



## **Professor Isaac M. Daniel**

See:

<http://www.composites.northwestern.edu/>

<http://www.mech.northwestern.edu/web/people/faculty/daniel/>

<http://www.civil.northwestern.edu/people/profiles/daniel.html>

<http://www.tam.northwestern.edu/people/daniel.html>

<http://freedownload.is/pdf/isaac-m-daniel-ishai>

[http://www.goodreads.com/author/show/567937.Isaac\\_M\\_Daniel](http://www.goodreads.com/author/show/567937.Isaac_M_Daniel)

<http://www.amazon.com/Isaac-M.-Daniel/e/B001IQZLMM>

<http://academic.research.microsoft.com/Author/18207561/isaac-m-daniel>

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Walter P. Murphy Professor

Professor of Mechanical, Civil and Environmental Engineering

Department of Mechanical Engineering

Northwestern University

**Education:**

BS Civil Engineering, Illinois Institute of Technology, 1957  
MS Civil Engineering, Illinois Institute of Technology, 1959  
PhD Civil Engineering, Illinois Institute of Technology, 1964

**Honors and Awards:**

Professional Achievement Award from IIT  
ASME fellow  
Walter P. Murphy Professor  
William M. Murray Medal of the Society for Experimental Mechanics  
Distinguished Research Award, American Society for Composites  
Editorial Board of the Journal of Composite Materials  
Editorial Board of Composites, Part A  
Fellow of the American Academy of Mechanics  
B.J. Lazan Award from the Society for Experimental Mechanics  
Two M. Hetenyi Awards from the Society for Experimental Mechanics  
Invited keynote speaker at 7th International Congress on Experimental Stress Analysis, Haifa, Israel, 1982  
Invited keynote speaker at 2nd International Conference on Composites Engineering, New Orleans, 1995  
Symposium on "Recent Advances in Experimental Mechanics" in honor of Isaac M. Daniel held in conjunction with 14th U.S. National Congress of Theoretical and Applied Mechanics, Blacksburg, VA (2002)  
Fellow, Society for Experimental Mechanics (1981)  
Invited Plenary Speaker at 16th European Conference on Fracture (ECF16) in Alexandroupolis, Greece, 2006  
M. M. Frocht Award of the Society for Experimental Mechanics, 2006  
P. S. Theocaris Award of the Society for Experimental Mechanics, 2007  
Elected Honorary Member of the Society for Experimental Mechanics, 2007

**Research:**

Applied Mechanics (stress analysis, fracture mechanics, impact, wave propagation); Composite Materials (processing, test methods, micromechanics, fracture, damage mechanics); Nondestructive Evaluation (ultrasonics, X-radiography, acoustic emission); Nanocomposites (processing, characterization, and modeling)

Professor Daniel's interests and experience encompass a broad range in Mechanics and Materials with emphasis on Experimental Mechanics and Composite Materials. In the latter, he has worked on all aspects of the area including processing, micromechanics, characterization, fracture and damage mechanics, nondestructive evaluation and life prediction. He has pioneered test methods for characterization of polymer, ceramic and metal matrix composites. In recent years he has been working on processing, characterization and modeling of polymer/clay and polymer/graphite nanocomposites. He serves on the editorial boards of Composites, Part A, Journal of Composite Materials, and Strain. He is the Director of the Center for Intelligent Processing of Composites (IPC) at Northwestern University.

Professor Daniel is a co-inventor of four patents. He has lectured at home and abroad, is the author of over 350 publications and nine chapters of books and co-author of a widely used textbook entitled "Engineering Mechanics of Composite Materials" now in its second edition.

## **In the Classroom:**

Professor Daniel teaches Mechanics of Materials at the undergraduate level, Modern Experimental Mechanics, Mechanics of Composite Materials, and Special Topics in Nanotechnology at the senior undergraduate and graduate levels. He is the Chairman of the Theoretical and Applied Mechanics program, and coordinates course offerings in solid mechanics in both the Civil and Mechanical Engineering departments and helps coordinate the colloquia in Theoretical and Applied Mechanics. He chaired the committee that reorganized and updated the Mechanics of Materials course for the department of Civil and Environmental Engineering. He also set up a modern teaching laboratory for this course. He restructured the course of Experimental Stress Analysis into that of Modern Experimental Mechanics and introduced two new courses at Northwestern, Mechanics of Composite Materials 1 and 2, a two-quarter sequence. In the latter he exposes the students to laboratory demonstrations of composites processing and characterization. He provides the students with an innovative home-developed computer program for analysis, design and optimization of composite structures. Course assignments include design and optimization of a composite structure, such as a bicycle, pressure vessel, or torque coupling. In the course he uses a textbook he co-authored on Engineering Mechanics of Composite Materials, now in its second edition, which is very well accepted and widely used around the world.

## **Selected Publications:**

Isaac M. Daniel and Ori Ishai, "Engineering Mechanics of Composite Materials", Second Edition, Oxford University Press, New York, 2006

M. K. Um, I. M. Daniel and B. W. Childs, "A Gas Flow Method for Determination of In-plane Permeability of Fiber Preforms," *Polymer Composites*, Vol. 22, No. 1, Feb. 2001, pp. 47-56

J. J. Luo and I. M. Daniel, "Deformation of Inhomogeneous Elastic Solids with Two-Dimensional Damage," *J. Appl. Mech.*, Vol. 68, July 2001, pp. 528-536

I. M. Daniel, E. E. Gdoutos, K.-A. Wang and J. L. Abot, "Failure Modes of Composite Sandwich Beams", *International Journal of Damage Mechanics*, Vol. 11, 2002, pp. 309-334

I. M. Daniel, H. Miyagawa, E. E. Gdoutos and J. J. Luo, "Processing and Characterization of Epoxy/Clay Nanocomposites," *Experimental Mechanics*, Vol. 43, No. 3, 2003, pp. 348-354

J. J. Luo and I. M. Daniel, "Characterization and Modeling of Mechanical Behavior of Polymer/Clay Nanocomposites", *Composites Science and Technology*, Vol. 63, 2003, pp. 1607-1616

J. G. Opperer, S. K. Kim and I. M. Daniel, "Characterization of Local Preform Defects in Resin Transfer Molding by the Gas Flow Method and Statistical Analysis", *Composites Science and Technology*, Vol. 64, 2004, pp. 1921-1935

P. M. Schubel, J. J. Luo and I. M. Daniel, "Impact and Post Impact Behavior of Composite Sandwich Panels", *Composites Part A*, Vol. 38, 2007, pp. 1051-1057

I. M. Daniel, "Failure of Composite Materials", *Strain*, Vol. 43, 2007, pp. 4-12

J. Cho, J. Y. Chen and I. M. Daniel, "Mechanical Enhancement of Carbon Fiber /Epoxy Composites by Graphite Nanoplatelet Reinforcement", *Scripta Materialia*, Vol. 56, 2007, pp. 685-688  
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