



Orestis Friderikos

Personal Details

Full Name:	Orestis Friderikos
Title:	Dr
Department/ Institute:	Department of Mechanical Engineering Technological Education Institute (TEI) of Serres Magnesias campus, GR-62120, Greece Tel: +30 2310698237 Fax: +30 2310698237 Mobile: +30 6944598092 E-mail: orefrid@teiser.gr
Gender:	Male
Ethnic Origin:	Greek

Research Interests

Primary research interest is in the area of modeling the material behaviour subjected to large displacements, large strains and high strain rates using the finite element method. The focus of the work is on computational and experimental validation issues involved in modeling metal forming and machining processes. Recently, another research interest is in the area of simulation of the damage failures on composite structures using GENOA software (Alpha STAR Corporation).

- Finite element analysis (FEM)
- Developing finite element code for large plastic deformation
- Computational plasticity
- Material behaviour under high strains and high strain rates
- Mechanics of composite materials
- Damage and failure analysis of composite materials
- Numerical analysis and optimization methods

Education

Level/Type	Awarding Institution	Date Awarded
PhD Title: Simulation of chip formation and flow in gear hobbing using the finite element method (Advisor: Professor K-D. Bouzakis)	Aristoteles University of Thessaloniki Department of Mechanical Engineering	May 2008
Dipl-Eng 5 years Degree	Aristoteles University of Thessaloniki Department of Mechanical Engineering	Nov 2001

Present and Previous Employment

Research Assistant- Laboratory for Machine tools and Manufacturing Engineering, Department of Mechanical Engineering, Aristoteles University of Thessaloniki, 2002-2009.

Lecturer – Research Assistant – Laboratory of Manufacturing Technology and Machine Tools, Department of Mechanical Engineering, Technological Education Institute (TEI) of Serres, 2008-current.

Lecturer – Department of Vehicle Technology, Alexander Technological Educational Institution of Thessaloniki, 2008-current.

Lecturer – Automation Institution, Alexander Technological Educational Institution of Thessaloniki 2011-2012.

Research Papers

Journal Papers

1. “FEM Supported Simulation of Chip Formation and Flow in Gear Hobbing of Spur and Helical Gears” ,Bouzakis, K.-D., Friderikos, O., Tsiafis, I., CIRP Journal of Manufacturing Science and Technology, 2008, 1, 18–26.
2. “Manufacturing of Cylindrical Gears by Generating Cutting Processes: A critical synthesis of analysis methods”, Bouzakis, K.-D., Lili, E.N., N. Michailidis, Friderikos, O., CIRP Annals - Manufacturing Technology, 2008, 57, 676–696.
3. “An investigation of cutting edge failure due to chip crush in carbide dry hobbing using the finite element method”, O. Friderikos, G. Maliaris, C. N. David, I. Tsiafis,

International Journal of Advanced Manufacturing Technology, 2011, 57, Nr. 1-4, 297-306(10).

