

### PERSONAL INFORMATION

**Family Name, First Name:** Tsouknidas Alexandros Efthimis  
**Place/Date of Birth:** Heidelberg, Germany / 31 December 1976  
**Gender:** Male

### EDUCATION & PROFESSIONAL TRAINING

- 1996-2001** : **M.S. in Mechanical Engineering**  
Mechanical Engineering Department, Aristoteles University of Thessaloniki Greece.  
03/10/2001 – **Graduation "Cum Laude" among the top 4 of his class** (>150 students). Duration of studies: 5 years (corresponding to the minimum duration of studies). Thesis Title: “Production line modelling and optimization”
- 2002-2007** : **PhD in Mechanical Engineering**  
Mechanical Engineering Department, Aristoteles University of Thessaloniki Greece  
31/07/2007 - **Graduation "Summa Cum Laude"**. PhD Supervisor: Prof. Dr.-Ing. habil., Dr.-Ing. E.h., Dr.h.c. K.-D. Bouzakis, Title of Dissertation: “Development of experimental – analytical procedures to optimize the induction heating parameters of Al-billets in order to enhance the mechanical properties of thixo formed products”.
- 2008-2011** : **Post-Doctorate in Mechanical Engineering**  
FRAUNHOFER PCCM, Project Center of the FRAUNHOFER IPT in Aachen Germany

### CURRENT POSITIONS

- 01/09/14-present** : **Department of Mechanical Engineering of the University of Western Macedonia, Pl. Agiou Dimitriou, Kozani 501 00, Greece, tel.: +30 2461 056 200**  
**Adjunct Assistant Professor:** Deliver instruction on Mechanical Drawing I and II, Computer Aided Manufacturing (CAM) and Computer Aided Design (CAD). Consult on dissertations of graduate students and oversee diploma theses of undergraduate students. Provide guidance to members of the “Typhoon Moto Racing” team.
- 01/10/08-24/05/12** : **Department of Mechanical Engineering of the Technical University of Western Macedonia, Kila, Kozani, 50 100, Greece, tel.: +30 2461 068 286.**  
**Adjunct Assistant Professor:** Taught weekly engineering courses and work with colleagues on research projects at the Technical Research Centre. Collaborated in development of new programme student guide to improve standards. Secured funding for 2 national research projects and co-founded research cluster, receiving appointment as Head of Innovation.
- 01/05/15-present** : **PLiN Nanotechnology S.A., Spectra Business Center, 12<sup>th</sup> km Thessaloniki-Chalkidiki, (Gefyra Paspala) P.O. Box 60148, Thermi 570 01, Greece, tel.: +30 2316 007 840.**  
**Role:** Was recruited to spearhead technology driven Spin-off as CEO and shortly after elected as President of the Board. Coordinated all administrative and managerial decisions, managed employees, lead projects and spearhead research outlining milestones and deliverables. Develop company policy and future goals, product commercialization and marketing, increase company value and accumulate funding, negotiate contracts and establish strategic collaborations.

- 23/08/16-present : **World Health Organization (WHO) Department of Occupational health, Avenue Appia 20, 1211 Geneva 27, Switzerland, tel.: +41 22 7913531**  
**Role:** External Reviewer of the WHO Draft Guidelines for protecting workers from exposure to manufactured nanomaterials. Provided written advice on evidence chapters & guidelines, questions covered, important outcomes for decision-making and their applicability.

