

Theodoros Loutas
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1. Personal information

Date of birth: 7th August 1979, Patras, Greece

Marital status: single

Current Occupation: Assistant Professor in the Mechanical Engineering and Aeronautics Department, University of Patras, Greece

2. Professional experience

13/10/2009- 1/5/2016 Lecturer in the Mechanical Engineering and Aeronautics Department, University of Patras, Greece

7/2007- 12/10/2009 Post-doc Researcher in the Applied Mechanics Laboratory, Mechanical Engineering and Aeronautics Department, University of Patras, Greece

7/2007-9/2007 Visiting researcher at Eurocopter France, Research & development Directorate, System Architecture Dpt

2002-2007 PhD student in the Applied Mechanics Laboratory, Mechanical Engineering and Aeronautics Department, University of Patras, Greece

7/2006-9/2006 Visiting researcher at IVW: Institut für Verbundwerkstoffe GmbH Kaiserslautern (Institute for Composite materials)

3. Education

7/2007 Successful examination of PhD thesis in the Mechanical Engineering and Aeronautics Department, University of Patras, Greece

Title: SIGNAL PROCESSING METHODOLOGIES OF ACOUSTIC EMISSION AND ACOUSTO-ULTRASONIC SIGNALS TOWARDS THE MONITORING AND IDENTIFICATION OF DAMAGE IN CERAMIC COMPOSITE MATERIALS

7/2002 Engineer Diploma in the Mechanical Engineering and Aeronautics Department, University of Patras, Greece
(grade excellent 9.16/10, rank 2/180)

Diploma thesis: 'The use of acoustic emission method for the damage mechanisms identification in oxide-oxide composite materials'

4. Academic Experience

4.1 Teaching

2012-present In the Mechanical Engineering and Aeronautics Department, University of Patras:

1. Sensors, signal processing and applications of non-destructive testing

(3hrs/week, summer semester, autonomous teaching)

2. Nondestructive testing

(3hrs/week, winter semester, autonomous teaching)

3. Special topics in Physics

(4hrs/week, winter semester, autonomous teaching)

4. Ultrasonic wave propagation and dispersion

(3hrs/week, summer semester, co-teaching with prof. Vassilis Kostopoulos)

5. Engineering Mechanics - Dynamics

(5hrs/week, winter semester, co-teaching with prof. Vassilis Kostopoulos)

2004-2011 In the Mechanical Engineering and Aeronautics Department, University of Patras supporting the main instructor (prof. Vassilis Kostopoulos):

1. Engineering Mechanics I – Statics (3 hrs/week)

2. Engineering Mechanics II – Dynamics (3 hrs/week)

2009-2011 In the Technological Institute of Patras as the main instructor:

1. Quality control (laboratory) (6 hrs/week)

2. Technology of materials (laboratory) (6 hrs/week)

2003-2006 In the Technological Institute of Patras as the main instructor:

