



## **Professor Anthony M. Waas**

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<http://aerospace.engin.umich.edu/people/faculty/waas>

<http://energy.umich.edu/energy-research/faculty/anthony-m-waas/>

<http://www.worldcat.org/identities/lccn-no2002-16842>

[http://www.researchgate.net/researcher/39536523\\_Anthony\\_M\\_Waas](http://www.researchgate.net/researcher/39536523_Anthony_M_Waas)

<http://www.amazon.com/Anthony-M.-Waas/e/B004ZFKD8A>

<http://www.galcit.caltech.edu/80+/speakers/WaasT.html>

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Felix Pawlowski Collegiate Professor  
Department of Aerospace Engineering  
University of Michigan

Anthony M. Waas, Professor of Aerospace Engineering and Professor of Mechanical Engineering, and Director, Composite Structures Laboratory at the University of Michigan, received his B.Sc. with first class honors from Imperial College, Univ. of London, U.K., in 1982 the M.S. in 1983 and Ph.D. in 1988 with a minor in Applied Mathematics from the California Institute of Technology, all in Aeronautics. He joined the faculty of the Department of Aerospace Engineering at the University of Michigan in 1988, where he was promoted to the rank of Associate Professor in 1994 and Professor in 2000. His current research interests are damage tolerance analysis of composite materials and components made of composite materials, nanocomposites, structural

engineering, biomaterials and bioengineering, and structures and mechanical components operating under "hot" conditions. Several of his projects have been funded by NASA and several other US Government agencies and industry.

During his tenure at Michigan, Dr. Waas has been involved in a variety of projects, funded by industry, government agencies, major labs, defense department and private enterprises. In 2006, Dr. Waas was elected as an academic and expert consultant to the NESC (NASA engineering safety committee - super problem resolution team). In addition to these, he has been a consultant to several industries in various capacities.

Dr. Waas has served as a member of the AIAA Structures Technical Committee (1992-1995, 1997-03, 2007-present), the ASME Technical Committee on Instability of Solids and Structures (1995-present), the ASME Technical Committee on Experimental Mechanics (1996-present) and the ASME Structures and Materials Committee (1999-present). He served as the chair of the latter committee (2003-2005). He is currently a member of that committee and serves on the Executive Committee of the Aerospace Division. He is a recipient of the Royal Aeronautical Society Prize of Imperial College (1982), the William Balhaus Prize in Aeronautics at the California Institute of Technology (1988), a Rackham Faculty Fellowship (1990), University of Michigan Aerospace Department Teaching Award (1995), the Society of Automotive Engineers Ralph Teetor Award (1995), the American Academy of Mechanics Junior Award for Research (1997), University of Michigan Aerospace Department Research Award (1998), University of Michigan Aerospace Department Outstanding Accomplishment Award (2001), The David Liddle award for Research Excellence (2006) and an AIAA sustained service award (2006). He is a Fellow of ASME and the AAM, and an Associate Fellow of AIAA. He is a member of the American Society of Composites and the Society of Experimental Mechanics. He has served as an Associate Editor of the AIAA Journal (1995-02) and on the Editorial Advisory Board of the AIAA Journal of Aircraft (1995-00). He is currently on the editorial board of the Journal Composites: B. and serves as an Associate Editor of the Royal Aeronautical Society, UK, Aeronautical Journal, International Journal of Engineering Science and Journal of Applied Mechanics and is on the Editorial Board of Computer Modeling in Engineering and Sciences, and the Journal of the Mechanical Behavior of Materials. He is the Technical Chair of the 49 th AIAA SDM meeting, Chicago, USA.

At the University of Michigan, he served on the Advisory Board in Control of Intercollegiate Athletics (1999-2002), as the chairperson of the College of Engineering Rules Committee (1995-1998), and as chair of the College of Engineering Honors and Awards Committee, 2004. He served as the Aerospace Department Graduate Program Chair (1998-2002) and the Associate Chairperson of the Department (2003-2005). He is currently a member of the Executive Committee of the College of Engineering. He is author or co-author of more than 100 refereed journal papers, and numerous conference papers and presentations.

