2120. DOI: 10.1177/1045389X14549865

9. Karagiannis D., Spathopoulos T., Stamatelos D., Solomou A, Machairas T., **Chrysohoidis N.A.** and D.A. Saravanos, 2014 Airfoil morphing based on SMA actuation technology. Aircraft Engineering and Aerospace Technology: An International Journal, Vol. 86 Iss: 4, pp.295 – 306, DOI: 10.1108/AEAT-10-2012-0194

10. **Chrysochoidis, N.A.** and E. T. Guttierez, 2015 Evaluation of the sensitivity and fatigue performance of embedded piezopolymer sensor systems in sandwich composite laminates, Smart Materials and structures, 24, 025032 DOI:10.1088/0964-1726/24/2/025032

11. Rekatsinas, C.S., Siorikis, D.K., Christoforou, A.P., **Chrysochoidis, N.A.**, Saravanos, D.A. 2018. Analysis of low velocity impacts on sandwich composite plates using cubic spline layerwise theory and

semi empirical contact law, Composite Structures, 194, 158-169, DOI: 10.1016/j.compstruct.2018.03.081

12. Rekatsinas, C.S., **Chrysochoidis, N.A.**, Saravanos, D.A., 2021. Investigation of Critical Delamination Characteristics in Composite Plates Combining Cubic Spline Piezo-Layerwise Mechanics and Time Domain Spectral Finite Elements, Wave Motion Journal, DOI:10.1016/j.wavemoti.2021.102752

13. Chatziathanasiou, G.M., **Chrysochoidis, N.A.**, Saravanos, D.A., 2021. A Semi-Active Shunted Piezoelectric Tuned-Mass-Damper for Robust Vibration Control, Journal of Vibration and Control, DOI: 10.1177/10775463211026487

14. Siorikis, D.K., Rekatsinas, C.S., **Chrysochoidis, N.A.**, Saravanos, D.A., 2021. A Cubic Spline Layerwise Spectral Finite Element for Robust Stress Predictions in Laminated Composite and Sandwich Strips, Accepted for Publication at European Journal of Solids and Structures (June 2021).

15. Siorikis, D.K., Rekatsinas, C.S., **Chrysochoidis, N.A.**, Saravanos, D.A., 2021. An Extended Layerwise Spectral Finite Element Framework for Delamination Growth Simulation in Laminated Composite Strips, Under review at Composite Structures

16. **Chrysochoidis, N.A.** and E.T. Guttierez, 2020, Investigation of the compression performance of large smart construction composite panels, Under review at Composite Structures.

Participation in Referee Scientific Conferences

1. **Chrysochoidis, N.A.** and Saravanos, D.A., 2002. Effects of delamination on the damped dynamic response of composite laminates with piezoelectric actuators. Proceedings of the First European Workshop on Structural Health Monitoring, Paris.

2. **Chrysochoidis, N.A.** and Saravanos, D.A., 2003. Composite Damping Characterization using Induced Piezoelectric Strain Actuation. Proceedings of the 5th International Symposium on Advanced Composites, Corfu, Greece.

3. Saravanos, D.A., Varelis, D., Plagianakos, T.S., **Chrysochoidis, N.A.**, Philippidis, T.P.,and Antoniou, A., 2003. A Shear Beam Finite Element for Predicting the Damping of Composite Wind-Turbine Blades. European Wind Energy Conference, Madrid, June 2003.

4**. Chrysochoidis, N.A**. and Saravanos, D.A., 2003 Detecting Effects of Delamination on Low and intermediate Frequency Response Range of Laminated Composite Beams with Active Piezo-systems. Recent Advances in Composite Materials, Xanthi, Greece.

5. Plagianakos, T.S., Saravanos, D.A. and **Chrysochoidis, N.A.**,2004. Analysis of adaptive sandwich composite beams with piezoelectric actuators and sensors using coupled high-order layerwise mechanics Collection of Technical Papers – AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference 3, pp. 2293-2303, Palm Springs California.

6. **Chrysochoidis, N.A.** and Saravanos, D.A., 2004. Modeling the Effects of Delaminations on the Static and Forced Response of Composite Laminates using Layerwise Mechanics. Proceedings of the Second European Workshop on Structural Health Monitoring, Munich

7. Saravanos, D.A., Varelis, D., Plagianakos, T.S., **Chrysochoidis, N.A.**, Philippidis T.P. and Antoniou, A. 2004. Modeling and Design of Composite Wind-Turbine Blades for Enhanced Damping. European Wind Energy 2004- The science of Making Torque from Wind Conference, Delft, April 2004.

8. **Chrysochoidis, N.A.**, Tzoutzouli, S., and Saravanos, D.A., 2004. Identifying the Temperature Effect on the damped Response of Composite Beams using Piezoceramic Actuators and Sensors. 11th European Conference in Composite Materials, Rhodes, Greece.