Participation in National and International Conferences with Oral Contribution

4. Bouzakis, K.-D., Tsiafis, I., Friderikos, O., C. Petridou, D. Sampsonidis, 2002, "Assembly and test of high precision drift tube chambers for the ATLAS muon spectrometer", Proceedings of the 1st International Conference on Manufacturing Engineering (ICMEN), Chalkidiki, Greece, 799-816.
5. Bouzakis, K.-D., Tsiafis, I., Lontos A., Michailidis N., Anastopoulos I., Kalogirou M., Friderikos, O., 2002, "Study of mechanical properties of various epoxy resin types by means of macro indentations and its FEM simulation", Proceedings of the 1st International Conference on Manufacturing Engineering (ICMEN), Chalkidiki, Greece, 525-541.
6. Bouzakis, K.-D., Kompogiannis, S., Friderikos, O., Anastopoulos, J., 2003, "Cutting performance increasing in gear hobbing by means of HSS hobs, coated with effective PVD films", Proceedings of the International Conference, Power Transmissions '03, 41-46.
7. Bouzakis, K.-D., Friderikos, O., Maliaris, G., Lili, E.N., Kombogiannis, S., Korlos, A., "Chip formation in gear hobbing, visualized by means of FEM supported techniques", 4th CIRP International Seminar On Intelligent Computation In Manufacturing Engineering CIRP ICME'04, 2004, 399-401.
8. Bouzakis, K.-D., Friderikos, O., Mirisidis, I., Tsiafis, I., 2005, "Determination of Chip Geometry and Cutting Forces in Gear Hobbing by a FEM-based Simulation of the Cutting Process", Proceedings of the 8th CIRP International Workshop on Modeling of Machining Operations, Chemnitz, Germany, 49-58.
9. Bouzakis, K.-D., Friderikos, O., Mirisidis, I., Tsiafis, I., 2005, "FEM-based simulation of the cutting process in gear hobbing with various kinematics", Proceedings of the 2nd International Conference on Manufacturing Engineering (ICMEN), Kallithea-Chalkidiki, Greece, 97-110.
10. Bouzakis, K.-D., Friderikos, O., Tsiafis, I., 2007, "FEM Supported Simulation of Chip Formation and Flow in Gear Hobbing of Helical Gears", Proceedings of the 4th International Conference on Digital Enterprise Technology, Bath, United Kingdom, 34-43.
11. Bouzakis, K.-D., Chatzis K., Friderikos, O., Kombogiannis S., 2008, "Effect of chip geometry and cutting kinematic on the wear of coated PM HSS tools in milling", Proceedings of the 7th International Conference 'THE' Coatings in Manufacturing Engineering, Kallithea-Chalkidiki, Greece, 197-208.

12. Bouzakis, K.-D., Friderikos, O., Tsiafis, I., 2008, "FEM Supported Simulation of Chip Formation and Flow in Gear Hobbing of Spur and Helical Gears", Proceedings of the 3rd International Conference on Manufacturing Engineering (ICMEN), Kallithea-Chalkidiki, Greece, 3-20.
13. O. Friderikos, A. Korlos, C. David, I. Tsiafis, 2011, "Investigation of Shear Instability in Orthogonal Machining of Ti6Al4V alloy using the Finite Element Method", 7th GRACM International Congress on Computational Mechanics, 30 June-2 July 2011, Athens, Greece.
14. O. Friderikos, "Two-Dimensional Rigid-Plastic FEM Simulation of Simple Metal Forming Processes in MATLAB", 2011, Proceedings of the 4rd International Conference on Manufacturing Engineering (ICMEN), Kallithea-Chalkidiki, Greece, 607-619.

Technical Program Committee in International Conferences

1. Technical Program committee of 1st International Conference on Manufacturing Engineering and EUREKA Partnering Events ICMEN, 3-4 October 2002, Greece.
2. Technical Program committee of 2nd International Conference on Manufacturing Engineering and EUREKA Brokerage Event, 5-7 October, 2005, Greece.
3. Technical Program committee of 3rd International Conference on Manufacturing Engineering and EUREKA Brokerage Event ICMEN, 1-3 October, 2008, Greece.
4. Technical Program committee of 7th International Conference "THE"" Coatings in Manufacturing Engineering, 1-3 October, 2008, Greece.
5. Member of Organization and supporting Committee, in the frame of the Hellenic Presidency of EUREKA Initiative 2001-2002, in order to organize the following conferences:
 - National Project Coordinators, 03-04/10/2001, 06-07/02/2002, 24-25/04/2002, 26/06/2002
 - High Level Group Representatives, 04-05/10/2001, 07-08/02/2002, 25-26/04/2002, 27/06/2002
 - Interparliamentary conference, 22-24/05/2002
 - Ministerial conference
6. Member of Organization Committee in the frame of the Research activities "First Meeting of the Monitoring Committee of the EU-Western Balkans co-operation in Science and Technology" and "Ministerial conference for the promotion of FP6 to third European and Candidate countries", of the Hellenic Presidency of European Union for research and technology issues, in order to organize the following conferences:

- Conference for the promotion of the 6 Framework Programme to countries of the Balkan and Black Sea regions, 17-19/02/2003
- Ministerial conference: EU-Balkan countries Action Plan in Search and Technology, 25-27/06/2003

Teaching

- 2003–2008 INTRODUCTION INTO MANUFACTURING TECHNOLOGY (1st Year UG course), Lecturer, Department of Mechanical Engineering, Aristoteles University of Thessaloniki, Greece.
- 2003–2009 GEAR MANUFACTURING PROCESSES (5th Year UG course), Lecturer, Department of Mechanical Engineering, Aristoteles University of Thessaloniki, Greece.
- 2010– current COMPUTATIONAL METHODS FOR STRUCTURES, Lecturer, Department of Mechanical Engineering, Technological Education Institute (TEI) of Serres.
- 2010–2011 CAD/CAE, Lecturer, Department of Mechanical Engineering, Technological Education Institute (TEI) of Serres.
- 2009–current MACHINING PROCESSES WITH COMPUTER NUMERICAL CONTROL (CNC), Lecturer, Department of Mechanical Engineering, Technological Education Institute (TEI) of Serres.
- 2011–current MECHANICAL DESIGN II, Lecturer, Department of Mechanical Engineering, Technological Education Institute (TEI) of Serres.
- 2008–2009 MECHANICAL LABORATORY II, Lecturer, Department of Mechanical Engineering, Technological Education Institute (TEI) of Serres.
- 2010–2011 MACHINE TOOLS (CAD\CAM), Lecturer, Department of Mechanical Engineering, Technological Education Institute (TEI) of Serres.
- 2011 GENERAL ELEMENTS OF MECHANICAL ENGINEERING, Lecturer, Automation Institution, Alexander Technological Educational Institution of Thessaloniki.
- 2008–2010 2012–current MACHINING PROCESSES WITH COMPUTER NUMERICAL CONTROL (CNC), Lecturer, Department of Vehicle Technology, Alexander Technological Educational Institution of Thessaloniki.

Student Advisement

2008 Chatzis K. (Diploma Thesis, Dpt. Mech. Eng., Aristoteles University of Thessaloniki).

Professional Activities

Member of the Technical Chamber of Greece

Language Skills

Greek Mother Tongue

English Excellent

Participation in Research Programs

04/2011–1/2012 Computational investigation of cutting tools failure in gear hobbing using the finite element method, Research Committee of TEI of Serres, under grant 23/5/23-3-2011.

2010–current Development of new products and replicas of cultural heritage by using Reverse Engineering techniques and manufacturing in micro scale, 09-SYN-62-331, funded by the Greek Secretariat of Research & Technology within the Frame Work programme “Cooperation”, ESPA.

04/2012–current Investigation of shear instability in orthogonal machining of Ti6Al4V alloy using the finite element method, ARCHIMEDES Programme III, ESPA, Mechanical Engineering Department, TEI Serres, (2012-2015) .

11/2005–07/2007 Innovative PVD nano-coatings on tools for machining titanium and Nickel Alloys (MATINA)”. The project was founded from the EUROPEAN COMMISSION-RESEARCH DIRECTORATE GENERAL through the Research Committee of Aristoteles University of Thessaloniki.

08/2007–06/2008 Construction and development of the impact tester. The project was founded from the companies CEMECON GMBH, CEMECON AG-COATINGS, RHEINISCH-WESTFALISCHE TECHNISCHE HOCHSCHULE AACHEN, through the Research Committee of Aristoteles University of Thessaloniki .

Future Participation

7/2012 Summer School in Advanced Composite Materials, International Institute for Multifunctional Material for Energy Conversion, IIMEC, Technological Education Institute (TEI) of Serres, 2-6 July 2012.

Technology and Tools

Operating Systems	MS Windows NT/ XP, Novel NetWare 4.11/IntranetWare, Red Hat Linux
Programming Languages	Basic, Fortran, Turbo Pascal, ANSI C, Interactive C (Rug Warrior MIT), MATLAB
FEM	DEFORM 2D/3D, ANSYS
CAM	Esprit, SolidCam
Technologies	Programming CNC Machine tools