

CURRICULUM VITAE

June 1, 2007
Sinisa Dj. Mesarovic

EDUCATION

Ph.D. 1996 Harvard University, Cambridge, MA
M.S. 1990 Case Western Reserve University, Cleveland, OH
B.S. 1987 University of Belgrade, Belgrade, Yugoslavia

Areas of Interest:

Multiscale modeling of materials, Solid Mechanics, Computational Mechanics, Dislocation plasticity, Granular materials, Phase transformations, Contact Mechanics

PROFESSIONAL EXPERIENCE

1999-2001 Senior Scientist, Dept. of Materials Science and Engineering, University of Virginia, Charlottesville, VA
 1996-1999 Research Associate, Engineering Dept., University of Cambridge, Cambridge, UK

COURSES TAUGHT

<u>Graduate Level</u>	<u>Undergraduate Level</u>
Continuum Mechanics (ME 501)	Finite Elements (ME 472),
MME Seminar Course (ME 598)	Solid Mechanics (ME/MSE 413)
Multiscale modeling (ME 579)	Engineering Analysis (ME 313)
Elasticity (ME 530)	Materials Lab (ME 220)

UNIVERSITY SERVICE

Graduate Studies Committee: 2001/02, 02/03, 03/04, 06/07
 Undergraduate Studies Committee 2004/05, 05/06
 College Committee for Mathematics 2004/05, 06/07
 ASME Student Chapter Advisor 2004/05, 05/06, 06/07
 Dean's Research Committee 2006/07

PROFESSIONAL ACTIVITIES, AWARDS AND HONORS

Member ASME, MRS, ASEE

Committees/Conferences:

ASME AMD/MD Joint Committee for Constitutive Equations
 ASME AMD Committee for Fracture
 Organized the symposium "Mechanics on the Nano and Micro Scales" ASME Congress 04
 Associate Editor of Metalurgija – Journal of Metallurgy (MJOM)

Awards/Prizes: Outstanding teacher in Mechanical Engineering, 2004/05

Reviewership:

Int J Solids Structures, Phil Mag, Int J Plasticity, ASME J Eng. Materials Technology. ASME J Appl Mech, ASME J Tribology, Proc Roy Soc Lond, J Mech Phys Solids, J Mat Sci, Mod Simul Mat Sci Eng, Mech Mat, Int. J. for Multiscale Comp Eng, Appl Math Modelling.

Invited Lectures/Seminars

- Transition between the models in multiscale simulations: Continuum and network models. Rensselaer Polytechnic Institute, March 2007.
- Transition between the models in multiscale modeling of materials. *Applied Mathematics Colloquia*, MIT, April 2005
- Coarse-graining of dislocation energies and the continuum crystal plasticity. Engineering seminar. Columbia University, July 2005
- Transition between the scales in multiscale modeling of materials. *Physics Colloquia*, WSU. 2004
- Micromechanical Foundations of a Nonlocal Crystal Plasticity. *International Conference on Plasticity, Hawaii, 2005.*
- Energy, Configurational Forces and Characteristic Lengths Associated With the Continuum Description of Geometrically Necessary Dislocations. *MRS Fall Meeting, Boston, 2004.*
- Adhesive Contact of Elastic Plastic Solids. *Faculty of Mathematics, University of Belgrade, 2002.*
- Explosive Crystallization in Thin Films. *Faculty of Technology and Metallurgy, University of Belgrade, 2002*
- Micromechanics of Powder Compaction. *Faculty of Technology and Metallurgy, University of Belgrade, 2001*
- Mapping the Elastic-Plastic Contact. *International Indentation Workshop II, Cambridge, UK, 2001*
- Spherical indentation of elastic-plastic solids. *Hardness and Nanohardness Meeting. Institute of Physics, London, UK, 1998.*
- Dynamic strain ageing and plastic instabilities. *Materials Research Society Fall Meeting, Boston, 1998*

PUBLICATIONS

Published Journal articles and Book chapters

Yassar, R. S., Mesarovic, S.Dj. & Field D.P. 2007 Micromechanics of hardening of elastic-plastic crystals with elastic inclusions. I – Dilute concentration. To appear in Int. J. Plasticity.

Mesarovic, S.Dj., McCarter, C.M., Bahr, D.F., Radhakrishnan, H., Richards, R.F, Richards, C.D., McClain, D., Jiao J. 2007 Mechanical behavior of a carbon nanotube turf. *Scripta Mat.* 56, 157-60.

