

Bhavani V. Sankar

Education

Ph.D.	Aeronautics & Astronautics	Purdue University, West Lafayette, Indiana, USA	1984
M.E.	Mechanical Engineering	Indian Institute of Science, Bangalore, India	1980
B.E. (Honours)	Mechanical Engineering	Madurai University, India	1973

Appointments

- 2007 - University of Florida Research Foundation Professor
- 2004 - Newton C. Ebaugh Professor
- 1995 - Professor, University of Florida
- 1993 - Director, Center for Advanced Composites, University of Florida
- 1990-95 Associate Professor, University of Florida
- 1986-90 Assistant Professor, University of Florida
- 1984-86 Assistant Professor, Bradley University, Peoria, Illinois, U.S.A.
- 1974-78 Assistant Engineer, State Transport Corporation, Madurai, India

Honors and Awards

- American Society for Composites/Destech Publications Award for Sustained Contributions to Composite Materials Technology (2009)
- College of Engineering Doctoral Dissertation Mentoring Award (2008-09)
- Fellow, American Society for Composites, 2004
- Fellow, American Society of Mechanical Engineers (1998)
- Associate Fellow, American Institute of Aeronautics & Astronautics (1996)
- Bisplinghoff Memorial Teaching Award (1989, 1991 & 1993) in recognition of outstanding teaching
- Awarded the Teaching Incentive Program Awards in 1994 and 1998
- W.J. Emmons Award, 1999, Co-Author of Annual Award Paper, Association of Asphalt Paving Technologists
- American Society for Composites award in appreciation of contributions to the 18th Technical Conference, 2003
- NSF Alliance for Graduate Education and Professorate Award as an exemplary graduate advisor and mentor in the National AGEP Doctoral program, 2004
- B.S.M.E. with Honors and Gold Medal, First Rank in the College

Editorial Boards

- Journal of Sandwich Structures & Materials
- Computer Modeling in Engineering Sciences
- Journal of Composite Materials (2002-2007)
- AIAA Journal (Associate Editor 2002-2005)

Research Interests

Mechanics of Composite Materials and Structures: Impact-, fracture-, and micro- mechanics of composites, textile composite materials, translaminal reinforcements, sandwich construction, functionally graded materials, mechanics of MEMS, high-performance foams, thermal structures and thermal protection systems, nano composites

Chair of Ph.D. Committees

1. S. Hu (May 90) - Hamilton Standard
2. H. Jung (Aug 91) - Olympia College, WA
3. M. Pinheiro (Dec 91) - Inst Militar de Engenharia, Rio de Janeiro, Brazil
4. R. Galdos (Aug 94) -
5. R. Marrey (Aug 95) - Johnson & Johnson, NJ
6. S. Sugavanam (Dec 96) - Cessna, Wichita, KS
7. S. Lahiri (Aug 97) - NASA Goddard
8. Huasheng Zhu (Dec 99) -

9. O. Park (Dec 99) - GE, Schenectady, NY
10. Huadong Zhu (Dec 2004) - Post Doc Fellow at Stanford University
11. Sukjoo Choi (May 2005) - Post Doc at Texas A&M University
12. Nicoleta Apetre (Dec 2005) - Post Doc at Georgia Tech, Atlanta, GA
13. Ryan Karkkainen (May 2006) - Army Research Laboratory, Aberdeen Proving Ground, MD
14. Seon Jae Lee (May 2006) - Samsung, South Korea
15. Satish Bapanapalli (May 2007) - Pacific Northwest National Laboratory, Richland, WA
16. Oscar Martinez (May 2007) - ATK launch Systems Group, Magna, UT
17. Thi Dang (August 2007) - Post Doc, VPI & SU, VA
18. Jianlong Xu (August 2007) - Caterpillar Tractor Co., Peoria, IL
19. Junqiang Wang (December 2007) - Caterpillar Tractor Co, Peoria, IL
20. Benjamin Boesl (May 2009) – Army Research Laboratory, Aberdeen proving Ground, MD
21. Prasanna Thiyagasundaram (August 2010), Intel Corporation, Portland, OR

Current Doctoral Students

21. Anurag Sharma
22. Bharani Ravishankar
23. Min Cheol Song
24. Marlana Behnke
25. Sayan Banerjee

Co-Chair of PhD Committees

1. Vidish Rao (Chair: C. Sun, Aug 91) - Shell, Houston, TX
2. Xiaokai Niu (Chair: P. Ifju, Aug 1999) - Sonoco Products Co, Hartsville, SC
3. R. Vitali (Chair: R. Haftka, Dec 2000) - Futron, Inc., Washington, D.C.
4. L. Chen (Chair: P. Ifju, Aug 2002) - Caterpillar Tractor Co. Peoria, IL
5. V. Chandrasekaran (Chair: M. Sheplak, Dec 2003) - Texas Instruments, Texas
6. A. Kale (Chair: R. Haftka, Dec 2005) - GE, Schenectady, NY
7. E. Acar (Chair: R. Haftka, August 2006) - Post Doc Fellow, Mississippi State University
8. C. Gogu (Chair: R. Haftka, Dec 2009) - Universite Toulouse III
9. T. Walter (Chair: G. Subhash) -
10. D. Villeneuve (Chair: R. Haftka) -