1. Fluid Mechanics I (laboratory) (3 hrs/week)

2. Fluid Mechanics II (laboratory) (3 hrs/week)

3. Hydrodynamic machines (laboratory) (3 hrs/week)

4. Internal combustion engines (laboratory) (3 hrs/week)

4.2 Member of PhD examination committees

1. «Analysis of bolted joints of aerospace structures under high strain rates» by Derdas Christos, (supervisor Prof. V. Kostopoulos), Mechanical Engineering and Aeronautics Department, University of Patras, Greece, 2011
2. « Methodology for Innovative Health Monitoring of Aerospace Structures using Dynamic Response Measurements and Advanced Signal Processing Techniques», by Aikaterini Panopoulou, (supervisor Prof. V. Kostopoulos), Mechanical Engineering and Aeronautics Department, University of Patras, Greece 2012
3. "Calculation of electrical conductivity and electrothermal analysis of multilayered carbon reinforced composites: application to damage detection", by Nikolaos Athanasopoulos (supervisor Prof. V. Kostopoulos), Mechanical Engineering and Aeronautics Department, University of Patras, Greece, 2013
4. "Manufacturing and study of polymeric concrete of epoxy hybrid matrix reinforced with fibrous and grainy fillers", by George Lagkas (supervisor Prof. G. Papanicolaou), Mechanical Engineering and Aeronautics Department, University of Patras, Greece, 2014
5. "Μεθοδολογία επιβεβαίωσης αριθμητικών προσομοιώσεων κατασκευών μέσω οπτικών μεθόδων πλήρους πεδίου και τεχνικών ανάλυσης εικόνας", του Βασίλειου Πασιαλή (κύριος επιβλέπων Καθ. Γ. Λαμπέας), Mechanical Engineering and Aeronautics Department, University of Patras, 2016
6. "Time domain spectral finite element methods for the simulation of wave propagation in composite layered structures with active piezoelectric sensors", του Χριστόφορου Ρεκατσίνα (κύριος επιβλέπων Καθ. Δ. Σαραβάνος), Mechanical Engineering and Aeronautics Department, University of Patras, 2016
7. "Ανάπτυξη νέων πολύ-λειτουργικών δομικών συνθέτων υλικών με ενίσχυση πολλαπλής ικλίμακας για βελτιωμένη θραυστομηχανική συμπεριφορά", της Χριστίνας Κωσταγιαννακοπούλου, (κύριος επιβλέπων Καθ. Β. Κωστόπουλος), Mechanical Engineering and Aeronautics Department, University of Patras, 2017
8. Design, analysis, optimization and construction of a micro-satellite for the study of lower atmosphere and re-entry conditions, του Α. Αμπατζόγλου (κύριος επιβλέπων Καθ. Β. Κωστόπουλος), Mechanical Engineering and Aeronautics Department, University of Patras, 2017
9. Development of self-healing techniques for fiber reinforced composites, του Α. Κοτρώτου (κύριος επιβλέπων Καθ. Β. Κωστόπουλος), Mechanical Engineering and Aeronautics Department, University of Patras, 2017
10. A numerical methodology for predicting the mechanical properties of unidirectional composite laminates with pores-evaluation of porous CFRP specimens using x-ray CT data and an artificial neural network, του Αντώνιου Σταμόπουλου, (κύριος επιβλέπων Επικ. Καθ. Κ. Τσερπές), Mechanical Engineering and Aeronautics Department, University of Patras, 2017
11. Random Vibration Based Precise Localization of Single and Multi-Site Structural Damage via Stochastic Functional Models, του Χ. Σάκκαρη, κύριος επιβλέπων Καθ. Σ. Φασόνης), Mechanical Engineering and Aeronautics Department, University of Patras, 2018

12. Δυναμική και ευστάθεια δομικών στοιχείων που φέρουν αναπνέουσα ρωγμή, του Α. Μπούμπουλα, κύριος επιβλέπων Καθ. Σ. Ανυφαντής), Mechanical Engineering and Aeronautics Department, University of Patras, 2018

4.3 Principal supervisor of PhD students

1. Panagiotis Tsokanas, Thematic area: "Fracture mechanics of dissimilar bonded joints" (2016-present)
2. Panagiotis Charlaftis, Thematic area: "Vibration-based Structural Health Monitoring" (2015-present)
3. Dimitrios Milanoski, Thematic area: "Structural Health Monitoring of Composite Aircraft Components" (2018-present)
4. Lucas Adamos, Thematic area: "Delamination fatigue of dissimilar joints" (2019-present)
5. George Galanopoulos, Thematic area: "Prognostics of Composite Aircraft Components" (2019-present)

4.4 Member of ongoing PhD advisory committees

1. Astrinos Papadakis, scientific domain "Design and analysis of cylindrical composite pressure vessels", (main supervisor Prof. N. Tsouvalis), Department of Mechanical Engineering, National Technical University of Athens, 2014
2. Dimitrios Chalkias, scientific domain "Manufacturing and characterization of new nano-composite materials with applications in solar elements", (supervisor Prof. G. Papanicolaou), Mechanical Engineering and Aeronautics Department, University of Patras, Greece 2013

