Pavlin B. Entchev

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EDUCATION

Ph.D. Aerospace Engineering (GPA 3.93/4.00)
1997–2002 Texas A&M University, College Station, TX
Advisor: Prof. Dimitris C. Lagoudas
Thesis: *Micromechanical Modeling of Porous Shape Memory Alloys*

MS Applied Mathematics (GPA 5.00/5.00)
1989–1994 Belorussian State Polytechnic Academy, Minsk, Belarus
Advisor: Prof. Alexandre F. Opeiko
Thesis: *Mathematical Modeling of a Controlled Suspension of an Automobile*

PROFESSIONAL EXPERIENCE

- **Graduate Assistant, Research, Aerospace Engineering Department, Texas A&M University, 1997-present:**

  - Development and implementation of a model for porous shape memory alloys using micromechanical averaging techniques;

  - Development of a 3D constitutive model for shape memory alloys under cyclic loading, which takes into account plastic strains development and evolution of the material parameters;

  - Numerical implementation of SMA constitutive model into user-material (UMAT) subroutine for ABAQUS using return-mapping algorithms;

  - Development and implementation of a novel model for oxidation of metals, which takes into account both the movement of the metal-oxide interface as well as the expansion of the oxide layer during oxidation; correlation of the model results with experimental data for oxidation of titanium.

- **Research Fellow, Institute of Mathematics, Bulgarian Academy of Sciences, 1994-1996:**

  - Research and implementation of finite difference numerical algorithms for solving oxidation problem in metals in 1D and 2D with anisotropic diffusion coefficients.

COMPUTER SKILLS

- **Languages:** C, C++, FORTRAN, Java

- **Operating systems:** DOS, Windows, UNIX

- **Software:** ABAQUS, Femap, Maple, LaTeX, MS Office

AWARDS AND MAJOR APPOINTMENTS

- First Place, 2001 Graduate Student Research Award, Texas A&M University, December 2001

- Aerospace Academic Excellence Award, Texas A&M University, November 2000

- Graduate Assistantship, Texas A&M University, 1997-2002

- Grant-in-Aid for Foreign Studies, Foundation "Eureka", Bulgaria, December 1996

- Diploma with honors, Belorussian State Polytechnic Academy, 1994

- Silver Medal for Outstanding Achievements, High School, 1989

Refereed Journal Articles

1. Entchev, P. B., Iliev, O. P. and Lagoudas, D. C., "Numerical Simulation of a 2D Oxide Layer Growth in an Anisotropic Medium," *Journal of the Mechanical Behavior of Materials*, Vol. 7 No. 1, pp. 67–84, 1996.

2. Lagoudas, D. C., Entchev, P. B., and Triharjanto, R., "Modeling of Oxidation and its Effect on Crack Growth in Titanium Alloys," *Computer Methods in Applied Mechanics and Engineering*, Vol. 183, pp. 35–50, 2000.

3. Entchev, P. B., Lagoudas, D. C., and Iliev, O. P., "Domain Transformation Problems in 2D Oxidation," *Journal of the Mechanical Behavior of Materials*, Vol. 11 No. 4, pp. 275–293, 2000.

4. Lagoudas, D. C., Entchev, P. B., Qidwai, M. A. and DeGiorgi, V. G., "Micromechanics of porous shape memory alloys", In: *Proceedings of 2000 ASME International Mechanical Engineering Congress and Exposition*, AD-Vol. 60, pp. 41–50.

5. Entchev, P. B., Lagoudas, D. C., and Slattery, J. C., "Effects of Non-Planar Geometries and Volumetric Expansion in the Modeling of Oxidation in Titanium," *International Journal of Engineering Science*, Vol. 39 No. 6, pp. 695–714, 2001.

6. Qidwai, M. A., Entchev, P. B., Lagoudas, D. C. and DeGiorgi, V. G., "Modeling of the Thermomechanical Behavior of Porous Shape Memory Alloys", *International Journal of Solids and Structures*, Vol. 38 Nos. 48–49, pp. 8653–8671, 2001.