Chair/Co-Chair of M.S. Thesis Committees

1. S. Lacombe (Bradley University, May 85) - Sunstrand, Rockfort, IA
2. J. Kuncis (Aug 89) - Anderson Consulting, NY
3. C. Ku (Dec 89) - Republic of China
4. Y. Kwon (May 91) - Lockheed-Martin, Marietta, GA
5. A. Ericsson (Royal Institute of Technology, Sweden, Jan. 92) -
6. A. Deshpande (May. 92) - NC State Univ, NC
7. R. Riis (Royal Institute of Technology, Sweden, Oct. 92), -
8. H. Zhu (May 94) - Ph. D. University of Florida
9. R. Hart (Dec 94) - Hughes, Melbourne, FL
10. S. Sharma (Dec. 94) - GE Corporate R&D, Schenectady, NY
11. R. Ferri (Dec 94) - Sigma Labs., Clearwater, FL
12. M. Lear (May 96) - Eglin Air Force Base, FL
13. X. Tan (Chair: A. Kumar, May 97) - United Engineering, West Palm Beach, FL
14. M. Gundepudi (May 97) - SONOCO, SC
15. J. Avery (May 98) - Scaled Composites, Mojave, CA
16. M. Narayanan (Dec 99) - Lexel Engineering, Flint, MI
17. B. Wallace (Dec 00) - Graduate studies in Computer Science
18. M. Sylwan (Dec 01) - Royal Institute of Technology, Stockholm, Sweden.
19. S. Prasad (Chair: Mark Sheplak, Aug 2002) - Ph.D. at IIT Madras, India
20. S Choi (Dec 2002) - PhD at University of Florida
21. Bokwon Lee (Aug 2003) – Korean Air Force
22. David Grau (Dec 2003) – NASA Kennedy Space Center
23. G. Wang (Chair: Mark Sheplak, Dec 2003)
24. W. Noh (Aug 2004) - Hyundai, South Korea
25. T. Rys (Aug 2004) - Raytheon, Dallas, Texas
26. S. Kalarikkal (Aug 2004) - Research Applications, Inc, San Diego, CA
27. G. Blanchard (Aug 2004) - Graduate Studies, France

28. M. Ricciardo (Aug 2005) - Pratt & Whitney, West Palm Beach, FL
29. J. Van Pelt (Dec 2006) - Lockheed-Martin, New Orleans, LA
30. C. Stamblewski (KTH, Stockholm, Sweden, Aug 2007) -
31. M. Leong (Aalborg University, Aalborg, Denmark, Dec 2007)
32. N. Vigroux (Dec 2008)- EADS ST Les Mureaux
33. A. Nadel (Dec 2009) - Aurora Flight Sciences, Manassas, VA
34. J. Bonsman (May 2010) - Sikorsky Aircrafts, Jupiter, FL

Undergraduate Projects

- C. Galliano
- M. Rao
- W. Schmidt
- M. Tudela
- R. Ferri
- E. Rambali (96)
- W. Mann
- J. Avery (96)
- T. Marin (98)
- M. Guadamuz (98-99)
- L. Norris (98)
- R. Richards (2000)
- R. Merritt (2000)
- J. Hartline (99-01)
- M. Cheplak (2002)
- J. Crosby (2003-04)
- J. Carver (2006)
- T. Vonderheide (2007-09)
- R. Nixon (2008)
- F. Ortega (2008)
- M. Behnke (2007-2009)
- K. Chang (2009-)

Publications

Summary: (One textbook, 6 edited volumes, 2 Book Chapters, 4 Book reviews, 97 publications in archival journals, ~150 publications in conference proceedings, and 3 NASA Contractor Reports)

Books

[Introduction to Finite Element Analysis and Design](#), Nam Ho Kim and Bhavani V. Sankar, John Wiley & Sons, Inc., New York, NY, 2009.

Edited Volumes

1. *Dynamic Response and Behavior of Composites*, (1995) Edited by C.T. Sun, B.V. Sankar and Y.D.S. Rajapakse, AD-Vol. 46, American Society of Mechanical Engineers, New York, NY.
2. *Proceedings of the ASME Aerospace Division*, (1996), Ed. J.C.I. Chang et al., AD-Vol. 52, American Society of Mechanical Engineers, New York, NY.
3. *Recent Advances in Mechanics of Aerospace Structures and Materials*, (1998) Edited by B.V. Sankar, AD-Vol. 56, American Society of Mechanical Engineers, New York, NY.
4. *Proceedings of the ASME Aerospace Division* (2000), Eds. J.D. Whitcomb, P. Hajela, A.M. Waas and B.V. Sankar, AD-Vol. 63, American Society of Mechanical Engineers, New York, NY.
5. *Proceedings of the American Society for Composites*, Eighteenth Technical Conference (2003), Eds. B.V. Sankar, P.G. Ifju and T.S. Gates, University of Florida, Gainesville, FL.
6. Special Volume of *Composites Science & Technology* in honor of Professor C.T. Sun. Guest Editors: B.V. Sankar and T.S. Gates, Volume 66, 2006

Book Chapters

1. B.V. Sankar (1996) "Low-Velocity Impact Response and Damage in Composite Materials", *Fracture of Composites*, E. Armanios, Ed., Transtech Publications, Ltd., Switzerland, pp. 555-582.
2. Haftka, R.T., R. Vitali and B.V. Sankar (1999) "Optimization of composite structures using response surface

approximations”, *Mechanics of Composite Materials and Structures*, C.A. Mota Soares, C.M. Mota Soares and M.J.M. Freitas (Eds.), Kluwer Academic Publishers, Dordrecht, Netherlands, pp. 409-430.

