



Professor Wing Kam Liu

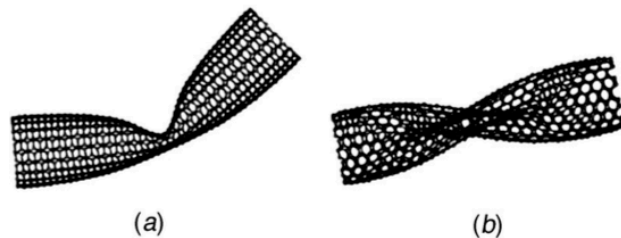


Fig. 9 (a) Buckling of SWCNT under bending load, (b) Buckling of SWCNT under torsional load

From: D. Qian, G. J. Wagner and W. K. Liu, “Mechanics of Carbon Nanotubes”, *App. Mech. Rev.*, 55 (2002) 495-533, DOI: 10.1115/1.1490129

Walter P. Murphy Professor of Mechanical Engineering
Northwestern University, Evanston, Illinois

Education:

Ph.D. California Institute of Technology, Pasadena, CA
M.S. California Institute of Technology, Pasadena, CA
B.S. Engineering Science (Hons), University of Illinois at Chicago, Chicago, IL

Research Interests:

Computational nanotechnology; multi-scale analysis and design; modeling of MEMS and NEMS devices; computational biology; reproducing kernel particle and wavelets methods

Significant Recognition:

International Association for Computational Mechanics: Gauss-Newton Medal, the highest award given by the Society (2012)

American Society of Mechanical Engineers (ASME): Robert Henry Thurston Lecture Award, 2007

U. S. Association for Computational Mechanics: John von Neumann Medal, the highest award given by USACM, 2007

Japan Society of Mechanical Engineers: Computational Mechanics Award, 2004

Cited by Institute for Scientific Information (ISI) as one of the most highly cited, influential researchers in Engineering, and an original member, highly cited researchers database (2001)

ASME Gustus L. Larson Memorial Award (1995)

Thomas J. Jaeger Prize, Int. Association for Structural Mechanics in Reactor Technology (1989)

ASME Pi Tau Sigma Gold Medal (1985)

Ralph R. Teetor Educational Award, American Society of Automotive Engineers (1983)

ASME Melville Medal (1979)

Significant Professional Service:

Editor, Computational Mechanics

Honorary editor-in-chief of the International Journal of Computational Methods

Honorary editor-in-chief of the International Journal of Computational Methods

2010- Present Vice President of the International Association for Computational Mechanics (Elected)

2007- Founding Chair of the ASME Wide Nanotechnology Council

2005 Chair, executive committee of Applied Mechanics Division of ASME (Member 2001-2006)

2005 Chair, executive committee of Applied Mechanics Division of ASME (Member 2001-2006)

Past President of U. S. Association for Computational Mechanics

2005 Chair, executive committee of Applied Mechanics Division of ASME

2009- present, Visiting Distinguished World Class University Professor of Sung Kyun Kwan University, Korea

Selected Publications:

Hughes, T.J.R., and W.K. Liu, "Nonlinear Finite Element Analysis of Shells: Part I. Three-Dimensional Shells," *Comp. Meths. Appl. Mechs. Eng.*, 26, pp. 331-362, 1981.

Hughes, T.J.R., and W.K. Liu, "Nonlinear Finite Element Analysis of Shells: Part II. Two-Dimensional Shells," *Comp. Meths. Appl. Mechs. Eng.*, 27, pp. 167-181, 1981.

T. Belytschko, H. Stolarski, W.K. Liu, N. Carpenter, and J.S.J. Ong. Stress projection for membrane and shear locking in shell finite-elements. *Computer Methods in Applied Mechanics and Engineering*, 51:221–258, 1985.

W.K. Liu, E.S. Law, D. Lam and T. Belytschko, Resultant-stress degenerated-shell element. *Comput. Methods Appl. Mech. Engrg.* 55 (1986), pp. 259–300.

