

THEOCHARIS BAXEVANIS  
Curriculum Vitae

ADDRESS

---

WORK:  
Department of Aerospace Engineering  
Texas A&M University  
237-E Wisenbaker Bldg.  
College Station, TX 77843-3141  
Phone: (979) 862-3359  
Email: theocharis@tamu.edu

HOME:  
1821 Nueces Dr  
College Station, TX 77840  
Phone: (979) 676-0512

PERSONAL DATA

---

CITIZENSHIP: Greek  
MARITAL STATUS: Married, two sons  
MILITARY SERVICE: 2001, August – 2003, May (*Trainee Officer*)

EDUCATION (ARISTOTLE UNIVERSITY, GREECE)

---

PH.D: (2003, March) Civil Engineering Department  
**Ph.D Thesis Title:** *The Role of Material Non-Homogeneities in Thermoviscoplastic Shearing*  
**Thesis advisor:** Nicolas Charalambakis

CERTIFICATE  
IN CONSTRUCTION SCIENCE  
AND TECHNOLOGY: (1998, May) Civil Engineering Department  
BSC IN MATHEMATICS: (1996, March) Department of Mathematics

RESEARCH INTERESTS

---

Constitutive Modeling and Numerical Simulation of the Mechanical and Thermal Behavior of Materials

*Range of Interests:* Active/Smart Materials, Thermo-Visco-Plasticity, Fracture Mechanics, Damage, Creep, Composites, Material Instability and Localization, Finite Element Analysis, Monte-Carlo Simulations

PROFESSIONAL EXPERIENCE

---

TEXAS A&M UNIVERSITY: *Post-doctoral Research Associate*  
Dept. of Aerospace Engineering  
2010, September – present  
*Lecturer*  
Dept. of Mechanical Engineering  
2013, September – present  
Dept. of Aerospace Engineering  
2012, December – 2013, August  
UNIVERSITY OF CRETE: *Adjunct Faculty*  
Dept. of Applied Mathematics  
2005, September – 2010, August

ÉCOLE CENTRALE DE NANTES: *Post-doctoral Research Associate*  
Génie Civil et Mécanique  
2004, September – 2005, August

SINTEF PETROLEUM RESEARCH: *Research Associate*  
Formation Physics  
2003, October – 2004, June

---

## PUBLICATIONS

### Current Research Projects

- (1) Baxevanis, Th., A. Parrinello and D. Lagoudas, *On the effect of actuation on the driving force for crack growth in Shape Memory Alloys*, submitted in Engineering Fracture Mechanics.
- (2) Jape, S., Th. Baxevanis and D. Lagoudas, *Actuation-induced crack growth in Shape Memory Alloys*, in preparation.
- (3) Jape, S., Th. Baxevanis and D. Lagoudas, *Variation of fracture toughness of Shape Memory Alloys with material constraint*, in preparation.
- (4) Baxevanis, Th., C. Landis and D. Lagoudas, *On the effect of latent heat on the fracture toughness of Shape Memory Alloys*, in preparation.

### Publications in Scientific Journals

- (1) Baxevanis, Th., A. Cox and D. Lagoudas, *Modeling of the precipitation effects on the effective thermo-mechanical response of NiTi Shape Memory Alloys*, accepted in Acta Mechanica.
- (2) Baxevanis, Th., C. Landis and D. Lagoudas, *On the fracture toughness of Shape Memory Alloys*, Journal of Applied Mechanics, 81: 041005, 2013.
- (3) Tsalis, D., Th. Baxevanis, G. Chatzigeorgiou and N. Charalambakis, *Homogenization of elastoplastic composites with generalized periodicity in the microstructure*, International Journal of Plasticity, 51: 161–187, 2013.
- (4) Baxevanis, Th., Parrinello, A. and D. Lagoudas, *On the fracture toughness enhancement due to stress-induced phase transformation in Shape Memory Alloys*, International Journal of Plasticity, 50: 158–169, 2013.
- (5) Baxevanis, Th., Y. Chemisky and D. Lagoudas, *Finite element analysis of the plane-strain crack-tip mechanical fields in Shape Memory Alloys*, Smart Materials and Structures, 21 (9), art. no. 094012, 2012.
- (6) Baxevanis, Th. and D. Lagoudas, *A mode I fracture analysis of a center-cracked infinite Shape Memory Alloy panel under plane stress*, International Journal of Fracture, 175 (2): 151–166, 2012.
- (7) Baxevanis, Th. and M. Plexousakis, *On the effect of fiber creep-compliance in the high-temperature deformation of continuous fiber-reinforced ceramic matrix composites*, International Journal of Solids and Structures, 47: 2487–2497, 2010.
- (8) Baxevanis, Th. and N. Charalambakis, *A micromechanically based model for damage-enhanced creep rupture in continuous fiber-reinforced ceramic matrix composites*, Mechanics of Materials, 42 (5): 570–580, 2010.
- (9) Baxevanis, Th., Th. Katsaounis and A. Tzavaras, *Adaptive finite element computations of shear band formation*, Mathematical Models and Methods in Applied Sciences, 20 (3): 423–448, 2010.
- (10) Baxevanis, Th., M. Plexousakis, *Estimation of base settlement from the surface subsidence profile: Two-Dimensional plane field of displacements*, International Journal for Numerical and Analytical methods in Geomechanics, 33 (8): 1109–1121, 2009.
- (11) Baxevanis, Th., *A coarse-grained model of thermally activated damage in heterogeneous media: Time evolution of creep rate*, Europhysics Letters, 83 (4): 46004, 2008.