4.5 Invited lectures

1. Theodoros Loutas, Utilizing AE data and Stochastic Modeling Towards Fatigue Damage Diagnostics and Prognostics of Composites, **Invited keynote talk, 58th meeting of the Acoustic Emission Working Group, Philadelphia, May 28-29 2016**
2. Theodoros Loutas, Prognostic approaches for the remaining useful life of structures and machinery, **Invited keynote talk, The 13th International Conference on Condition Monitoring and Machinery Failure Prevention, Paris 10-12 October, 2016**
3. Theodoros Loutas, Towards the prognosis of the remaining useful life of composite structures utilizing health monitoring data and probabilistic models – present challenges and future vision, **Invited keynote talk, 18th European Conference on Composite Materials, Athens 24-28 June 2018**

4.6 Supervisor of diploma-master theses

1. P. Stoupas, "Condition monitoring of single-stage gearbox with NDT techniques", 2013
2. K. Tochniti, "Numerical study of a single lap-shear aluminum joint with Lamb waves", 2013
3. V. Mparas, "Numerical study of a single lap-shear composite material joint with Lamb waves", 2013
4. A. Papadakis, "Finite element simulation of Lamb wave propagation on a composite plate towards damage identification and location", 2014
5. A. Galis, "Development of a reliable methodology for the natural number of cluster identification of Acoustic Emission signals", 2013
6. J. Dimomeletis, "Machine learning algorithms for classification of dynamic strain data from a composite structure", 2014
7. M. Margaronis, "Misalignment diagnosis of a ship generator with vibration recordings", 2014
8. N. Eleftheroglou, "Real-time fatigue damage diagnostics and prognostics of composite materials utilizing online structural health monitoring data and stochastic modeling", 2015
9. A. Bourikas, "Optimal sensor placement of FBG sensors on composite structures for dynamic strain measurements", 2015
10. S. Petropoulos, "Strain measurements evaluation from CFRP coupons sensorized with Fibre Bragg Grating sensors", 2015
11. A. Alexiadis, "Investigation of the mechanics of skin/stringer disbonding", 2016
12. P. Ntaoularis, "Hyper-features extraction from vibration recordings with the aid of genetic algorithms", 2016
13. D. Bonas, "Statistical optimization of a laser-based material ablation process for bonded repair purposes", 2016
14. V. Amfilohiou, "Statistical optimization of a laser-based surface treatment of aircraft aluminum for bonding strength improvement", 2016
15. G. Kalagasisidis, "Ultrasonic inspection and evaluation of porosity in repaired composite structures with DAC curves", 2017
16. I. Tripodis, "Structural Health Monitoring in aeronautical composite materials during fatigue with in-situ acoustic emission and strain measurements", 2018

17. A. Gregoriou, "The application of probabilistic neural networks in the prognostics of battery end-of-life", 2018

4.7 Reviewer in scientific journals

In brackets the number of reviewed papers:

- Composite Structures
- Journal of Composite Materials
- Composites part B – Engineering
- Structural Health Monitoring
- IEEE Transactions in Reliability
- IEEE Intelligent Transportation Systems Transactions
- IEEE Transactions on Industrial Electronics
- Expert Systems with Applications
- Mechanical Systems and Signal Processing
- Journal of Applied Acoustics
- Journal of Non-Destructive Evaluation
- Advanced Composite Letters
- Strain
- Sensors
- Journal of Vibration and Control
- Lubricants
- International Journal of Structural Stability and Dynamics
- Reliability Engineering & System Safety
- Polymer Composites
- Mathematical problems in Engineering
- Institute of Industrial Engineers Transactions
- International Journal of Aerospace Engineering
- Journal of Mechanical Engineering Science
- Measurement
- Neural Processing Letters
- Quality and Reliability Engineering