Book Reviews

1. Thermal Stresses, Second Edition, *AIAA Journal*, 41(11):2305-6, November 2003. (Book information: Authors - N. Noda, R.B. Hetnarski and Y. Tanigawa, Taylor and Francis, New York, 2002, 493 pp.)
2. Recent Advances in Structural Joints and Repair for Composite Materials, *AIAA Journal*, 42(4):860-61, April 2004. (Book information: Edited by Liyong Tong and Costas Soutis, Kluwer Academic Publishers, Dordrecht, Netherlands, 2003, 254 pp)
3. Thermal Stresses, Second Edition, *Journal of Thermal Stresses*. 27(9) September 2004, 881-883. (Book information: Authors - N. Noda, R.B. Hetnarski and Y. Tanigawa, Taylor and Francis, New York, 2002, 493 pp.).
4. Thin Film Materials - Stress, Defect Formation and Surface Evolution, *AIAA Journal*, 43(4):922-23, April 2005. (Book information: Authors: L.B. Freund and S. Suresh, Cambridge University Press, Cambridge, United Kingdom, 2003, 750 pp.)

Journal publications

[101] Leong, M., B.V. Sankar

Effect of Thermal Stresses on the Failure Criteria of Fiber Composites

Mechanics of Advanced Materials & Structures Volume 17, Issue 7 October 2010, pages 553 - 560.

[100] Walter, T.R., G. Subhash, B.V. Sankar, C.F. Yen

Monotonic and cyclic short beam shear response of 3D woven composites

Composites Science & Technology 70 (2010) 2190–2197.

[99] Ravishankar, Bharani, B.P. Smarslok, R.T. Haftka, B.V. Sankar

Error Estimation and Error Reduction in Separable Monte Carlo Method

AIAA Journal Vol. 48, No. 11, November 2010.

[98] Thiyagasundaram, P., B.V. Sankar, N.K. Arakere

Elastic Properties of Open-Cell Foams with Tetrakaidecahedral Cells Using Finite Element Analysis

AIAA Journal Vol. 48, No. 4, April 2010, 818-828.

[97] Martinez, O.A, A. Sharma, B.V. Sankar, R.T. Haftka, M.L. Blosser

Thermal Force and Moment Determination of an Integrated Thermal Protection System

AIAA Journal 48 (2010) 119-128.

[96] Rys, T., B.V. Sankar, P.G. Ifju

Investigation of Fracture Toughness of Laminated Stitched Composites Subjected to Mixed Mode Loading

Journal of Reinforced Plastics & Composites 29 (2010) 422-430.

[95] Gogu, Christian, R.T. Haftka, S.K. Bapanapalli, B.V. Sankar

A Dimensionality Reduction Approach for Response Surface Approximations: Application to Thermal Design

AIAA Journal Vol. 47, No. 7, July 2009.

[94] T.R. Walter, G. Subhash, B.V. Sankar, C.F. Yen

Damage modes in 3D glass fiber epoxy woven composites under high rate of impact loading

Composites Part B 40 (2009) 584–589.

[93] Gogu, Christian, Satish K. Bapanapalli, Raphael T. Haftka, Bhavani V. Sankar

Comparison of Materials for an Integrated Thermal Protection System for Spacecraft Reentry

Journal of Spacecraft and Rockets Vol. 46, No. 3, May–June 2009.

[92] Burla, Ravi K., A.V. Kumar, B.V. Sankar

Implicit Boundary Method for Determination of Effective Properties of Composite Microstructures

International Journal of Solids & Structures 46 (2009) 2514–2526.

[91] Rao, M.P., B.V. Sankar, G. Subhash

Effect of Z-Yarns on the Stiffness and Strength of Three-Dimensional Woven Composites

Composites Part B 40 (2009) 540–551.

[90] Xu, J., B.V. Sankar

Prediction of Stitch Crack Evolution and Gas Permeability In Multidirectional Composite Laminates

Composites Part A: 39 (2008) 1625–1631.

[89] Dang, Thi D., B.V. Sankar

Meshless Local Petrov-Galerkin Micromechanical Analysis of Periodic Composites Including Shear Loadings

CMES: Computer Modeling in Engineering & Sciences, Vol. 26, No. 3, pp. 169-187, 2008.