9. **Chrysochoidis, N.A.** and Saravanos, D.A., 2005. Layerwise Dynamic Response Models for Delaminated Composite Beams with Active Piezoelectric Sensors. Collection of Technical Papers – AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference 7, pp. 4822-4831, Austin,Texas.

10. **Chrysochoidis, N.A.** and Saravanos, D.A., 2005. Realistic Layerwise Models for the Dynamic Response of Delaminated Composite Beams with Active Piezoelectric Sensors. Proceedings of the Sixteenth International Conference on Adaptive Structures and Technologies, Paris,5-7 October 2005.

11. **Chrysochoidis, N.A.** and Saravanos, D.A., 2006. 2D Layerwise Modeling of High-Frequency Modal Response in Delaminated Composite Beams with Active Piezoelectric Sensors. Proceedings of the Third European Workshop on Structural Health Monitoring, 5-7 July, Granada, Spain.

12. Bottai, GS, **Chrysochoidis, N.A.**, Giurgiutiu, V and Saravanos DA, 2007. Analytical and Experimental Evaluation of Piezoelectric Wafer Active Sensors Performances for Lamb Waves based Structural Health Monitoring in Composite Laminates Proceedings of SPIE – Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring 6532, art. No. 65320N 10.1117/12.714970

13. **Chrysochoidis, N.A.** , Anyfantis CN and Saravanos, DA, 2007. Effect of Delamination on the High Frequency Wave Dispersion of Composite Beams with Active Piezosensors. Proceedings of the 6th International Symposium on Advanced Composites, Corfu, Greece

14. **Chrysochoidis, N.A.** and Saravanos, DA, 2007. High Frequency Dispersion Characteristics of Smart Delaminated Composite Beams. Proceedings of the 18th international Conference of Adaptive Structures and Technologies, Ottawa, Ontario, Canada 3-5 October 2007

15. **Chrysochoidis, N.A.** and Saravanos, DA, 2008. High Frequency Response of Delaminated Composite Beams with Active Piezoelectric Sensors. Collection of Technical Papers-AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference Paper number AIAA-2008-213, Chicago, Illinois. http://dx.doi.org/10.2514/2.697

16. Brunner, A. , Barbezat, M, **Chrysochoidis, N.A.**, Barouni A.K., Saravanos, D.A., 2008. Delamination Detection in Composites using Active Piezoceramic Wafer and AFC Sensor, Proceedings of the Fourth European Workshop on Structural Health Monitoring, July 2008, Krakow, Poland.

17. **Chrysochoidis, N.A.**, Barouni, A.K. and Saravanos, D.A., 2009. On the delamination detection in composite beams with active piezoelectric sensors using non-linear ultrasonics, Proceedings of SPIE – Smart Structures and Materials & Nondestructive Evaluation and Health Monitoring, art. No. 729552 doi:10.1117/12.816915

18. **Chrysochoidis, N.A.** and Saravanos, D.A., 2010. Nonlinear Wave Spectroscopy SHM Methods Using an Active Nonlinear Piezoceramic Sensor for Delamination Detection in Composites, 51st AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Paper number AIAA-2010-2902, Orlando, Florida.

19. **Chrysochoidis, N.A.** and Saravanos, D.A., 2010. Nonlinear Wave SHM Method for Impact Damage Detection in Composites using an Active Piezoceramic Sensor, Proceedings of the Fifth European Workshop on Structural Health Monitoring, July 2010, Sorrento, Italy

20. **Chrysochoidis, N.A.** and Saravanos, D.A. 2010. Bonding Health Monitoring in Aluminum Adhesive Joints Using Nonlinear Ultrasonic Piezoelectric Sensor. Proceedings of the 21st International Conference on Adaptive Structures and Technologies (ICAST), University Park, Pennsylvania, October 4–6, 2010

21. **Chrysochoidis, N.A.**, Toulitsis, A.K. and Saravanos, D.A., 2011. Impact damage detection in composites using an active nonlinear acousto-ultrasonic piezoceramic sensor, Proceedings of SPIE - The International Society for Optical Engineering 7981, art. no. 79810T doi:10.1117/12.882117

22. **Chrysochoidis, N.A.** and Saravanos, D.A., 2012. Critical parameters of impact detection in composite plates using an active acousto-ultrasonic piezoceramic sensor, Proceedings of the sixth European Workshop on Structural Health Monitoring, July 2012, Dresden, Germany

23. **Chrysochoidis N.A.** and E. Guttierez, 2015, Investigating Efficiency of Non-linear Wave Modulation Spectroscopy for Early Detection of Critical Buckling Damages in Sandwich Composite Panels, Structural Health Monitoring 2015, Stanford (CA) 10.12783/SHM2015/235