### **Specializations & Research Interests**

My research interests are in Mechanics of Aerospace Structures and Materials, Composite Structures, Structural Stability, Biologically inspired Materials, Nanocomposites, and Engineered Materials. My recent research activities have emphasized damage tolerance and durability assessment of aerospace structures including experiments and modeling, design and assessment of adhesively bonded joints, design of lightweight actively cooled airframe walls for hypersonic vehicles, the manufacturing and mechanical properties of nanotube reinforced composites and the static and dynamic behavior of textile composites for aerospace and automotive applications

## **Education**

Ph.D., Aeronautics and Applied Mathematics, California Institute of Technology, 1988

M.S., Aeronautics, California Institute of Technology, 1983

B.Sc, Aeronautics, Imperial College, University of London, U.K., 1982

ACGI, City and Guilds Institute, London, U.K, 1982

## **Professional Service**

Ted Kennedy Family Team Excellence Award for 2011-2012

Associate Editor, The Aeronautical Journal, Royal Aeronautical Society, UK, 2004-present

Student Papers Chair, 43rd AIAA SDM Conference, 2003

Chairperson, ASME Technical Committee on Structures and Materials, 2003-2005

Associate Editor, AIAA Journal, 1995-2002

Editorial Board, Composites: B journal, 1991-present

Editorial Advisory Board, AIAA J. Aircraft, 1993-2000

## **Honors and Awards**

Fellow, American Society of Mechanical Engineers (ASME)

Associate Fellow, American Institute of Aeronautics & Astronautics (AIAA)

Combined Research, Teaching and Service Excellence Award, Department of Aerospace Engineering, 2000

Research Excellence Award, Department of Aerospace Engineering, 1998

American Academy of Mechanics Junior Research Award, 1997

SAE Ralph Teetor Award, 1995

Teaching Excellence Award, Department of Aerospace Engineering, 1995

Rackham Graduate School Fellowship, 1990

William F. Ballhaus Aeronautics Prize, Caltech, 1988

Special Tuition Fellowship Award, Caltech, 1983-87

Imperial College Special Scholarships for BSc. Performance, 1979-1982

Royal Aeronautical Society Prize of Imperial College, UK, 1982

## **Teaching Interests**

Intro to Aerospace Engineering (Aero 200)

Intro to Instrument and Measurement (Aero 301)

Laboratory II (Aero 302)

Structural Mechanics I (Aero 314)

Structural Mechanics II (Aero 414)

Mechanics of Composites (Aero 516)

Structural Stability (Aero 518)

## **Positions Held at Michigan**

2003-2004: Associate Chair, Dept. of Aerospace Engineering, Univ. of Michigan

2000-2004: Professor, Dept. of Aerospace Engineering, Univ. of Michigan

1994-2000: Associate Professor, Dept. of Aerospace Engineering, Univ. of Michigan

1988-1994: Assistant Professor, Dept. of Aerospace Engineering, Univ. of Michigan

## **Prof.Waas's Recent Publications**

Beghini A, Bazant ZP, Waas AM, et al. Initial postcritical behavior of sandwich columns with low shear and transverse stiffness, *COMPOSITES PART B-ENGINEERING* 39 (1): 159-164 2008.

Song S, Waas AM, Shahwan KW, et al., Braided textile composites under compressive loads: Modeling the response, strength and degradation , *COMPOSITES SCIENCE AND TECHNOLOGY* 67 (15-16): 3059-3070 DEC 2007.

Salas KI, Waas AM, Convective heat transfer in open cell metal foams , *JOURNAL OF HEAT TRANSFER-TRANSACTIONS OF THE ASME* 129 (9): 1217-1229 SEP 2007.

Podsiadlo P, Kaushik AK, Arruda EM, A.M. Waas et al., Ultrastrong and stiff layered polymer nanocomposites, *SCIENCE* 318 (5847): 80-83 OCT 5 2007.

Gustafson PA, Bizard A, Waas AM, Dimensionless parameters in symmetric double lap joints: An orthotropic solution for thermomechanical loading , *INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES* 44 (17): 5774-5795 AUG 15 2007.

Mora RJ, Waas AM, Evaluation of the Micropolar elasticity constants for honeycombs, *ACTA MECHANICA* 192 (1-4): 1-16 2007.

Waldorff, E., Waas, A., Friedmann, P. and Keidar, M., Characterization of carbon nanotubes produced by arc discharge: Effect of the background pressure," *Journal of Applied Physics*, 95, 2749, 2004.

Rakow, J.F. and Waas, A.M. On the effective isotropic moduli of random fibrous composites, platelet composites, and foamed solids, *Mechanics of Advanced Materials and Structures*, 11 (2): 151-173, Mar.-April 2004.

Amit Salvi, Anthony M. Waas, Ari Caliskan, Specimen Size Effects In The Off-Axis Compression Test Of Unidirectional Carbon Fiber Tow Composites, *Composite Science & Technology*, 64, pp83-97, 2004.

Quek SC, Waas AM, Shahwan KW and Agaram, V. Compressive response and failure of braided textile composites: Part 1 - experiments, *Int J. Nonlinear Mech.* 39 (4): 635-648, June 2003.

Quek, S C, A M Waas, K W Shahwan, and V Agaram, Analysis of 2D Flat Triaxial Braided Composites, *Int.J. Mechanical Sciences*, 45 (6-7): 1077-1096, 2003.