7. Entchev, P. B. and Lagoudas, D. C., "Modeling Porous Shape Memory Alloys using Micromechanical Averaging Techniques", *Mechanics of Materials*, Vol. 34, pp. 1–24, 2001.

Papers in Proceedings Volumes and Edited Books

1. Entchev, P. B., Dvorkin, V. V. and Sabalevskaya, I. N., "Modeling of Inhomogeneous Systems," In: *Proceedings of the 50th Scientific and Technical Conference of BSPA*, Minsk, Belarus, Vol. 1, p. 106, 1994.

2. Entchev, P. B., Dvorkin, V. V. and Opeiko, A. F., "Object Oriented Method for Modeling of Suspension of the Automobile," In: *Proceedings of the Conference Theory and Methods for Creating of Intellectual CAD Systems*, Minsk, Belarus, November 1994.

3. Entchev, P. B., "Numerical Investigation of Solid-Solid Phase Change Problem," *Preprint No. 14 of the Bulg. Acad. of Sci.*, 1995.

4. Entchev, P. B., "Numerical Simulation of a Class of Solid-Solid Phase Change Problems," In: *Proceedings of the 21st Summer School Applications of Mathematics in Engineering and Business*, Varna, Bulgaria, August 24 – September 2, 1995.

5. Lagoudas, D. C., Entchev, P. B. and Triharjanto, R. H., "Modeling of Oxidation and its Effect on the Crack Growth Resistance of Titanium Alloys," *Studies in Applied Mathematics: Damage Mechanics in Engineering Materials*, Vol. 46, G. Z. Voyiadjis, J.-W. W. Ju, and J.-L. Chaboche, eds. Elsevier Science, pp. 421–440, 1998.

6. Lagoudas, D. C., Imbrie, P. K., Entchev, P. B., Slattery, J. C. and Dhori, P., "Environmental Effects on Titanium Alloys and Composites," In: *Constitutive and Damage Modeling of Inelastic Deformation and Phase Transformation*, Plasticity '99, Edited by A. Khan, pp. 815–818, 1999.

7. Lagoudas, D. C., Entchev, P. B., Vandygriff, E. L., Qidwai, M. A. and DeGiorgi, V. G., "Modeling of Thermomechanical Response of Porous Shape Memory Alloys," In: *Proceedings of the 2000 Conference on Smart Structures and Materials*, Vol. 3992, 2000.

8. Lagoudas, D. C., Entchev, P. B. and Vandygriff, E. L., "Fabrication, Modeling and Characterization of Porous Shape Memory Alloys," In: *Proceedings of the 2001 Conference on Smart Structures and Materials*, 2001.

9. Lagoudas, D. C., and Entchev, P. B., "Micromechanical Modeling of the Behavior of Porous Shape Memory Alloys," In: *Proceedings of 6th National Congress on Mechanics*, Thessaloniki, Greece, 2001

10. Lagoudas, D. C., Entchev, P. B. and Vandygriff, L. E, "Fabrication and Modeling of Porous Shape Memory Alloys," In: *Proceedings of ASC 16th Annual Technical Conference*, 2001.

Graduate Coursework

Continuum Mechanics	Engineering Fracture Mechanics
Viscoelasticity of Solids and Structures	Plasticity Theory
Foundations of Continuum Mechanics	Micromechanics
Introduction to Finite Element Method	Nonlinear Finite Element Method
Numerical Methods in Differential Equations	Applied Exterior Calculus
Boundary Value Preconditioners	Wave Propagation in Solids

Professional Memberships

- American Society of Mechanical Engineers (ASME)
- American Institute of Aeronautics and Astronautics (AIAA)

Work Authorization

- Eligible for F1 Practical Training Work Authorization

References

- Available upon request