



# Vinay Dayal

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Associate Chair for ABET  
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## Education

- Ph.D. Aerospace Engineering, Texas A&M University, 1987
- M.S. Engineering Mechanics, University of Missouri-Rolla, 1983
- B. S. Aeronautical Engineering, Indian Institute of Technology (Kanpur), 1972

## Academic Appointments

- Iowa State University (1989-present)**  
Department of Aerospace Engineering
  - Associate Professor, August 1989-present
  - Assistant Professor, January 1989-1995
- North Carolina A&T State University**  
Department of Mechanical Engineering
  - Research Assistant Professor, August 1987-December 1989

## Awards and Honors

- M. Hetenyi Award, 1991 for the best research paper in Experimental Mechanics.
- Included in MARQUIS "Who's Who in Science and Engineering."

## Teaching

**UNDERGRAD:** AerE 321 Flight Structures Analysis, AerE 423 Composite Aircraft Structures, AerE 421 Advanced Aircraft Structures, AerE 426 Aircraft Structural Design, AerE 422 Structures Lab, EM 324 Mechanics of Materials.

**GRADUATE:** AerE/EM 521 Airframe Analysis, AerE 569 Mechanics of Composites, AerE 522 Design with Composites, EM 525 Finite Element Analysis, EM 517 Experimental Mechanics.

## Research

### Interest Areas:

- Composite Materials; NDE of Composites by Ultrasound; Experimental Stress Analysis; Finite Element Analysis.

**Sponsored Grants:** \$5.3M total from 43 grants including 9 federal (DoD, DOE, etc.), 2 state, 32 industry.

## Selected Publications

(of 147 pubs. including 36 journals, 4 book chapters, 4 patents; h-index (Google): 14)

1. Livings, R., Dayal, V., Barnard, D. Air-Coupled Ultrasonic Resonance Imaging of Hexagonal SiC and Alumina Tiles, *Journal of Nondestructive Evaluation*, Vol. 36: 15(1).
2. Livings, R., Dayal, V., Barnard, D. (2016). "Damage Detection in a Multi-Layered, Multi-Material Composite Using Air-Coupled Ultrasonic Resonance Imaging," *Journal of Nondestructive Evaluation*, Vol. 35.
3. Chakrapani, S.K., Barnard, D., Dayal, V. "Influence of Laminate Sequence and Fabric Type on the Inherent Acoustic Nonlinearity in Carbon Fiber Reinforced Composites," *Journal of the Acoustical Society of America*, Vol. 139(5), pp. 2310-2319.
4. Chakrapani, S.K., Barnard, D., Dayal, V. (April 2016). "Nonlinear forced vibration of carbon fiber/epoxy prepreg composite beams: Theory and experiment," *Composites Part B*, Vol. 91, pp. 513-521.
5. Chakrapani, S.K., Barnard, D., Dayal, V. (Sept. 2015). "Finite element simulation of core inspection in helicopter rotor blades using guided waves," *Ultrasonics*, Vol. 62, pp. 126-135.
6. Dayal, V. (Oct. 2009). "Conceptual design of unpressurized shelters on lunar surface," *Journal of Aerospace Engineering*, 22(4), pp. 396-402.
7. Kumar, N., Dayal, V., Sarkar, P.P. (June 2012). "Failure of wood-framed low-rise building under tornado wind loads," *Engineering Structures*, 39, pp. 79-88.
8. Dayal, V. (2014). "Conceptual design of pressurized shelters on the lunar surface," *Journal of Aerospace Engineering*, 27(1), pp. 33-39.
9. Dayal, V., Hsu, D.K., Kite, A.H. (2007). "Air-coupled ultrasound – a new paradigm in NDE," *Proctor of the Mechanical Engineering Congress and Exposition*, Nov. 11-15, Seattle, WA.
10. Dayal, V. (1992). "An automated simultaneous measurement of thickness and wave speed by ultrasound," *Experimental Mechanics*, 32(3), pp. 197-202.
11. Hsu, D.K., Dayal, V. (1998). "Ultrasonic Newton's Rings," *Applied Physics Letters*, 60(10), pp. 1169-1171.
12. Dayal, V. (1998). "Fourier transformation for non-destructive evaluation," *Journal of the Acoustical Society of America*, 104(3), pp. 1789.
13. Mohammed, I., Dayal, V. (1994). "Micro-macro crack interaction in composites," *Engineering Fracture Mechanics*, 49(5), pp. 647-659.

## Thesis Advisor/Co-advisor and Postgraduate-Scholar Sponsor

**Doctoral (7):** S. Chakrapani (2016), R. Livings (2017), Y. Yang (2005), L. Picket (2005), S. Winter (1999), Z.I. Beg (1998), A.M. Khan (1997).

**Masters (26):** M. Ilyas (1992), M. Chakrapani (1993), J. Ting (1993), T.C. Patton (1993), Z. Baig (1993), S. Lai (1994), S. Winter (1994), D. Van Otterloo (1995), H. Chun (1995), G. Faschun, (1998), T. Choudary (1999), L. Zhao (1999), M. Majeed (2000), H. Wasan (2000), Y. Yang (2001), M. Venturumilli (2003), A. Solti (2004), J. J. Peters (2006), A. Kite (2007), A. Shahwar (2007), N. Kumar (2008), K. Nathan (2009), T. Hephzibah (2011), R. Livings (2011), S. Chakrapani (2011), A. Subramanian (2013), M. Meyer (2013), A. Harper (2015).

## Professional and Outreach Activities

- Editor: Proceedings of the ASME, NCA-Vol. 25, Noise Control and Acoustics Division, 1998.
- Contributing Editor: proceedings of the ASME Noise Control.
- Chair: "Damping in Composites" at ASME Winter Annual Meeting, 1997, Dallas, Texas.
- Invited by USSTRATCOM to join in the Glory Trip 9-10 Sept. 2003
- Organized: 4 sessions on "Vibroacoustic Characterization of Advanced Materials and Structures," ASME Winter Annual Meeting, 1999; one session on "Smart NDT," International Conference on Smart Materials, Structures, and Systems in Bangalore, India, July 7-10, 1999; session at Fifth International Conference on Composites Engineering, July 1998, Las Vegas; 4 sessions on "Intelligent Processing and Characterization of Advanced Composite Materials," ASME Winter Annual Meeting, 1997, Dallas, Texas.