Professor Brian L. Wardle

See:
http://aeroastro.mit.edu/faculty-research/faculty-list/brian-l-wardle
http://web.mit.edu/dept/aeroastro/labs/necstlab/index.shtml
http://en.wikipedia.org/wiki/Brian_Wardle_%28academic%29
https://mitei.mit.edu/research/energy-faculty/brian-wardle
https://mpc-www.mit.edu/news/newsletters/may-2013/item/176-faculty-highlight-brian-wardle

Dept. of Aeronautics and Astronautics
Director, NECSTLAB and nano-engineered composite aerospace structures consortium
Massachusetts Institute of Technology (MIT)

Academic Degrees:
B.S., 1992, The Pennsylvania State University S.M., 1995, Massachusetts Institute of Technology Ph.D., 1998, Massachusetts Institute of Technology
Society Memberships:
American Institute of Aeronautics and Astronautics, Materials Research Society, American Chemical Society, American Society of Composites, International Committee on Composite Materials
Positions Held at MIT:
Boeing Assistant Professor, 2003-2006; Assistant Professor, 2006-2008; Charles Stark Draper Assistant Professor, 2008-2009; Associate Professor, 2009-present
Positions Held outside MIT:
Engagement Manager, McKinsey & Company, 1999-2003
Specialization and Research Interests:
Nano-engineered composites, composite and layered materials; hybrid nanocomposite systems; MEMS power devices and energy harvesting; structural health monitoring systems; active materials and devices; finite-element modeling; structural response and testing; buckling mechanics

NECSTLAB (**N**ano-**E**ngineered **C**omposite aerospace **ST**ructures **LAB**oratory)
The **necstlab** (pronounced next lab) research group explores new concepts in engineered materials and structures, and is directed by Prof. Wardle in the Dept. of Aeronautics & Astronautics at MIT. The group's mission is to lead the advancement and application of new knowledge at the forefront of materials and structures understanding, with research contributions in both science and engineering. Applications of interest include enhanced (aerospace) advanced composites, multifunctional attributes of structures such as damage sensing, and also microfabricated (MEMS) topics. A significant effort over the past decade has been to use nanoscale materials to to enhance performance of advanced aerospace materials and their structures through the industry supported NECST Consortium.

Selected Publications:

Wardle, B. L., "Impact and Quasi-Static Response of Cylindrical Composite Shells", TELAC Report 95-4, S. M. Thesis, Massachusetts Institute of Technology, 1995.

Wardle, B. L. and Lagace, P. A., "Importance of Instability in the Impact Response of Composite Shells", Proceedings of the AIAA/ASME/ASCE/AHS/ASC 37th Structures, Structural Dynamics, and Materials Conference, Salt Lake City, UT, 1996, pp. 1363-1373.

B. L. Wardle and P. A. Lagace, "Importance of instability in impact response and damage resistance of composite shells", AIAA Journal, 1997, vol. 35, no 2, pp. 389-396, doi: 214, 35400006292180.026

Brian L. Wardle and Paul A. Lagace, "On the Use of Dent Depth as an Impact Damage Metric for Thin Composite Structures", Journal of Reinforced Plastics and Composites, August 1997, vol. 16, no. 12, pp. 1093-1110, doi: 10.1177/073168449701601202

Wardle, B. L., "Buckling and Damage Resistance of Transversely-Loaded Composite Shells," Ph.D. Dissertation, Dept. of Aeronautics and Astronautics, Massachusetts Inst. of Technology, TELAC Rept. 98-7, Cambridge, MA, June 1998.

Wardle, Brian L., "Buckling and damage resistance of transversely-loaded composite shells", NASA Langley Research Center, Document ID: 19980232333, 288 pages, Final report: April 1996 – May 1998

Wardle, B. L., and Lagace, P. A., "Behavior of Composite Shells Under Transverse Impact and Quasi-Static Loading," AIAA Journal, Vol. 36, No. 6, 1998, pp. 1065–1073.

Wardle, B.L. and Lagace, P.A. On the use of quasi-static testing to assess impact damage resistance of composite shell structures, Mechs Composite Matls and Struct, 1998, 5, (1), pp 103-121.

B. L. Wardle and P. A. Lagace, "Bifurcation, Limit-Point Buckling, and Dynamic Collapse of Transversely Loaded Composite Shells," AIAA Journal, Vol. 38, No. 3, 2000, pp. 507-516. doi:10.2514/2.989

Mark A. Tudela, Paul A. Lagace and Brian L. Wardle, "Buckling response of transversely loaded composite shells, Part 1: Experiments", AIAA Journal, 2004, vol. 42, no. 7, pp. 1457-1464,
doi: 214, 35400011374213.0200

Wardle, B.L., P.A. Lagace, and M.A. Tudela, Buckling response of transversely loaded composite shells, Part 2: Numerical Analysis. AIAA Journal, 2004. 42(7): p. 1465-1473.

Wardle, B.L., Solution to the Incorrect Benchmark Shell-Buckling Problem. AIAA Journal, 2008. 46(2): p. 381-387.