- [88] Stamblewski, C., B.V. Sankar, D. Zenkert
Analysis of Three-Dimensional Quadratic Failure Criteria for Thick Composites using the Direct Micromechanics Method
Journal of Composite Materials 42(7) 2008 635-654.
- [87] Xu, J., B.V. Sankar, S.K. Bapanapalli
Finite Element Based Method to Predict Gas Permeability in Cross-ply Laminate
Journal of Composite Materials 42(9) 2008 849-864.
- [86] Choi, S., B.V. Sankar
Gas Permeability of Various Graphite/Epoxy Composite Laminates for Cryogenic Storage Systems
Composites: Part B 39 (2008) 782-791.
- [85] Apetre, N.A., B.V. Sankar, D.R. Ambur
Analytical Modeling of Sandwich Beams with Functionally Graded Core
Journal of Sandwich Structures & Materials 10(1) 2008 53-74.
- [84] Kale, A., R.T. Haftka, B.V. Sankar
Efficient Reliability Based Design and Inspection of Stiffened Panels against Fatigue
Journal of Aircraft 45(1) 2008 86-97.
- [83] Oscar A. Martinez, Bhavani V. Sankar, Raphael T. Haftka, Satish K. Bapanapalli, Max L. Blosser
Micromechanical Analysis of Composite Corrugated-Core Sandwich Panels for Integral Thermal Protection Systems
AIAA Journal 45(9) 2323-2336.
- [82] Yu, T.J., B.V. Sankar, N.K. Arakere, R. Vaidyanathan
Inverse Method for the Determination of Full Field Stresses from Experimentally Measured Normal Strains
The Journal of Strain Analysis for Engineering Design 42(6) 2007 469-476.
- [81] R.L. Karkkainen, B.V. Sankar, J.T. Tzeng
A Direct Micromechanical Approach toward the Development of Quadratic Stress Gradient Failure Criteria for Textile Composites
Journal of Composite Materials 41(16) 2007 1917-1937.
- [80] Karkkainen, R.L., B.V. Sankar, J.T. Tzeng
Strength Prediction of Multi-Layer Plain Weave Textile Composites Using the Direct Micromechanics Method",
Composites Part B: Engineering 38 (7&8) 2007 924-932.
- [79] Xu, J., B.V. Sankar
Parametric investigation of gas permeability in cross-ply composite laminates using three-dimensional finite elements
AIAA Journal 45(4) 2007 934-941.
- [78] Lee, S., J. Wang, B.V. Sankar
A Micromechanical model for predicting the Fracture Toughness of Functionally Graded Foams
International Journal of Solid & Structures 44 (2007) 4053-4067.
- [77] Dang, Thi D., B.V. Sankar
MLPG Formulation for Generalized Plane Strain Problems with Material Discontinuity and Application to Composite Micromechanics
AIAA Journal 45(4) 2007 912-921.
- [76] Choi, S, B.V. Sankar
Fracture toughness of transverse cracks in graphite/epoxy laminates at cryogenic conditions
Composites: Part B 38 (2007) 193-200.
- [75] Zhu, H., B.V. Sankar
Analysis of Sandwich TPS Panel with Functionally Graded Foam Core by Galerkin Method
Composite Structures 77 (2007) 280-287.
- [74] Acar, E., Haftka, R.T., Sankar, B.V. and Qui, X.
"Increasing Allowable Flight Loads by Improved Structural Modeling,"
AIAA Journal, Vol. 44, No. 2, 2006, pp. 376-381.
- [73] Mathew, J., Q. Song, B.V. Sankar, M. Sheplak, L. Cattafesta
Optimized design of piezoelectric flap actuators for active flow control
AIAA Journal 44(12) 2006 2919-2928.
- [72] Bapanapalli, S.K., B.V. Sankar, R.J. Primas
Microcracking in cross-ply laminates due to biaxial and thermal loading
AIAA Journal 44(12) 2006 2949-2957.