5. Participation in national and European research projects

5.1 Prior to 2009 and my election in an academic position

Funding source	Title	Project Duration
BRITE/EURAM	Ceramic Components for Industrial Gas Turbine, CERCO. (trainee)	1998-2002
GROWTH	Validation of testing methods in Ceramic and Carbon Fibers , VaFTeM (participation in the implementation of the research tasks)	2002-2004
ΠΕΝΕΔ 2001 (National project)	Wave propagation in anisotropic media. Elastic constant determination from ultrasonic signals. (participation in the implementation of the research tasks)	2002-2005
ΠΡΟΓΡΑΜΜΑ ΠΡΑΕΕ Α' φάση (National project)	Non-invasive system of incoming brain oedema 'ANEMOS project' (participation in the implementation of the research tasks)	2002-2003
ΠΡΟΓΡΑΜΜΑ ΠΡΑΕΕ Α' φάση	'Non Destructive testing of new and in-service wire ropes' 2004-2005 (participation in the proposal writing and the implementation of the research tasks)	2004-2005
FP6-2003	Cost-effective and environmentally sound dismantling of obsolete vessels, ShipDismantl (participation in the proposal writing and the implementation of the research tasks)	2005-2009
FP6-2004	Aerospace nanotube hybrid composite structures with sensing and actuating capabilities, NOESIS (participation in the implementation of the research tasks)	2005-2009
FP6-2005	Automated Diagnosis for Helicopter Engines and Rotating parts, ADHER (participation in the proposal writing and the implementation of the research tasks)	2006-2008
FP7-2007	Dismantling of Vessels with Enhanced Safety and Technology, DIVEST	2008-2011

	(participation in the proposal writing and the implementation of the research tasks)	
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5.2 After 2009

Funding source	Title	Project Duration
FP7 EU-L1	'Innovative Repair of Aerospace Structures with Curing Optimization & Life Cycle Monitoring Abilities, IAPETUS (participation in the implementation of the research tasks)	2008-2012
Western Greece Region, LEAD-ERA 2010	Incorporation of natural fibres into virgin and recycled polymeric matrix, REFIPLAST (responsible for the proposal writing and scientific supervisor of the research tasks)	2011-2014
FP7-AAT-2012-RTD-1	Self-healing polymer for concepts on self-repaired aeronautical composites, HIPPOCRATES (participation in the proposal writing and the implementation of the research tasks)	2013-2016
FP7-TRANSPORT	Smart Intelligent Aircraft Structures, SARISTU (scientific manager for Univ. of Patras for Application Scenario 04)	2011-2014
EU-JTI-Clean Sky	"Study on the processing and the performance of cyanate ester composites towards the optimization for harsh service environments", SPECIMEN (participation in the implementation of the research tasks)	2011-2013
EU-JTI-Clean Sky	Manufacturing optimization of a plenum with GFRP cyanate ester-based prepeg, PLENOPTIMUM (responsible for the proposal writing and scientific manager of the research tasks)	2014-2015

6. Principal Investigator in national and European research projects

Funding source	Title	Project Duration	Funding (€)
European Space Agency	Damage Mechanics for Composite Structures (ESA-SHM)	2015 (12 months)	75.000,00
H2020-FETOPEN-2014-2015-RIA	An Advanced Methodology for the Inspection and Quantification of Damage on Aerospace Composites and Metals using an Innovative Approach (CompInnova)	2015-2018	475.000,00
H2020-CS2-CFP06	Titanium-Composite Adhesive Joints (TICOAJO)	2017-2019	200.000,00
ΕΛΙΔΕΚ – PhD students scholarships	Fracture mechanics characterization of delamination fracture in adhesive joints	2016-2020	28.000,00

7. Publications

7.1 Publications in books (chapters) after invitation

1. **Theodoros Loutas** and Vassilis Kostopoulos, Utilizing the Wavelet Transform in Condition-Based Maintenance: A Review with Applications, in "Advances in Wavelet Theory and Their Applications in Engineering, Physics and Technology", invited contribution in book edited by Dumitru Baleanu, ISBN 978-953-51-0494-0, Published: April 4, 2012 under CC BY 3.0 license
2. Aikaterini Panopoulou, **Theodoros Loutas**, Dimitrios Roulias, Sebastiaan Fransen, Prof. Vassilis Kostopoulos, Innovative Structural Health Monitoring System of Composite Aerospace Structures Based on Dynamic Fiber Bragg Gratings and Advanced Signal Processing in "Numerical simulation", invited contribution in book edited by Dr Jacques Richard, ISBN: 978-0-9835850-7-7, December 2012: First Edition
3. N. Eleftheroglou, **T.H. Loutas**, S. Malefaki, Stochastic modeling of fatigue damage in composite materials via Non Homogeneous Hidden Semi Markov Processes and health monitoring measurements in "Statistical, Stochastic and Data Analysis Methods and Applications (pp. 19-33) Alex Karagrigoriou, Teresa Oliveira and Christos H. Skiadas (Eds)", 2015