### PREVIOUS PROFESSIONAL EXPERIENCE

- 03/12/01-31/08/07 : **SAMARAS and ASSOCIATES LTD, LIMANI CENTER, 26th Oktovriou str. 43, Thessaloniki 546 27, Greece, tel.: +30 2310 540280.**  
**Role:** Supported the company's Management Systems Development & Product Certification Department and moved to Group Leader in late 2006. Engaged projects relating to Product Development & Certification in accordance to ISO, EN and DIN standards.
- 01/01/02-30/04/03 : **The Centre for Research & Technology (CERTH), 6<sup>th</sup> Km of Charilaou - Thermi, P.O. Box 60361, Thermi 570 01, Greece, tel.: +30 2310 498 100.**  
01/03/08-31/07/11 **Role:** Served as a Researcher and Project Manager of the Fraunhofer PCCM, a joint initiative of Fraunhofer IPT in Germany and the CERTH in Greece. Lead research teams, overseeing multiple staff engaged in executing projects. Develop concepts, draft proposals and submit new projects. Assemble international research consortia.
- 12/07/10-11/07/13 : **THESSALONIKI WATER SUPPLY & SEWERAGE CO. S.A. (EYATH Pagion), Leoforos Konstantinou Karamanli 69, Thessaloniki 546 42, Greece, tel.: +30 2310 953600.**  
**Role:** Member of the Board of Directors of the company supplying water for the wider Thessaloniki region. The organization administers government property valued at 170m€ Analysed opportunities, assets and organisational position. Collaborate with other Board members on decisions related to development and asset allocation.
- 01/01/04-31/12/09 : **Research Committee of the Aristotle University of Thessaloniki (AUTH), Aristotle Campus, 3is Septemvriou, Thessaloniki, 54 124, Greece, tel.: +30 2310 994 010.**  
01/08/11-27/05/15 **Role:** Conduct research projects and publish findings in peer-reviewed journals, managing approximately 25 projects and publishing 40 journal papers. Present research findings at more than 40 international conferences and other scientific events.
- 01/02/12-30/09/15 : **Research Committee of the Technical University of Western Macedonia, Kila, Kozani, 50 100, tel.: +30 2461 068 286.**  
**Role:** Submitted two research proposals and secured two nationally funded projects. Developed project schedules, outlining milestones and deliverables and producing status reports. Worked with teams to support research objectives and present research findings at international conferences and other scientific events.

### PREVIOUS TEACHING/ACADEMIC APPOINTMENTS:

- 30/10/07-05/07/10 : **Department of Vehicle Engineering of the Alexander Technological Educational Institute of Thessaloniki, P.O. Box 141, 574 00 Sindos, Thessaloniki, Greece, tel.: +30 2310 013 937**  
**Adjunct Assistant Professor:** Delivered weekly instruction to students enrolled in the engineering program.
- 10/10/11-10/02/12 : **Department of Mechanical Engineering of the Technical University of Central Macedonia, Terma Magnesias, 62124 Serres, Greece, tel.: +30 23210 49124.**  
**Adjunct Assistant Professor:** Weekly instructed students.

03/05/10-15/07/11 : Department of Mechanical Engineering of the Aristotle University of Thessaloniki,  
09/03/12-30/04/12 7<sup>th</sup> floor of Building D Aristotle Campus, Thessaloniki, 54 124, Greece, tel.: +30 2310 996 079.

**Adjunct Assistant Professor:** Delivered instruction on rapid prototyping techniques and assist in 2 mechanical engineering courses.

01/09/15-05/07/16 : Department of Mechanical Engineering of the Frederick University, Y. Frederickou Str. 7, Pallouriotisa, Nicosia 1036, Cyprus, tel.: +357 22394 394

**Adjunct Assistant Professor:** Responsible for the preparation and delivery of courses syllabus and Lab work. Deliver instruction on 3 graduate and undergraduate courses (Biomedical Engineering, Design and Manufacturing etc.).

### HONORS AND AWARDS

- 2014: *IMEC scholarship* to Texas A&M University, College Station, Texas, USA (**funded by the NSF**).
- 2013: *HSB best paper award* at the 19th Congress of the European Society of Biomechanics.
- 2013: *HSB best poster award* at the 19th Congress of the European Society of Biomechanics.
- 2013: Finalist/runner-up for the biannual international **Clinical Biomechanics Award**, presented by ISB.
- 2013: *Post-Doctoral Scholarships of excellence* from the Aristotle University of Thessaloniki.
- 2012: *Post-Doctoral Scholarships of excellence* from the Aristotle University of Thessaloniki.
- 2012: *Post-Doctoral Grant of excellence* from the General Secretariat for Research and Technology.
- 2012: "Sfera" Access grant to PROMES (CNRS) awarded by the European Commission.
- 2011: "Sfera" Access grant to PROMES (CNRS) awarded by the European Commission.
- 2010: "Sfera" Access grant to PROMES (CNRS) awarded by the European Commission.

### PUBLISHED WORK – ACADEMIC ACHIVEMENTS

- *Published more than 45 scientific manuscripts in peer reviewed and citation indexed journals.*
- *Presented his work in more than 60 international conferences, symposia and other scientific events.*
- *Cited more than 300 times, h-index = 10, i10-index = 12.*
- *Elected member & treasurer of the Council of the Hellenic Society of Biomechanics (effective 2013-2014).*
- *Editorial board member and guest Editor of several journals e.g. Craniofacial Biology and Dental Research: **IF=4.031**, Advances in Materials Science and Engineering: **IF=1.010** etc..*
- *Reviewer for several citation indexed journals e.g. BioMedical Engineering, Journal of Biomechanics, Journal of Clinical Biomechanics, Surgical Innovation, Journal of Pain Research etc..*
- *Committee Member (Scientific and/or Program and/or Organizing) of more than 20 conferences.*
- *“Session Chair” and/or “invited Speaker” at 5 scientific events (ESB 2013, Bioinformatics 2011 etc.).*
- *Supervised 7 Diploma thesis and co-supervised 3 PhD student.*
- *National Expert for the Europe-wide R&D Network “EUREKA-EuroStars” (2008-2009)*