- [71] Prasad, S.A.N., Q. Gallas, S. Horowitz, B. Homeijer, B.V. Sankar, L.N. Cattafesta, and M. Sheplak
An Analytical Electroacoustic Model of a Piezoelectric Composite Circular Plate
AIAA Journal 44(10) 2006 2311-2318.
- [70] Lee, B., B.V. Sankar
Lay-up independent fracture criterion for notched laminated composites", *Composites Science & Technology* 66 (2006)
2491-2499.
- [69] Choi, S., B.V. Sankar
Micromechanical Analysis of Composite Laminates at Cryogenic Temperatures
J. Composite Materials, 40(12) 2006 1077-1091.
- [68] Karkkainen, R.L., B.V. Sankar
A Direct Micromechanics Method for Failure Analysis of Plain Weave Textile Composite
Composites Science & Technology 66 (2006) 137-150.
- [67] Grau, D.L., X.S. Qiu, B.V. Sankar
Relation between interfacial fracture toughness and mode-mixity in honeycomb core sandwich composites
J. Sandwich Structures & Materials 8 (2006) 187-203.
- [66] Kalarikkal, S., B.V. Sankar, P.G. Ifju
Effect of Cryogenic Temperature on the Fracture Toughness of Graphite/Epoxy Composites
ASME Journal of Engineering Materials and Technology 128(2) 2006 151-157.
- [65] Apetre, N.A., B.V. Sankar, D.R. Ambur
Low-velocity impact response of sandwich beams with functionally graded core
International Journal of Solids & Structures 43 (2006) 2479-2496.
- [64] Jang, Insik and B.V. Sankar, "Analysis of a composite double cantilever beam with stitched reinforcements under mixed mode loading: Formulation (I)", *J. of Mechanical Science & Technology*, (19)2, 567-577, 2005.
- [63] Choi, S. and B.V. Sankar, 2005, "A Micromechanical method to predict the fracture toughness of cellular materials", *International Journal of Solids & Structures*, 42/5-6, pp. 1797-1817.
- [62] Chen, L., BV Sankar, PG Ifju, "Analysis of Mode I and Mode II tests for composites with translaminar reinforcements", *Journal of Composite Materials*, (39) 15, 1311-1333, 2005.
- [61] Zhu, H. , B. V. Sankar, R. T. Haftka, S. Venkataraman and M. Blosser , "Optimization of a Functionally Graded Metallic Foam Insulation under Transient Heat Transfer Conditions", *Journal of Structural and Multidisciplinary Optimization*, 28(5), November 2004, 349-355.
- [60] Venkataraman, S., Haftka, R. T., Sankar, B. V., Zhu; H., Blosser, M. L., "Optimal Functionally Graded Metallic Foam Thermal Insulation,
AIAA Journal, 2004 vol. 42 no. 11, pp. 2355-2363.
- [59] Zhu, H. And BV Sankar, "A Combined Fourier Transform-Galerkin Method for the Analysis of Functionally Graded Beams", *J. Applied Mechanics*, 71(3):421-424, 2004.
- [58] Zhu, H., BV Sankar, RT Haftka, S. Venkataraman, Max Blosser, "Minimum mass design of insulation made of functionally graded material", *Journal of Spacecrafts and Rockets*, 41(3):467-469, 2004.
- [57] Chen, L, BV Sankar and PG Ifju, "Application of Moire interferometry for Mode II testing of stitched composites", *Journal of ASTM International*, Mar. 2004, Vol. 1, No. 3 Paper ID JAI-11907.
- [56] Choi, S., B.V. Sankar. "Fracture toughness of carbon foam", *Journal of Composite Materials*, 37(23):2101-2116, 2003.
- [55] Venkataraman, S., B.V. Sankar, "Elasticity solution for stresses in a sandwich beam with functionally graded core", *AIAA Journal*. 41(12):2501-2505, December 2003.
- [54] W.K Lim, JH Song, BV Sankar. "Effect of ring indentation on fatigue crack growth in an aluminum plate", *International Journal of Fatigue*, 25(9-11):1271-1277, 2003.
- [53] Lim W.K. and Sankar, B.V. "Non-singular term effect for the inclined crack extension in anisotropic solids under uniaxial loading", *J. Composite Materials*, 36(17):2031-2044.2002
- [52] Chen L., Sankar, B.V., Ifju P.G., "A new Mode I fracture test for composites with translaminar reinforcements", *Composites Science & Technology*, 62(10-11), 1407-1414 , 2002.

- [51] Vitali, R., Haftka, R.T., and Sankar, B.V., "Multi-fidelity design of stiffened composite panel with a crack, *Structural and Multidisciplinary Optimization*, 23(5), 347-356, 2002.
- [50] Sankar, B.V. and J.T. Tzeng, "Thermal stresses in functionally graded beams", *AIAA Journal*, 2002, 40(6), pp. 1228-1232.
- [49] Vitali, R., O Park, RT Haftka, BV Sankar, CA Rose (2002) "Structural Optimization of a Hat-stiffened Panel Using Response Surfaces", *J. Aircraft*, 39(1):158-166.
- [48] Park, O. & Sankar, B.V. "Crack-tip force method for computing energy release rate in delaminated plates", *Composite Structures*, 55(2002):429-434.
- [47] Dee, A.T., J.R. Vinson and B.V. Sankar (2001) "Effects of through-thickness stitching on high strain rate compressive properties of a graphite/epoxy composite", *AIAA Journal*, 39(1):126-133.
- [46] Lim, W-K., S.-Y. Choi and B.V. Sankar (2001) "Biaxial Load Effects on Crack Extension in Anisotropic Solids" *Engineering Fracture Mechanics*, 68(4):403-416.
- [45] Sankar, B.V. (2001) "An elasticity solution for functionally graded beams", *Composites Science & Technology*, 61:689-696.
- [44] Park, O., R.T. Haftka, B.V. Sankar, J.H. Starnes and S. Nagendra (2001) "Analytical-Experimental Correlation for a Stiffened Composite Panel Loaded in Axial Compression," *Journal of Aircraft*, 38 (2):379-387.
- [43] Sankar, B.V. and M. Narayanan (2001) "Finite Element Analysis of Debonded Sandwich Beams under Axial Compression", *J. Sandwich Structures & materials*, 3(3):197-219.
- [42] Wallace, B.T., Sankar, B.V. and Ifju, P.G. (2001) "Pin reinforcement of delaminated sandwich beams under axial compression", *J. Sandwich Structures & Materials*, 3(2):117-129.
- [41] Chen L, Ifju PG, and Sankar BV (2001) "A novel double cantilever beam test for stitched composite laminates", *J. Composite Materials*, 35(13):1137-1149.
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- [39] Pinheiro, M.A. and B.V. Sankar (2000) "Beam finite element for analyzing free edge delaminations" *J. Thermoplastic Composite Materials*, 13:272-291.
- [38] Avery, J.L. and B.V. Sankar (2000) "Compressive failure of sandwich beams with debonded facesheets", *Journal of Composite Materials*, 34(14):1176-1199.
- [37] Roque, R., Z. Zhang and B.V. Sankar (1999) "Determination of Crack Growth Rate Parameters of Asphalt Mixtures Using the Superpave IDT," *Journal of the Association of Asphalt Paving Technologists*, Vol. 68, pp. 404-433.
- [36] M.H. Lear and B.V. Sankar (1999) "Optimizing energy absorption in multi-layered materials through controlled delamination", *Journal of Material Science*, 34(17):4181-4193.
- [35] B.V. Sankar and S.M. Dharmapuri (1998) "Analysis of a stitched double cantilever beam", *Journal of Composite Materials*, 32(24):2203-2225.
- [34] H. Zhu, B.V. Sankar and R.V. Marrey (1998) "Evaluation of failure criteria for fiber composites using finite element micromechanics", *J. Composite Materials*, 32(8):766-782.
- [33] R. Ferri and B.V. Sankar (1997) "A Comparative Study on the Impact resistance of Composite Laminates and Sandwich Panels", *J. Thermoplastic Composite Materials*, 10:304-315.
- [32] S.K. Sharma and B.V. Sankar (1997) "Mode II Delamination Toughness of Stitched Graphite/Epoxy Textile Composites", *Composites Science and Technology*, 57(7):729-737.
- [31] M.K. Gundepudi, B.V. Sankar, J.J. Mecholsky, Jr. and D.C. Clupper (1997) "Stress analysis of spheres under multiple contacts", *Powder Technology*, 94(2)153:161.
- [30] B.V. Sankar and R.V. Marrey (1997) "Analytical method for micromechanics of textile composites", *Composites Science and Technology*, 57(6):703-713.
- [29] S.K. Sharma and B.V. Sankar (1997) "Sublaminar Buckling and Compression Strength of Stitched Uniweave Graphite/Epoxy Laminates", *J. Reinforced Plastics and Composites*, 16(5):425-434.
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Thermoplastic Composite Materials, 10(3):241-253.