- (12) Baxevanis, Th., G. Pijaudier-Cabot and F. Dufour, *Bifurcation and creep rate-effects in a viscoelastic non-local damageable continuum*, European Journal of Mechanics - A/Solids, 27 (4): 548–563, 2008.
- (13) Baxevanis, Th., and Th. Katsaounis, *Scaling of the size and temporal occurrence of burst sequences in creep rupture of fiber bundles*, Physical Journal B, 61 (2): 153, 2008.
- (14) Baxevanis, Th., and Th. Katsaounis, *Burst avalanches and inter-occurrence times in creep rupture*, Europhysics Letters, 81 (2): 24001, 2008.
- (15) Baxevanis, Th., and Th. Katsaounis, *Load capacity and rupture displacement in viscoelastic fiber bundles*, Physical Review E, 75: 046104, 2007.
- (16) Baxevanis, Th., E. Papamichos, O. Flornes and I. Larsen, *Compaction bands and induced permeability reduction in Tuffeau de Maastricht calcarenite*, Acta Geotechnica, 1 (2): 123–135, 2006.
- (17) Baxevanis, Th., F. Dufour and G. Pijaudier-Cabot, *Interface crack propagation in aging and time-dependent discrete models: Characterization of the size of the fracture process zone*, International Journal of Fracture, 141 (3–4): 561–571, 2006.
- (18) Baxevanis, Th., and N. Charalambakis, *The role of material non-homogeneities on the formation and evolution of strain non-uniformities in thermoviscoplastic shearing*, Quarterly of Applied Mathematics, 62 (1): 97–116, 2004.
- (19) Charalambakis, N., and Th. Baxevanis, *Adiabatic shearing of non-homogeneous thermoviscoplastic materials*, International Journal of Plasticity, 20 (4–5): 899–914, 2004.

### Technical Reports

- Baxevanis, Th., E. Papamichos, O. Flornes, I. Larsen, and A. Lavrov, *Compaction bands and permeability reduction: experimental and numerical investigation of Tuffeau de Maastricht rock*, Report. No. 33.5359.00/01/04, Reg. No. 2004.041, 1-29, SINTEF Petroleum Research, Trondheim, Norway, 24 June 2004.