“Formulation of Dynamic Stability of Fluid-Filled Shells”, K. Tsukimori, W. K. Liu and R. A. Uras, *Nuclear Engineering and Design*, Vol. 142, pp. 267-297, 1993.

“Adaptive Enrichment Meshfree Sim. and Experiment on Buckling and Post-buckling Analysis in Sheet Metal Forming”, H. Lu, H. S. Cheng, J. Cao, and W. K. Liu, *Computer Methods in Applied Mechanics and Engineering*, 2004.

“Reproducing Kernel Particle Methods for Large Deformation Analysis of Nonlinear Structures”, J. S. Chen, C. Pan, C. T. Wu and W. K. Liu, *Computer Methods in Applied Mechanics and Engineering*, Vol. 139, pp. 195-228, 1996.

Wing Kam Liu (The Technological Institute, Northwestern University, Evanston, IL 60201, USA), “Finite element procedures for fluid-structure interactions and application to liquid storage tanks”, *Nuclear Engineering and Design*, Vol. 65, No. 2, June 1981, pp. 221-238, doi:10.1016/0029-5493(81)90091-1

Wing Kam Liu and Dennis Lam (Department of Mechanical Engineering, Northwestern University, Evanston, IL 60208, U.S.A.), “Numerical analysis of diamond buckles”, *Finite Elements in Analysis and Design*, Vol. 4, No. 4, February 1989, pp. 291-302, doi:10.1016/0168-874X(89)90024-3

Uras, R. A. and Liu, W. K. (Northwestern University, Department of Mechanical Engineering, Evanston, Illinois 60208, U.S.A.), “Dynamic stability characteristics of liquid-filled shells”, *Earthquake Engineering & Structural Dynamics*, Vol. 18, No. 8, November 1989, pp. 1219–123, doi: 10.1002/eqe.4290180811

Wing Kam Liu and Rasim Aziz Uras (Northwestern University, Department of Mechanical Engineering, Evanston, Illinois 60208, USA), “Transient failure analysis of liquid-filled shells PART I: Theory”, *Nuclear Engineering and Design*, Vol. 117, No. 2, November 1989, pp. 107-140, doi:10.1016/0029-5493(89)90037-X

Wing Kam Liu and Rasim Aziz Uras (Northwestern University, Department of Mechanical Engineering, Evanston, Illinois 60208, USA), “Transient failure analysis of liquid-filled shells PART II: Applications”, *Nuclear Engineering and Design*, Vol. 117, No. 2, November 1989, pp. 141-157, doi:10.1016/0029-5493(89)90038-1

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“Dynamic buckling of liquid-filled shells under horizontal excitation”, *Journal of Sound and Vibration*, Vol.141, No. 3, 22 September 1990, pp. 389-408, doi:10.1016/0022-460X(90)90634-C

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“Buckling of Force-Excited Liquid-Filled Shells”, *Journal of Pressure Vessel Technology*, Vol. 113, No. 3, pp418-422, August 1991, DOI: 10.1115/1.2928776

S. Li, W. Hao and W. K. Liu (Department of Mechanical Engineering, Northwestern University, 2145 Sheridan Road, Evanston, Illinois 60208, USA), “Numerical simulations of large deformation of thin shell structures using meshfree methods”, *Computational Mechanics*, Vol. 25, Nos. 2-3, 2000. pp. 102-116, doi: 10.1007/s004660050463

A. Masud (1), C. L. Tham (1) and W. K. Liu (2)

(1) Department of Civil and Materials Engineering, The University of Illinois at Chicago, Chicago, Illinois

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“A stabilized 3-D co-rotational formulation for geometrically nonlinear analysis of multi-layered composite shells”, *Computational Mechanics*, Vol. 26, No. 1, 2000, pp.1-12, DOI: 10.1007/s004660000144

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D. Qian, G. J. Wagner and W. K. Liu, Mechanics of carbon nanotubes, *App. Mech. Rev.*, 55 (2002) 495-533.