[27] R.V. Marrey and B.V. Sankar (1997) "A micromechanical model for textile composite plates", *J. of Composite Materials*, 31(12):1187-1213.

[26] S. Lahiri, B.V. Sankar and P.A. Mataga (1996) "Evaluation of Bimaterial Stress Intensity Factors Using a Finite Element-Boundary Element Alternating Method", *Engineering Fracture Mechanics*, 53(2):289-302.

[25] S. Sugavanam, V.K. Varadan, V.V. Varadan and B.V. Sankar (1996) "Active Control of a Lightly Damped Cantilever Beam Using Spatially Distributed Actuators and Sensors", *J. Wave-Material Interaction*, 11(1):67-84

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Abstracts in conference proceedings

The following abstract were accepted based on reviews, and all of them were presented at respective meetings.

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2. B.V. Sankar (1988) "Axisymmetric Contact Between a Rigid Sphere and a Layered Plate". *Proceedings of the International*

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3. B.V. Sankar (1989) "Axisymmetric Contact Between a Rigid Indenter and a Laminated Plate", Society of Engineering Science Meeting, Berkeley, California, June 1989.
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 7. D.C. Clupper, Z. Chen, J.J. Mecholsky, Jr. and B.V. Sankar (1996) "Attrition and Fracture of Particles During Single particle, Multiple Particle and Impact Testing", American Ceramic Society Annual Meeting, Indianapolis, April, 14-17, 1996.
 8. Roque, R., Z. Zhang and B. Sankar (1998) "Indirect determination of crack growth rate parameters of asphalt mixtures", Proceedings of the 12th Engineering Mechanics Conference, May 17-20, La Jolla, California.
 9. Zhu, Huasheng and B.V. Sankar (1998) "Effect of through-the-thickness stitching on post-buckling behavior of delaminated composites", 13th US National Congress of Applied Mechanics, June 1998, Gainesville, Florida, ISBN 0-9652609, p. TA11
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 11. Sankar, B.V. and S. Dharmapuri (1998) "Evaluation of complex stress intensity factors in debonded sandwich beams", ASME, MD - Volume 84, Mechanical Behavior of Advanced Materials, pp. 285, Symposium on Micromechanics and Laminate Analysis in honor of Dr. N.J. Pagano's 65th Birthday, ASME/IMECE, Anaheim, California, November 1998. (invited)
 12. W.-K. Lim¹, J.-H. Song¹, B. V. Sankar (2002) "Effect of Ring Indentation on Fatigue Crack Growth of Aluminum Plate", International Conference on Fatigue damage to Structural Materials, Hyannis, MA, September 22-27, 2002.
 13. Lee, Bokwon and BV Sankar, "Fracture criterion and finite-width correction factors for notched composite laminates", Proceedings of the 16th US Army Symposium on Solid Mechanics, Eds. A.M. Rajendran et al., pp. 123-124, Charleston, South Carolina, May 4-7, 2003. (Invited)
 14. Sankar, B.V., "Sandwich construction with functionally graded cores", D.C. Drucker memorial Symposium, October 8-10, 2002, University of Florida, Gainesville, Florida. (Invited)
 15. Sankar, B.V. and Wonjong Noh, "Mixed-Mode Interfacial fracture toughness of sandwich composites at cryogenic temperatures", 41st Space Congress, Cape Canaveral, Florida, April 27-30, 2004. (invited)
 16. B.V. Sankar, "Micromechanics of Fracture in Cellular Materials", Invited talk given at the International Conference on Computational and Experimental Engineering and Sciences (ICES'05), IIT-Madras at Chennai, India, December 1-8, 2005
 17. T. Dang, B.V. Sankar. "Meshless Local Petrov-Galerkin Micromechanical Analysis Of Fiber Composites Including Axial Shear Loading", 7th World Congress on Computational Mechanics (WCCM VII), Los Angeles, California, July 16-22, 2006, Paper Number 489.
 18. M. Leong, B.V. Sankar, N. Olhoff. "Thermal effects on composite failure criteria". International Conference on Multiscale Modeling and Simulation, Indian Institute of Science, Bangalore, India, January 2-4, 2008.