24. **Chrysochoidis N.A.**, G. Renaldi and E. Guttierez, 2015, Evaluation of the Performance of an Energy Harvesting Chain Based on Piezopolymer Sensors, Structural Health Monitoring 2015, Stanford (CA) 10.12783/SHM2015/122

25. **Chrysochoidis, N.A.**, Rekatsinas, C.S. and D. A. Saravanos, Detection of Bucking in Composite Structures Based on Nonlinear Effects on Modal Frequencies, Damping and Wave Modulation, SMASIS2016, ASME Conference on Smart Materials, Adaptive Structures And Intelligent Systems, Sep. 28 – 30, 2016, Stowe, VT, USA.

26. Siorikis, D.K., Nastos, C.V., **Chrysochoidis, N.A.**, Theodosiou, T.C., Rekatsinas,C.S., Saravanos, D.A., Codines, C., Abdi, F. and Gonzalez, E.M., Experimental Micromechanics Based Numerical Analysis of High Velocity Impact on Laminated Composite Plates, 18th European Conference on Composite Materials, ECCM 2018, Athens, GR.

27. Rekatsinas, C.S., **Chrysochoidis, N.A.** and Saravanos, D.A. 2018, Detecting Delaminations in Composites through Active Wave Modulation Spectroscopy: Analytical Investigation of Critical Nonlinear Mechanisms, 9th European Workshop on Structural Health Monitoring 2018, Manchester, UK

28. Rekatsinas, C.S., **Chrysochoidis, N.A.** and Saravanos, D.A. 2019, Analyzing the nonlinear mechanisms in active wave modulation spectroscopy and their Influence on delamination detection in laminated strips and plates, Proceedings of SPIE - The International Society for Optical Engineering, 10972,109721K

29. Siorikis, D.K., Rekatsinas, C.S., Nastos, C.V., Theodosiou, T.C., **Chrysochoidis, N.A.**, Christoforou, A.P., Yigit, A.S. and Saravanos, D.A., Experimental and Numerical Assessment of Dynamics of Hailstone Impact on Composite Plates, 7th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Eccomas Proceedia COMPDYN (2019) 4342-4355, Crete, GR.

30. Georgopoulos-Bosinas K., Chrysochoidis N.A., Rekatsinas C.S. and **Saravanos D.A.** Semi-Active Piezoelectric Tuned Mass Damper for Mitigation of Aerodynamic Vibrations in Aircraft Structures, SMART 2019 - 9th ECCOMAS Thematic Conference on Smart Structures and Materials, Jul. 9-11, 2019, Paris, FR.

31. Georgopoulos-Bosinas K., Chrysochoidis N.A., Rekatsinas C.S. and **Saravanos D.A.** Applications of Novel Semi-Active Piezoelectric Tuned Mass Damper for Vibrations Mitigation in Aircraft Structures, Aerospace Conference Europe, Bordeaux, France February 2020.

32. Chatziathanasiou G.M., **Chrysochoidis N.A.** and D.A. Saravanos, Dynamic Analysis of Active Isolation Mount using Feedforward and Feedback Control Schemes, EURODYN 2020, XI International Conference on Structural Dynamics, Athens, Greece, 23–25 November 2020

33. Kardarakos, G.C., **Chrysochoidis N.A.**, Varelis D., Saravanos D.A., Plagianakos, T.S., Vartholomeos, P. Leventakis, N., Bolanakis, G., Margelis, N. and E. Papadopoulos, Piezoelectric Energy Harvesting from Composite Beams in Geometric Nonlinear, Regime: Numerical and Experimental Approach, SPIE Smart Structures & NDE Conference 2021

34. Chatziathanasiou, G.M., **Chrysochoidis, N.A.**, Georgopoulos-Bosinas, K.I. and Saravanos, D.A., Semi-active vibration control of aircraft structures, AIAA Scitech 2021 Forum, 2021, pp. 1–10

35. Kardarakos, G.C., **Chrysochoidis N.A.**, Varelis D., Vartholomeos, P. Leventakis, N., Margelis, N. Plagianakos, Bolanakis, G T., Saravanos D.A. and E. Papadopoulos, Computational and Experimental

Efficiency Investigation of Nonlinear Energy Harvesting Systems Based on Monostable and Bistable Piezoelectric Beams, ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS 2021-68209, September 14-15, 2021.

36. Chatziathanasiou G.M., Dimitriou, D., **Chrysochoidis N.A.** and D.A. Saravanos, Design and Structural Integration of Semi-Active Tuned Mass Damper for Improved Vibration Control on Airframe Structures, ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS 2021-68211, September 14-15, 2021.