### Publications in Congress Proceedings and Edited Books

- (1) Cox, A., Th. Baxevanis and D. Lagoudas, *Numerical evaluation of the effect of  $Ni_3Ti_4$  precipitates on the overall thermomechanical response of NiTi Shape Memory Alloys*, SMASIS2013–3183, Snowbird, Utah, 16–18, September, 2013.
- (2) Parrinello, A., Th. Baxevanis and D. Lagoudas, *On the energy release rate during global thermo-mechanically-induced phase transformation in Shape Memory Alloys*, SMASIS2013–3187, Snowbird, Utah, 16–18, September, 2013.
- (3) Tsalis, D., Th. Baxevanis, G. Chatzigeorgiou and N. Charalambakis, *Homogenization of elastoplastic composites with generalized periodicity in the microstructure*, Chania, Crete, 25–27 May, 10th HSTAM International Congress in Mechanics, 2013.
- (4) Baxevanis, Th., C. Landis and D. Lagoudas, *Mode I steady crack-growth in superelastic Shape Memory Alloys*, Stone Mountain, 19–21 September, SMASIS2012–7934, 2012.
- (5) Parrinello, A., Baxevanis, Th., D. Lagoudas and A. Cox, *A finite element study of stable crack-growth in superelastic Shape Memory Alloy*, Stone Mountain, 19–21 September, SMASIS2012-7912, 2012.
- (6) Baxevanis, Th. and D. Lagoudas, *On the path-dependency of the  $J$ -integral in a pseudoelastic Shape Memory Alloy*, Scottsdale, 18–21 September, SMASIS2011–5004, 2011.
- (7) Baxevanis, Th. and E. Papamichos, *Compactive cataclastic flow in Tuffeau de Maastricht calcarenite: mechanical deformation and permeability reduction* in Bifurcations, Instabilities, Degradation in Geomechanics, Springer Berlin Heidelberg, 95–126, 2007 (edited by George E. Exadaktylos and Ioannis G. Vardoulakis).
- (8) Baxevanis, Th., G. Pijaudier-Cabot, F. Dufour and R. Desiassyifayanty, *Localization in a viscoelastic non-local damageable continuum and the inherited size effect* in Computational Modelling of Concrete Structures, Proceedings of EURO-C 2006 Computational

- Modelling of Concrete Structures, Mayrhofen, Tyrol, Austria, 27th–30th March 2006 (edited by Gunther Meschke, Rene de Borst, Herbert Mang and Nenad Bicanic).
- (9) Baxevanis, Th., F. Dufour and G. Pijaudier-Cabot, *Bifurcation and size effect in a viscoelastic non-local damageable continuum* in Failure Analysis of Nano and Engineering Materials and Structures, Proceedings of the 16th European Conference of Fracture (ECF 16), Alexandroupolis, Greece, 18 pages on CDROM, July 3-7, 2006 (edited by E. E. Gdoutos).
  - (10) Baxevanis, Th., F. Dufour and G. Pijaudier-Cabot, *Interface crack propagation in a viscoelastic discrete model* in Creep, shrinkage and durability of concrete and concrete structures, Nantes, 12–14 September, 125-130, 2005 (edited by G. Pijaudier-Cabot, B. Gérard and P. Acker).
  - (11) Baxevanis, Th., Th. Katsaounis and A. Tzavaras, *A finite element method for computing shear bands formations*, Proceedings of the 10th International Conference on Hyperbolic Problems: Theory, Numerics, Applications (HYP2004), Osaka, 13–17 September, 295–302, 2004.
  - (12) Baxevanis, Th. and N. Charalambakis, *Shear stability and homogenization of stratified thermovisco-plastic materials*, Proceedings of the 4th GRACM Congress on Computational Mechanics, Patra, 27–29 June, 8 pages on CDROM, 2002.
  - (13) Charalambakis, N. and Th. Baxevanis, *Non-homogeneities and non-uniformities in thermoviscoplastic shearing* in Plasticity, Damage and Fracture at Macro, Micro and Nano scales, Neat Press, 636–638, 2002 (edited by A.S. Khan and O. Lopez Pamies).

#### TEACHING EXPERIENCE

---

TEXAS A&M UNIVERSITY, 2012–2014:

*Department of Mechanical Engineering:*

STATICS & PARTICLE DYNAMICS (MEMA 221): 2012–2013, Fall

*Department of Aerospace Engineering:*

MICROMECHANICS (MEMA 625–AERO 617): 2012–2013, Spring

UNIVERSITY OF CRETE, 2005–2010:

*Department of Applied Mathematics:*

CONTINUUM MECHANICS: 2009–2010, Spring

FLUID DYNAMICS: 2009–2010, Fall

THEORY OF ELASTICITY AND VISCOELASTICITY: 2008–2009, Spring

FLUID DYNAMICS: 2008–2009, Fall

CONTINUUM MECHANICS: 2007–2008, Spring

LINEAR ALGEBRA I: 2007–2008, Fall

LINEAR ALGEBRA II: 2006–2007, Spring

INTRODUCTION TO APPLIED MATHEMATICS I: 2006–2007, Fall

DIFFERENTIAL CALCULUS II: 2005–2006, Spring

DIFFERENTIAL CALCULUS I: 2005–2006, Fall

#### MENTORING

---

PHD STUDENTS:

- Sameer Jape, Ph.D. program in Aerospace Engineering, Texas A&M University, 2013–today
- Babantude Abgoola, Ph.D. program in Aerospace Engineering, Texas A&M University, 2012–today

- Dmitro Fedorenko, exchange program through NSF International Institute of Materials for Energy Conversion (IIMEC), award #0844082, Texas A&M University, Fall 2012

#### MSC STUDENTS:

- Austin Cox, MSc program in Aerospace Engineering, Texas A&M University, 2012–today
- Antonino Parinello, MSc program in Aerospace Engineering, Texas A&M University, 2011–2013

#### UNDERGRADUATE STUDENTS:

- Tanner Kirk, student worker, Texas A&M University, Fall 2013–today
- Florent Charbonnier, exchange program through NSF International Institute of Materials for Energy Conversion (IIMEC), award #0844082, Texas A&M University, Fall 2012
- Maxime Delavenne, exchange program through NSF International Institute of Materials for Energy Conversion (IIMEC), award #0844082, Texas A&M University, Fall 2012

#### INSTRUCTOR IN SCHOOLS

---

- Co-Instructor of “Micromechanics” in the 2nd IIMEC winter school in “Computational Material Science across Scales”, College Station, USA, 6–15 January, 2013.
- Instructor of “Multifunctional Composites” in the IIMEC summer school “Advanced Composite Materials”, Serres, Greece, 2–6 July, 2012.

#### SERVICE

---

- Co-Chair, *Fatigue & Fracture* in Symposium *Mechanics & Behavior of Active Materials*, SMASIS “Smart Materials Adaptive Structures & Intelligent Systems” Conference Snowbird, Utah, 16–18 September, 2013.
- Chair in Mini-Symposium “Micromechanics and modeling of Multifunctional Materials”, Thessaloniki, Greece, 14–15 July, 2011.
- Topic Chair, *Scaling and Size Effects*, 16th European Conference of Fracture (ECF 16), Failure Analysis of Nano and Engineering Materials and Structures, Alexandroupolis, Greece, July 3–7, 2006.
- Reviewer in International Journal of Fracture, Acta Materialia, Smart Materials and Structures, Journal of Intelligent Material Systems and Structures, International Journal of Damage Mechanics, Physical Review Letters, Physical Review E.

#### INVITED, CONTRIBUTED TALKS AND PRESENTATIONS

---

- (1) *Numerical evaluation of the effect of  $Ni_3Ti_4$  precipitates on the overall thermomechanical response of NiTi Shape Memory Alloys*, SMASIS “Smart Materials Adaptive Structures & Intelligent Systems” Conference, Snowbird, Utah, 16–18, September, 2013.
- (2) *On the energy release rate during global thermo-mechanically-induced phase transformation in Shape Memory Alloys*, SMASIS “Smart Materials Adaptive Structures & Intelligent Systems” Conference, Snowbird, Utah, 16–18, September, 2013.
- (3) *Finite Element Analysis of the Precipitation Effects on the Transformation Behavior Characteristics of Ni-rich NiTi SMAs*, Athens, Greece, 23–26 June, 2013.
- (4) *RVE Based Numerical Evaluation of the Effective Thermo-mechanical Behavior of NiTi Shape Memory Alloys With Coherent Precipitates*, Houston, Texas, 22–24 May, 2013.
- (5) *On the energy release rate during global thermo-mechanically-induced phase transformation in Shape Memory Alloys*, SMASIS “Smart Materials Adaptive Structures & Intelligent Systems” Conference, Snowbird, Utah, 16–18, September, 2013.