7.2 Monographies

1. T. H. Loutas, Notes for the course "Non Destructive Testing of materials and structures", 139 pages, University of Patras press, 2013 (in greek)
2. T. H. Loutas, Notes for the course "Signal processing, sensors and applications of Non Destructive Testing ", 120 pages, University of Patras press, 2014 (in greek)

7.3 Citations

The published work analyzed below has attracted 1362 citations (h-index 19) according to Google scholar (accessed on 16/1/2019).

7.4 Publications in international journals

1. V. Kostopoulos, **T. H. Loutas**, A. Kontsos, G. Sotiriadis and Y. Z. Pappas, "On the identification of the failure mechanisms in oxide/oxide composites using acoustic emission", **NDT & E International**, Volume 36, Issue 8, December 2003, Pages 571-580
2. Y. Z. Pappas, A. Kontsos, **T. H. Loutas** and V. Kostopoulos, "On the characterization of continuous fibres fracture by quantifying acoustic emission and acousto-ultrasonics waveforms", **NDT & E International**, Volume 37, Issue 5, July 2004, Pages 389-401
3. V. Kostopoulos, **T. H. Loutas** and G. Sotiriadis, "On the Young's modulus measurements of Ceramic and Carbon Fibers using elastic wave propagation techniques. Comparison against quasi-static tensile tests", **Advanced Composite Letters**, Volume 13, Issue 2, 2004, pages 131-137
4. **T.H. Loutas**, V. Kostopoulos, C. Ramirez-Jimenez, M. Pharaoh, "Damage evolution in center-holed glass/polyester composites using time/frequency analysis of acoustic emission monitored waveforms", **Composites Science and Technology** 66 (2006) 1366-1375
5. **Loutas T.H.**, Kalaitzoglou J., Sotiriades G., Kayias E., Kostopoulos V., Diagnosis of artificial gear defects on single stage gearbox using acoustic emission, **Advanced Materials Research** 13-14, pp. 415-420, 2006
6. **Loutas T.H.**, Kostopoulos V., Damage monitoring in cyclic loaded C/C woven composites using the acousto-ultrasonics approach, **Advanced Materials Research** 13-14, pp. 421-426, 2006
7. V. Kostopoulos, **T.H. Loutas**, and K. Dassios, "Fracture Behaviour and Damage mechanisms Identification of SiC/Glass ceramic composites using DEN specimens and AE monitoring", **Composites Science and Technology**, Volume 67, Issues 7-8, 2007, Pages 1740-1746
8. V. Kostopoulos, P. Tsotra, P. Karapappas, S. Tsantzalis, A. Vavouliotis, **T. H. Loutas**, A. Paipetis, K.Friedrich, T. Tanimoto, "Mode I Interlaminar Fracture of CNF or/and PZT Doped CFRPs via acoustic emission monitoring", **Composites Science and Technology**, Volume 67, Issue 5, April 2007, Pages 822-828
9. V. Kostopoulos, P. Tsotra, A. Vavouliotis, P. Karappapas, S. Tsantzalis and **T.H. Loutas**, "Damage Detection during Fatigue Loading of CNF Doped CFRPs via Resistance Measurements and AE", **Solid State Phenomena**, Vols 121-123 (2007) pp.1399-1402
10. **T.H. Loutas**, J. Kalaitzoglou, G. Sotiriades and V. Kostopoulos, A Novel Approach for Continuous Acoustic Emission Monitoring on Rotating Machinery Without the Use of Slip-ring, **Journal of vibration and acoustics**, Volume 130, Issue 6, December 2008
11. V. Kostopoulos, **T.H. Loutas**, C. Derdas, E. Douzinis, 'Wavelet Analysis Of Head Acceleration Response Under Dirac Excitation For Early Oedema Detection', **Journal of Biomechanical engineering**, vol. 130, No2, April 2008
12. **T.H. Loutas**, V. Kostopoulos, Health monitoring of carbon/carbon woven reinforced composites. Damage assessment by using advanced signal processing techniques. Part I: Acoustic emission monitoring and damage mechanisms evolution, **Composites Science and Technology**, Volume 69, Issue 2, February 2009, Pages 265-272