### PATENTS

- *Nanotechnology based multi action cleaning solution for fuel injection nozzles of internal combustion engines. **Application no:** 20160100054, **Inventors:** N. Michailidis, A. Tsouknidas, D. Tsipas, D. Papadopoulos, P. Karanasios, G. Varsami, D. Koulaxis*
- *Ball Valves with superficially enhanced sealing mechanisms. **Application no:** 2013-00937, **Inventors:** K.-D. Bouzakis, A. Tsouknidas, S. Kobogiannis, F. Klocke*

**SELECTED PUBLICATIONS**

1. **A. Tsouknidas**, L. Jimenez-Rojo, E. Karatsis, N. Michailidis, T.A. Mitsiadis, *A bio-realistic finite element model to evaluate the effect of masticatory loadings on mouse mandible-related tissues. Frontiers in Physiology*, 2017, in press.
2. **A. Tsouknidas**, D. Giannopoulos, S. Savvakis, N. Michailidis, E. Lympoudi, D. Fytanidis, A. Pissiotis, K. Michalakis, *The influence of bone's quality on the biomechanical behavior of a tooth-implant fixed partial denture. A 3D Finite Element Analysis (FEA). The International Journal of Oral & Maxillofacial Implants* 30 (3), 2016, pp. e143-e154.
3. Y. Kirmanidou, M. Sidira, M.E. Drosou, V. Bennani, A. Bakopoulou, **A. Tsouknidas**, N. Michailidis, K. Michalakis, *New Ti-Alloys and Surface Modifications to Improve the Mechanical Properties and the Biological Response to Orthopedic and Dental Implants: A Review. BioMed Research International*, 2016, art. no. 2908570.
4. **A. Tsouknidas**, E. Lympoudi, K. Michalakis, D. Giannopoulos, N. Michailidis, A. Pissiotis, D. Fytanidis, D. Kugiumtzis, *Influence of Alveolar Bone Loss and Different Alloys on the Biomechanical Behavior of Internal and External-Connection Implants: A Three-Dimensional Finite Element Analysis. The International Journal of Oral & Maxillofacial Implants*, 30 (3), 2015, e30-e42.
5. **A. Tsouknidas**, G. Maliaris, S. Savvakis, N. Michailidis, *Anisotropic post-yield response of cancellous bone simulated by stress-strain curves of bulk equivalent structures. Computer Methods in Biomechanics and Biomedical Engineering*, 18 (8), 2015, pp. 839-846.
6. **A. Tsouknidas**, K. Anagnostidis, S. Panagiotidou, N. Michailidis, *The effect of osteoarthritis on the regional anatomical variation of subchondral trabecular bone in the femoral head. Clinical Biomechanics*, 30 (5), 2015, pp. 418-423.
7. **A. Tsouknidas**, S.O. Sarigiannidis, K. Anagnostidis, N. Michailidis, S. Ahuja, *Assessment of stress patterns on a spinal motion segment in healthy versus osteoporotic bony models with or without disc degeneration: A finite element analysis. Spine Journal*, 15 (3), 2015, pp. 17S-22S.
8. **A. Tsouknidas**, *The Effect of Pedicle Screw Implantation Depth and Angle on the Loading and Stiffness of a Spinal Fusion Assembly. Biomedical Materials and Engineering* 25 (4), 2015, pp. 425-433.
9. G.I. Mataliotakis, **A. Tsouknidas**, S. Panteliou, M.D. Vekris, G.I. Mitsionis, S. Agathopoulos, A.E. Beris, *A new, low cost, locking plate for the long-term fixation of a critical size bone defect in the rat femur: In vivo performance, biomechanical and finite element analysis. Biomedical Materials and Engineering* 25 (4), 2015, pp. 335-346.
10. **A. Tsouknidas**, S. Savvakis, Y. Asaniotis, K. Anagnostidis, A. Lontos, N. Michailidis, *The effect of kyphoplasty parameters on the dynamic load transfer within the lumbar spine considering the response of a bio-realistic spine segment. Clinical Biomechanics*, 28 (9-10), 2013, pp. 949-955.
11. N. Michailidis, G. Karabinas, **A. Tsouknidas**, G. Maliaris, D. Tsipas, P. Koidis, *A FEM based endosteal implant simulation to determine the effect of peri-implant bone resorption on stress induced implant failure. Bio-Medical Materials and Engineering*, 23 (5), 2013, pp. 317-327.
12. **A. Tsouknidas**, A. Lontos, S. Savvakis, N. Michailidis, *Nonintrusive 3D reconstruction of human bone models to simulate their bio-mechanical response. 3D Research* 3(2), 2012, pp. 1-10.
13. **A. Tsouknidas**, K. Anagnostidis, G. Maliaris, N. Michailidis, *Fracture risk in the femoral hip region: A finite element analysis supported experimental approach. Journal of Biomechanics* 45, 2012, pp. 1959-1964.
14. **A. Tsouknidas**, N. Michailidis, S. Savvakis, K. Anagnostidis, K.D. Bouzakis, G. Kapetanios, *A finite element model technique to determine the mechanical response of a lumbar spine segment under complex loads. Journal of Applied Biomechanics* 28(4), 2012, pp. 448-456.
15. **A. Tsouknidas**, *Friction induced wear of Rapid Prototyping generated components: A Review. Advances in Tribology*, 2011, art. no. 746270.
16. **A. Tsouknidas**, S. Maropoulos, S. Savvakis, N. Michailidis, *FEM assisted evaluation of PMMA and Ti6Al4V as materials for cranioplasty resulting mechanical behaviour and the neurocranial protection. Bio-Medical Materials and Engineering* 21, 2011, pp. 139-147.