NASA Contractor Reports

1. Y.S. Kwon and B.V. Sankar (1993) "Indentation-Flexure and Low-Velocity Impact Damage in Graphite/Epoxy Laminates", NASA Contractor Report 187624.
2. S.K. Sharma and B.V. Sankar (1995) "Effects of Through-the-Thickness Stitching on Impact and Interlaminar Fracture Properties of Textile Graphite/Epoxy Laminates", NASA Contractor Report 195042.
3. R.V. Marrey and B.V. Sankar (1995) "Micromechanical Models for Textile Structural Composites", NASA Contractor Report 198229.

International Activities

(Last five years)

1. Invited to deliver a keynote lecture at the International Conference on Computational & Experimental Engineering and Science, Madera, Portugal, July 2004.
2. Member of the International Organizing and Scientific Committee, 7th International Conference on Sandwich Structures, Aalborg, Denmark, August 2005.
3. Organizing a symposium on Textile Composites at the International Mechanical Engineering Congress & Exposition, November 2004.
4. External Reviewer for a Ph.D. thesis submitted at the Indian Institute of Technology, Kanpur, India. October 2003.
5. Invited by Aalborg University, Aalborg, Denmark to be an opponent for a PhD thesis in June 2002. Thesis Title: *Design basis for transition zone in integrally hat-stiffened RTM-skin for primary aircraft structure* by Anette Nielsen.

6. Presented an invited paper at the International Conference on Composite Materials (ICCM) in Beijing, China in June 2001 and chaired a session at the same meeting. Paper title: Sankar, B.V. and H.D. Zhu (2001) "*Elasticity analysis of functionally graded beams*", Proceedings of the 13th International Conference on Composite Materials, Beijing, China, June 25-29, 2001, p. 583.
7. Presented an invited paper at the Second International Conference on Composites in the Transportation Industry at Sydney, Australia, Feb 14-18, 2000. This conference was sponsored by the University of New South Wales. Paper title: Sankar, B.V. and H. Zhu (2000) "*Effects of stitching on the low-velocity impact response of delaminated beams*", Proceedings of the ACUN-2 International Composites Conference, Composites in the Transportation Industry, Sydney, Australia, February 14-18, pp. 560-565.
8. Invited by the Department of Aeronautics at the Royal Institute of Technology in Stockholm, Sweden, to serve as an *opponent* for the doctoral dissertation entitled *Impact Response and Delamination of Composite Plates* (candidate: Robin Olsson) June 1998.
9. Invited to deliver a keynote lecture at the Centennial Meeting of the Japan Society of Mechanical Engineers in Tokyo, July 20-22, 1997. My talk was entitled "Translaminar reinforcements in laminated fiber composites", which appeared in a special proceedings of the conference, pp. 517-522.
10. Invited to organize several special topical symposia at the International Mechanical Engineering Congress & Exposition (see Service to Profession below).
11. June 2000: Member Local Organizing Committee for the SIS-2000 held in Gainesville. SIS-2000 was an international conference on Surface and Interface Science organized by the Center for Surface Science and Engineering and the Engineering Research Center for Particle Science & Technology.
12. November 2000: Organized the symposium entitled "Design, Analysis and Processing of Textile Composites" at the International Mechanical Engineering Congress in Orlando, FL.

Service To Profession

Professional Societies

- Founding Member and Fellow - American Society for Composites (ASC)
- Member and Fellow - American Society of Mechanical Engineering
- Member and Associate Fellow - American Institute of Aeronautics and Astronautics (AIAA)

Editorial Board

- Member of the Editorial Board - Journal of Composite Materials
- Member of the Editorial Board - Journal of Sandwich Materials and Structures
- Associate Editor - AIAA Journal (2003-2006)

Committees

- ASME Aerospace Division Structures and Materials Committee
- Chair: 2005-2007
- Vice-Chair 2003-05
- Chair, Structures and Materials Award Committee, 1993
- IMECE Technical Program Chairman, 1997-98
- American Society for Composites
- 2005-07 Member at Large, Executive Committee, American Society for Composites
- 1996-98 Chair, Education Division, American Society for Composites
- 2004- Liaison to the ASME Aerospace Division
- American Institute of Aeronautics & Astronautics
- Best Student Paper Award Judge, American Institute of Aeronautics & Astronautics, Atlanta, April 2000
- Organizer, Work-in-Progress Sessions, AIAA Structures, Dynamics & Materials Conference, 2003.