13. **T.H. Loutas**, V. Kostopoulos, Health monitoring of carbon/carbon woven reinforced composites. Damage assessment by using advanced signal processing techniques. Part II: Acousto-ultrasonics monitoring, **Composites Science and Technology**, Volume 69, Issue 2, February 2009, Pages 273-283
14. A. Vavouliotis, P. Karapappas, **T. Loutas**, T. Voyatzsi, A. Paipetis, V. Kostopoulos, Multi-stage fatigue life monitoring on carbon fibre reinforced polymers enhanced with multi-wall carbon nanotubes, **Plastics, Rubber and Composites**, 2009, 38 (2-4), pp. 124-130
15. **T.H. Loutas**, Sotiriades G., Kalaitzoglou I. and Kostopoulos V., Condition monitoring of a single-stage gearbox utilizing on-line vibration and acoustic emission measurements, **Applied Acoustics** 70 (9), pp. 1148-1159, 2009
16. D.G. Katerelos, A. Paipetis, **T.H. Loutas**, G. Sotiriadis, V. Kostopoulos and S.L. Ogin, In-situ damage monitoring of cross-ply laminates using acoustic emission, **Plastics, Rubber and Composites** 38 (6), pp. 229-234, 2009
17. **T.H. Loutas**, A. Vavouliotis, P. Karapappas and V. Kostopoulos, Fatigue damage monitoring in carbon fibre reinforced polymers using the acousto-ultrasonics method, **Polymer Composites**, Volume 31, Issue 8, Pages: 1409-1417, August 2010
18. **T.H. Loutas** and V. Kostopoulos, Wavelet-based methodologies for the analysis of vibration recordings for fault diagnosis in gears, **Noise and Vibration Worldwide** 41 (7), pp. 10-18, 2010
19. **T.H. Loutas**, J. Kalaitzoglou, G. Sotiriades and V. Kostopoulos, On the application of non-destructive testing techniques on rotating machinery, **International Journal of Materials and Product Technology**, Vol. 41, Nos. 1/2/3/4, pp.117-127, 2011
20. **T.H. Loutas**, D. Roulias, E. Pauly, V. Kostopoulos, The combined use of vibration, acoustic emission and oil debris on-line monitoring towards a more effective condition monitoring of rotating machinery, **Mechanical Systems and Signal Processing**, 25 (4), pp. 1339-1352, 2011
21. V. Kostopoulos, P. Karapappas, S. Tsantzalis, A. Vavouliotis, P. Tsotra, A. Paipetis, **T.H. Loutas**, K. Friedrich, "Interlaminar fracture toughness of carbon fibre-reinforced polymer laminates with nano- and micro-filler", **Strain** 47 (SUPPL. 1), pp. e269-e282, 2011
22. Koutsos, A., **Loutas, T.**, Kostopoulos, V., Hazeli, K., Anasori, B., Barsoum, M.W., Nanocrystalline Mg-MAX composites: Mechanical behavior characterization via acoustic emission monitoring, **Acta Materialia**, 59 (14), pp. 5716-5727, 2011
23. Panopoulou, A., **Loutas, T.**, Roulias, D., Fransen, S., Kostopoulos, V., Dynamic fiber Bragg gratings based health monitoring system of composite aerospace structures, **Acta Astronautica** 69 (7-8), pp. 445-457, 2011
24. Panopoulou, A., Roulias, D., **Loutas, T.H.**, Kostopoulos, V., Health Monitoring of Aerospace Structures Using Fibre Bragg Gratings Combined with Advanced Signal Processing and Pattern Recognition Techniques, **Strain**, 48 (3) , pp. 267-277, 2012
25. **Loutas, T.H.**, Panopoulou, A., Roulias, D., Kostopoulos, V., Intelligent health monitoring of aerospace composite structures based on dynamic strain measurements, **Expert Systems with**