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**SELECTED RELEVANT PROJECTS**

- 27/05/12-26/05/15** : **FEM supported determination of the biomechanical response of the human spine considering all musculoskeletal characteristics**, Acronym: BioSpine, funded by the General Secretariat For Research And Technology of Greece under action “Supporting Postdoctoral Researchers”, Project code: PE8 (3227). **Role:** Principal Investigator.

The project developed a highly detailed FE model of the lumbosacral spine, capable of considering patient depending anatomical characteristics and biomechanical aspects. The objective of the model is to provide valuable insight on trauma progression, implant design, pathology prevention and surgical procedure development/optimization.

- 14/04/11-13/04/15** : **NANO to MACRO BIOMATERIALS (design, processing, characterization, modeling) and applications to stem cells regenerative orthopedic and dental medicine**. Acronym: NAMABIO, funded under FP7 (COST Action), Project code: MP1005. **Role:** Participant.

Regenerative medicine is a new discipline based on biomaterial development and increasing knowledge in cell science. NAMABIO focused only in the interdisciplinary research related to biomaterials and stem cells of interest for the regenerative medicine of bones and teeth.

- 01/01/15-31/12/15** : **The effect of masticatory loading on stem cell fate in the cervical loop of the incisor in rodents**. Acronym: BitFEM, funded by the Aristotle University of Thessaloniki under action “Post-Doctoral Scholarships of excellence”, **Role:** Principal Investigator

The aim of the project was to develop a bio-realistic FE model of the mouse mandible, in order to determine the effect of masticatory loading on the stem cells endemic to the cervical loop of the incisor.

- 01/01/13-31/12/13** : **The effect of height restoration of compression fractures on the risk of follow-up trauma after kyphoplasty**. Acronym: KyphEM, funded by the Aristotle University of Thessaloniki under action “Post-Doctoral Scholarships of excellence”, **Role:** Principal Investigator.

Retrospective clinical studies suggest that kyphoplasty, despite being a procedure with promising potential, may be related to an increased fracture risk of the adjacent untreated vertebrae. The project examined the effect of height restoration on the risk of follow-up fractures and determined that that prevalent fractures are a symptomatic condition of osteoporosis rather than a sequel of efficiently preformed kyphoplasty.

- 01/01/12-31/12/12** : **Pre-operative optimization of scoliosis through advanced Finite Element Modelling**. Acronym: ScolifEM, funded by the Aristotle University of Thessaloniki under action “Post-Doctoral Scholarships of excellence”, **Role:** Principal Investigator.

A scoliotic spine was reverse engineered based on  $\mu$ CT measurements. The model was meshed and verified and then used to simulate different instrumentation scenarios with pedicle screws, as to determine the optimum surgical parameters in restoring the deformed anatomy.

- 14/12/11-15/03/12** : **Protective coatings for dental implants**. Acronym: ProDent, funded by the General Secretariat For Research And Technology of Greece under action “Vouchers for SMEs”, **Role:** Principal Investigator.

The project aimed at the development of Biomimetic/Nanostructured coatings for dental implants. The objective was to both, increase the material strength of the implants as well as promote osseointegration.