Major Conferences Organized

- Co-Chair, 28th National Meeting of Society of Engineering Science, Gainesville, Florida, November 6-8, 1991.
- Chair, Local Arrangements and Member of the Technical Committee and Organizing Committee for the 13th U.S. National Congress of Applied Mechanics (1998), Gainesville, Florida.
- Member, Local Organizing Committee for the SIS-2000 held in Gainesville. SIS-2000 was an international conference on Surface and Interface Science organized by the Center for Surface Science and Engineering and the Engineering Research Center for Particle Science & Technology, June 2000.
- Conference Co-Chair, 18th Annual Technical Conference of the American Society for Composites, October 2003. (This is the premier conference in the field of composite materials)

Symposia Organized

- Symposium on Mechanics of Textile Structural Composites at the 1994 International Mechanical Engineering Congress and

Exposition, Chicago, November 1994.

- Symposium on Dynamic response of Composite Materials (with Professor C.T. Sun and Dr. Y. Rajapakse) at the 1995 International Mechanical Engineering Congress and Exposition
- Symposium on Fracture and Damage in Composite Structures (with professor C.T. Sun) at the 1996 IMECE (ASME Winter Annual Meeting)
- Symposium on Design, Analysis and Processing of Textile Composites at the International Mechanical Engineering Congress in Orlando, November 2000.
- Symposium on Sandwich Structures & Materials at the 2001 ASME/IMECE Meeting in New York, NY, November 2001.
- Symposium on Textile Structural Composites at the 2004 ASME IMECE Meeting, Anaheim, CA, November 2004.

Session Chair

Chaired sessions regularly at the American Society for Composites Technical Meetings, American Society of Mechanical Engineers, American Institute of Aeronautics and Astronautics meetings, International Mechanical Engineering Congress, International Conference on Composite Materials.

Short Course

Offered a one-day short course on Marine Composites (Co-Instructors: C.T. Sun and D. Weissman-Berman, University of Florida), Nov. 1990.

External Examiner

- Served as the *Opponent* (External Examiner) for a doctoral thesis examination in the Department of Aeronautics, Royal Institute of Technology, Sweden, May, 1998. Thesis title: Impact response and delamination of composite plates by Robin Olsson.
- Served as the *Opponent* for a doctoral thesis examination in the Department of Mechanical Engineering at Aalborg University, Aalborg, Denmark, August 2002. Thesis title: *Design basis for transition zone in integrally hat-stiffened RTM-skin for primary aircraft structure* by Anette Nielsen.
- Reviewer for a doctoral thesis submitted at the Indian Institute of Technology, Kanpur, 2003.

Reviewer

- I review about 12-15 papers per year for major journals in the area of composite materials & structures including: ASCE J of Engineering Mechanics, ASCE J of Aerospace Engineering, Journal of Composite Materials, International J of Fracture, AIAA Journal, International Journal of Solids and Structures, ASTM J. Comp. Res. and Tech., Composites Engineering, Composites Science and Technology, Experimental Mechanics, Computational Mechanics, Journal of Spacecraft and Rockets, Journal of Aircraft, Journal of Biomimetics, ASME Journal of Engineering Materials & Technology, Journal of Applied Mechanics, J of Mechanics and Physics of Solids, Engineering Fracture Mechanics.
- I routinely review proposals for the National Science Foundation, Army Research Office, AFOSR, Engineering Foundation, NASA.
- I have been asked to review book proposals for McGraw-Hill, John Wiley, Addison-Wesley, Cambridge University Press and CRC press.

Service to department, college and university

Department

1993 : Director, Center for Studies of Advanced Structural Composites

1987-96 : Member of Graduate Curriculum & Policy Committee

Various Faculty Search Committees

Computer Resources Committee

Engineering Science Curriculum Committees

Faculty Advisor, Student Chapter of the Society of Engineering Science

1995 : Member, Department Chairman Search Committee

1997-99 : Undergraduate Coordinator

1997 : Sustained Performance Evaluation Committee

1997 : UFRF Research Professorship Committee

1997 : Curriculum Coordination Committee (Solids and Structures)

1999 : Undergraduate Curriculum and Policy Committee

2000-01 : Chair, Faculty Search Committee

2002 : Coordinator, Solid Mechanics Group

2003-04 : Chair, Faculty Search Committee

2004 : Awards and Honors Committee

College and University

1988-90 : Elected Member of the University Senate

1992-93 : University Minority Affairs Committee

1992-93 : Mentor for Minority students

1996 : University of Florida Foundation Professor Selection Committee

1995 : Teaching Incentive Program Award Selection Committee

1995 : University Faculty Teaching Awards Committee

1996 : Professorial Excellence in Performance Evaluation Committee

1997-99 : College Curriculum Committee

1997-00 : College Personnel Board (Tenure & Promotion Committee)

2000-03 : College Personnel Board (Tenure & Promotion Committee)

2000-01 : Mentor for two minority students

2004-05 : Elected Member of the University Senate

2004-05 : Search Committee for the Director of Center for Protective Structures, Department of Civil and Coastal Engineering