- (6) *Fracture Toughness of Superelastic Shape Memory Alloys*, 49th Annual Technical Conference of Society of Engineering Sciences, Georgia Tech, 10–12 October, 2012.
- (7) *Mode I steady crack-growth in superelastic Shape Memory Alloys*, SMASIS “Smart Materials Adaptive Structures & Intelligent Systems” Conference, Stone Mountain, 19–21 September, 2012.
- (8) *Finite Element Analysis of Crack-Tip, Plane-Strain Fields in Shape Memory Alloys under Small-Scale Nonlinearity*, 48th Annual Technical Conference of Society of Engineering Sciences, Northwestern University, 12–14 October, 2011.
- (9) *Mechanical fields near a static crack in a Shape Memory Alloy*, SMASIS “Smart Materials Adaptive Structures & Intelligent Systems” Conference, Scottsdale, 18–21, September, 2011.
- (10) *A model for mode I plane stress fracture of a pseudoelastic Shape Memory Alloy*, Mini-Symposium “Micromechanics and modeling of Multifunctional Materials”, Thessaloniki, 14–15 July, 2011.
- (11) *Creep-enhanced damage in continuous fiber-reinforced composites*, Department of Mechanical Engineering, University of Thessaly, Volos, Greece, November, 2009.
- (12) *A micromechanical model for the high-temperature deformation of ceramic composites reinforced with long fibers*, Department of Materials Science and Engineering, University of Ioannina, Ioannina, Greece, November, 2009.
- (13) *On the effect of fiber creep-compliance in the high-temperature deformation of continuous fiber-reinforced composites*, Production Engineering and Management Department, Technical University of Crete, Chania, Greece, March, 2009.
- (14) *Bifurcation and creep rate effects in a viscoelastic non-local damageable continuum*, Department of Applied Mathematics, University of Crete, Heraklio, Greece, October, 2006.
- (15) *Bifurcation and size effect in a viscoelastic non-local damageable continuum*, 16th European Conference of Fracture (ECF 16), Failure Analysis of Nano and Engineering Materials and Structures, Alexandroupolis, Greece, July 3–7, 2006.
- (16) *Interface crack propagation in a viscoelastic discrete model*, 7th International conference on creep, shrinkage and durability of concrete and concrete structures, Nantes, 12–14 September, 2005.
- (17) *The effect of diffusion controlled dissolution processes on Irwin’s length analyzed with a discrete model*, Nantes, France, June, 2005.
- (18) *Compaction bands and permeability reduction: experimental and numerical investigation of Tuffeau de Maastricht rock*, 16th ALERT-Geomaterials Graduate School, Aussois, France, October 14–16, 2004.
- (19) *Experimental and numerical investigation of compactions bands on Tuffeau de Maastricht calcarenite*, SINTEF, Trondheim, Norway, May, 2004.
- (20) *Pattern formation in thermo-visco-plastic shearing*, Department of Applied Mathematics, University of Crete, Heraklio, Greece, August, 2003.
- (21) *Shear stability and homogenization of stratified thermo-visco-plastic materials*, 4th GRACM Congress on Computational Mechanics, 27–29 June, Patra, Greece, 2002.

---

#### OTHER CONFERENCES, WORKSHOPS AND SCHOOLS

- (1) Lagoudas, D., A. Cox, B. Lester, Th. Baxevanis *Micromechanical modeling and analysis of Shape Memory Alloy composite materials at different scales*, 50th Annual Technical Conference of Society of Engineering Sciences, Brown University School of Engineering, July 28–31, 2013.

- (2) Chatzigeorgiou, G., D. Tsalis, Th. Baxevanis and N. Charalambakis, *Homogenization of structures with generalized periodicity made of elastoplastic materials with high contrasted properties*, Funchal, Portugal, Crete, 23–27 June, 4th International Conference on Integrity, Reliability & Failure, 2013.
- (3) Baxevanis, Th., and D. Lagoudas, *Challenges in computational fracture mechanics of Shape Memory Alloys*, Kaust Campus, Jeddah, Saudia Arabia, 6–7 May, IAMCS Spring Symposium, 2012.
- (4) Summer School in “Modeling and Numerical Methods for Multiscale Problems”, Heraklion, Crete, 2–7 June, 2003.

#### RESEARCH GRANDS

---

- 2013, June – 2016, June: Fracture Mechanics in the Presence of Reversible Martensitic Transformation in High Temperature Shape Memory Alloys, NSF Proposal number #1301139.  
*Main author.*
- 2011, September – today: FFATA Nano-Precipitation Hardened High Temperature Shape Memory Alloys, Contract number #FA9550-12-1-0218.
- 2010, September – today: NSF International Institute of Materials for Energy Conversion (IIMEC), award #0844082.
- 2005, September – 2006, August: “PYTHAGORAS, EPEAK I”.
- 2003, September – 2005, August: EU project ‘Degradation and Instabilities in Geomaterials with Application to Hazard Mitigation’ (DIGA-HPRN-CT-2002-00220) in the framework of the Human Potential Program, Research Training Networks.