- O.I. Crabtree, S.Dj. Mesarovic, R.F. Richards, D.F. Bahr and C.D. Richards 2006 Nonlinear vibrations of a pre-stressed laminated thin plate. *International Journal of Mechanical Sciences* , Volume 48, Issue 4 , April 2006, Pages 451-459.
- Mesarovic, S. Dj. (2005) Energy, configurational forces and characteristic lengths associated with the continuum description of geometrically necessary dislocations. *Int. J. Plasticity*. 21, 1855-89.
- Mesarovic, S. Dj. & Padbidri J. (2005) Minimal kinematic boundary conditions for simulations of disordered microstructures. *Phil. Mag.* 85(1), 65-78.
- Mesarovic, S.Dj. (2005) Explosive crystallization of thin films. *Metalurgija-J. Metall.* 11(1), 23-39.
- Mesarovic, S.Dj. (2005) Micro-mechanical modeling of the compaction of low-density composite powders. *Metalurgija-J. Metall.* 11(1), 3-21.
- Cabral, M.J., Lye, W.K., Bean, J.C., Reed, M.L., Chraska, T., Mesarovic, S.Dj, Hull, R. & Phillips, A.B. (2001) Induced crystallization as a nonlithographic pattern transfer technique for nanofabrications. *J. Vac. Sci. Technol. B* **19**(6), pp. 2793-2796.
- Mesarovic, S. Dj. (2001) Mapping the elastic-plastic contact and adhesion. In *Multi-scale Deformation and Fracture in Materials and Structures – The James R. Rice 60th Anniversary Volume*. Chuang, T.-J. & Rudnicki J. W., Editors. Kluwer Academic Publishers.
- Mesarovic, S. Dj. and Johnson, K. L. (2000) Adhesive contact of elastic-plastic spheres. *J. Mech. Phys. Solids* **48**, pp. 2009-2033.
- Mesarovic, S. Dj. and Fleck N. A. (2000) Frictionless indentation of elastic-plastic spheres. *Int. J. Solids Structures* **37**, pp. 7071-7091.
- Mesarovic, S. Dj. and Fleck N. A. (1999) Spherical indentation of elastic-plastic solids. *Proc. Roy. Soc. Lond. A* **455**, pp. 2707-2728.
- Mesarovic, S. Dj. (1997) The influence of pre-existing dislocations on cleavage crack propagation behavior in crystals. *J. Mech. Phys. Solids* **45** (2), pp. 211-238.
- Mesarovic, S. Dj. and Kysar, J. W. (1996) Continuum aspects of directionally dependent cracking of an interface between copper and alumina crystals. *Mech. Materials* **23**, pp. 271-286.
- Wang, J.-S. and Mesarovic, S. Dj. (1995) Directional dependence of corrosion fatigue in iron-silicon bicrystals. *Acta Metall.* **43** (10), pp. 3837-3849.
- Mesarovic, S. Dj. (1995) Dynamic strain ageing and plastic instabilities. *J. Mech. Phys. Solids* **43** (5), pp. 671-700.
- Mesarovic, S. Dj. and Gasparini D. A. (1992) Dynamic behavior of a nonlinear cable system. I. Analytical formulation. *ASCE J. Eng. Mechanics* **118** (5), pp. 890-903.
- Mesarovic, S. Dj. and Gasparini D. A. (1992) Dynamic behavior of a nonlinear cable system. II. Bifurcation and stability analyses. *ASCE J. Eng. Mechanics* **118** (5), pp. 904-920.
- Mesarovic, S. Dj., Gasparini D. A., Muju, S. and McNelis, M. (1992) Probability of crack growth in a Poisson field of penny-shaped cracks. *ASCE J. Eng. Mechanics* **118** (5), pp. 961-972.

Technical Conference Papers (other than Invited Papers)

- Mesarovic, S. DJ & Padbidri, J 2006 Transition between the models in multiscale simulations: Continua and granular materials. Proc. Multiscale & Functionally Graded Materials. Oahu, Hawaii, 2006.
- Mesarovic, S. DJ 2006 Coarsening of dislocation energies and the size-dependent continuum crystal plasticity. Proc. Int. Symp Trends In Applications Of Mathematics to Mechanics, Vienna, Austria, 2006
- Mesarovic, S. DJ & Padbidri, J 2005 Transition between the scales in multiscale modeling and simulations. Proc. Joint ASME/ASCE/SES Conf. Mech. Materials McMat 2005, Baton Rouge, Louisiana.
- Yassar, R.S., Field, D.P. & Mesarovic, S.Dj. 2005 Crystal plasticity modeling for texture development in precipitation hardening alloys. In *Dislocations, Plasticity, Damage and Metal Forming. Proc. Plasticity '05*. Editors Khan, A. S. & Khoei, A.R.
- Crabtree, O.I., Richards, C.D., Mesarovic, S.Dj., Richards, R.F., Bahr, D.F. and Demir, I 2004 Numerical modeling of a nonlinear MEMS membrane. Proceedings of 2004 ASME IMECE.
- Mesarovic, S.Dj. 1995 Effects of externally generated dislocations on brittleness/ductility of crystals and interfaces. *Proc Materials Research Society Fall Meeting*, Boston, 1995.

Other Technical Reports

- Mesarovic, S. Dj. (1999) Finite element implementation of the micromechanics based constitutive model for Stage I compaction of composite powders. *CUED Technical Report*, Cambridge University, ISSN 0309-7420.