26. Georgoulas, G., **Loutas, T.**, Stylios, C.D., Kostopoulos, V., Bearing fault detection based on hybrid ensemble detector and empirical mode decomposition, **Mechanical Systems and Signal Processing**, 41 (1-2) , pp. 510-525, 2013
27. Roulias, D., **Loutas, T.**, Kostopoulos, V., A statistical feature utilizing wavelet denoising and neighbor block method for improved condition monitoring of rolling bearings, **Chemical Engineering Transactions** 33 , pp. 1045-1050, 2013
28. **Loutas, T.H.**, Roulias, D., Georgoulas, G., Remaining Useful Life Estimation in Rolling Bearings Utilizing Data-Driven Probabilistic E-Support Vectors Regression, **IEEE Transactions on Reliability**, 62 (4) , art. no. 6645455 , pp. 821-832, 2013
29. G. Georgoulas, P. Karvelis, **T. Loutas**, C. Stylios, Rolling element bearings diagnostics using the Symbolic Aggregate Approximation, **Mechanical Systems and Signal Processing**, 60, pp. 229- 242, February 2015
30. C. Kostagiannakopoulou, **T.H. Loutas**, G. Sotiriadis, A. Markou, V. Kostopoulos, On the interlaminar fracture toughness of carbon fiber composites enhanced with graphene nano-species, **Composites Science and Technology**, Volume 118, 2015, Pages 217-225
31. **T.H. Loutas**, P. Charlaftis, A. Airolidi, P. Bettini, C. Koimtzoglou, V. Kostopoulos, Reliability of strain monitoring of composite structures via the use of optical fibre ribbon tapes for structural health monitoring purposes, **Composite Structures**, Volume 134, 2015, Pages 762-771
32. E. Kollia, **Th. Loutas**, E. Fiamegkou, A. Vavouliotis, V. Kostopoulos, Degradation behavior of glass fiber reinforced cyanate ester composites under hydrothermal ageing, **Polymer Degradation and Stability**, Volume 121, 2015, Pages 200-207
33. A. Kotrotsos, A. Vavouliotis, T. Loutas and V. Kostopoulos, The Effect of CNT modified matrix of cyanate ester CFRPs on the hydrothermal behavior of the material. Evaluation of the water uptake using electrical resistance measurements, **Polymer Composites**, 37 (4), pp. 1072-1077, 2016
34. Kostopoulos, V., Kotrotsos, A., Tsantzalis, S., Tsokanas, P., Loutas, T., Bosman, A.W. Toughening and healing of continuous fibre reinforced composites by supramolecular polymers, **Composites Science and Technology** 128, pp. 84-93, 2016
35. Kostopoulos, V., Kotrotsos, A., Baltopoulos, A., Tsokanas, P., Loutas, T., Bosman, A.W., Mode II fracture toughening and healing of composites using supramolecular polymer interlayers, **Express Polymer Letters**, 10 (11), pp. 914-926, 2016
36. N. Eleftheroglou and T. Loutas, Fatigue damage diagnostics and prognostics of composites utilizing structural health monitoring data and stochastic processes, **Structural Health Monitoring**, 15 (4), pp. 473-488, 2016
37. Kostopoulos, V., Kotrotsos, A., Tsantzalis, S., Tsokanas, P., Christopoulos, A.C., Loutas, T., Toughening and healing of continuous fibre reinforced composites with bis-maleimide based pre-pregs, **Smart Materials and Structures** 25 (8), 084011, 2016

38. N. Eleftheroglou, D. Zarouchas, T. Loutas, R. Alderliesten, R. Benedictus, Online Remaining Fatigue Life Prognosis for Composite Materials Based on Strain Data and Stochastic Modeling, **Key Engineering Materials** 713 (1662-9795): 34-37, 2016
39. Loutas, T., Eleftheroglou, N., Zarouchas, D., A data-driven probabilistic framework towards the in-situ prognostics of fatigue life of composites based on acoustic emission data, **Composite Structures**, 161, pp. 522-529, 2017
40. Loutas, T.H., Bourikas, A., Strain sensors optimal placement for vibration-based structural health monitoring. The effect of damage on the initially optimal configuration, **Journal of Sound and Vibration** 410 (2017) 217-230
41. Eleftheroglou, N., Zarouchas, D., Loutas, T., Alderliesten, R., Benedictus, R., Structural health monitoring data fusion for in-situ life prognosis of composite structures, **Reliability Engineering & System Safety**, Volume 178, October 2018, Pages 40-54
42. T. Loutas, G. Sotiriadis, D. Bonas, V. Kostopoulos, A statistical optimization of a green laser-assisted ablation process towards automatic bonded repairs of CFRP composites, December 2018, **Polymer Composites**, DOI: 10.1002/pc.25153

7.5 Publications in national and international conferences

1. **T.H. Loutas**, A. Koutsos, G. Sotiriadis, Y.Z. Pappas and V. Kostopoulos, "On the identification of the damage mechanisms in Oxide/Oxide composites using Acoustic Emission" in Proceedings of the 25th European Conference on Acoustic Emission Testing, Prague, Czech Republic, September 11-13, 2002
2. **T.H. Loutas**, G. Sotiriadis, K. Dassios, I. Kalaitzoglou and V. Kostopoulos, "Fracture Behaviour and Damage mechanisms Identification of SiC/Glass ceramic composites using DEN specimens and AE monitoring" in Proceedings of 3rd International Conference on Emerging Technologies in Non-Destructive Testing, Technology Transfer and Business Partnership Event, Salonica, Greece, May 26-28, 2003
3. **T.H. Loutas**, I. Fotiou, P. Fitrikas and V. Kostopoulos, "On the axial stiffness measurements of Ceramic and Carbon Fibers using elastic wave propagation techniques. Comparison against quasi-static tensile tests" in Proceedings of 5th International Symposium on Advanced Composites, Corfu, Greece May 5-8, 2003
4. Y.Z. Pappas, A. Koutsos, **T.H. Loutas** and V. Kostopoulos, "On the Characterization of Acoustic Emission Activity Generated by Continuous Fibres Breakage" in Proceedings of 3rd International Conference on Emerging Technologies in Non-Destructive Testing & Technology Transfer and Business Partnership Event, Salonica, Greece, May 26-28 2003
5. **T.H. Loutas**, V. Kostopoulos, G. Sotiriadis, "On the elastic modulus measurements of Ceramic and Carbon Fibers using elastic wave propagation techniques" in Proceedings of 3rd INTERNATIONAL CONFERENCE ON NDT of the Hellenic Society for NDT (HSNT), Chania, Greece, October 15-17, 2003
6. **T.H. Loutas**, V. Kostopoulos, K. Dassios, "Fracture Behaviour and Damage mechanisms

Identification of SiC/Glass ceramic composites using DEN specimens and AE monitoring" in Proceedings of 11th European Conference on Composite Materials, Rhodes, Greece, May 31-June 3, 2004

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8. Research Interests

1. NDT & health monitoring of composite structures and damage mode identification using various NDT techniques
2. Fracture mechanics of composites and joints (analytical-experimental-numerical studies)

3. Stochastic modeling of damage in composites utilizing Bayesian statistics - diagnostics & prognostics
4. Non-destructive testing (ultrasonics, acoustic emission, acousto-ultrasonic, vibration testing, static and dynamic strain sensing with FBGs, electric conductivity)
5. Condition monitoring of rotating machinery with various NDT technologies (vibration, acoustic emission, oil debris monitoring) - diagnostics & prognostics
6. Nano-composite materials with nano-doped matrix - mechanical behaviour, properties, multi-functionality, damage mode evolution