

CURRICULUM VITAE

Dahsin Liu

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EDUCATIONS

Ph.D. Engineering Mechanics Virginia Polytechnic Institute and State University 1984

M.S. Engineering Mechanics Virginia Polytechnic Institute and State University 1981

B.S. Naval Architecture National Taiwan Ocean University 1976

PROFESSIONAL EXPERIENCE

- 7/01-present Professor, Dept. of Mechanical Engineering
Michigan State University, East Lansing, Michigan
- 8/98-1/99 National Science Council Visiting Professor, Dept. of Mechanical Engineering
National Sun Yat-Sen University, Kaohsiung, Taiwan
- 7/97-6/01 Professor, Dept. of Materials Science and Mechanics
Michigan State University, East Lansing, Michigan
- 7/91-6/97 Associate Professor, Dept. of Materials Science and Mechanics
Michigan State University, East Lansing, Michigan
- 9/85-6/91 Assistant Professor, Dept. of Metallurgy, Mechanics & Materials Science
Michigan State University, East Lansing, Michigan
- 1/84-8/85 Postdoctoral Research Associate, Dept. of Engineering Sciences
University of Florida, Gainesville, Florida
- 9/79-1/84 Graduate Research Assistant, Dept. of Engineering Science & Mechanics
Virginia Polytechnic Institute and State University, Blacksburg, Virginia

HONORS AND AWARDS

1. The Withrow Teaching Excellence Award, College of Engineering, Michigan State University, 1994.
2. National Science Council Visiting Professorship (Taiwan), 1998.
3. D.R. Harting Award, Society for Experimental Mechanics, 2002.
4. Wang Kuang-Cheng Visiting Scholarship (China), 2002.
5. Fellow, American Society for Composites, 2008.

PATENTS

1. K.B. Zimmerman and D. Liu, U.S. Patent 5,601,676, Composite Joining and Repair, Feb. 11, 1997.
2. D. Liu and P.J. Schulz, U.S. Patent Application filed, Topologically Controlled Composite Structure, Sept. 18, 2006.

PUBLICATIONS (published and forthcoming)

A. Referred Papers in Journals and Monographs

1. Hyer, M.W. and Liu, D.H., "Photoelastic Determination of Stresses in Multiple-pin Connectors," *Experimental Mechanics*, 23 (3), 249-256, 1983.
2. Hyer, M.W. and Liu, D., "Stresses in a Quasi-isotropic Pin-loaded Connector Using Photoelasticity," *Experimental Mechanics*, 24 (1), 48-53, 1984.
3. Hyer, M.W. and Liu, D., "Stresses in Pin-Loaded Plates," *Mechanical Characterization of Load Bearing Fiber Composite Laminates*, ed. A.H. Cardon and G. Verchery, Elsevier Applied Science Publishers, 179-190, 1985.
4. Hyer, M.W. and Liu, D., "Stresses in Pin-Loaded Orthotropic Plates: Photoelastic Results," *J. Composite Materials*, 19 (2), 138-153, 1985.
5. Liu, Dahsin, Sun, C.T., and Malvern, L.E., "Structural Degradation of Impacted Graphite/Epoxy Laminates," *Shock and Vibration Bulletin*, 56, Part 2, 51-60, 1986.
6. Liu, D., Lillycrop, L.S., Malvern, L.E., and Sun, C.T., "The Evaluation of Delamination - An Edge Replication Study," *Experimental Techniques*, 11 (5), 20-25, 1987.
7. Lee, B.T., Sun, C.T., and Liu, Dahsin, "An Assessment of Damping Measurements in the Evaluation of Integrity of Composite Beams," *J. Reinforced Plastics and Composites*, 6 (2), 114-125, 1987.
8. Liu, Dahsin and Malvern, Lawrence E., "Matrix Cracking in Impacted Glass/Epoxy Plates," *J. Composite Materials*, 21 (7), 594-609, 1987.
9. Liu, Dahsin, "Impact-induced Delamination - A View of Material Property Mismatching," *J. Composite Materials*, 22 (7), 674-691, 1988.
10. Malvern, Lawrence E., C.T. Sun, and Dahsin Liu, "Delamination Damage in Central Impact at Subperforation Speeds on Laminated Kevlar/Epoxy Plates," *Composite Materials: Fatigue and Fracture*, 2nd Volume, ASTM STP 1012, P.A. Lagace, Ed., 387-405, 1989.
11. Hong, Seongho and Liu, Dahsin, "On the Relationship between Impact Energy and Delamination Area," *Experimental Mechanics*, 29 (2), 115-120, 1989.
12. Liu, Dahsin, "Delamination Resistance in Stitched and Unstitched Composite Plates Subjected to Impact Loading," *J. Reinforced Plastics and Composites*, 9 (1), 59-69, 1990.
13. Liu, Dahsin, "Photoelastic Study on Composite Stitching," *Experimental Techniques*, 14 (1), 25-27, 1990.
14. Lee, Chienhom and Liu, Dahsin, "Tensile Strength of Stitching Joint in Woven Glass Fabrics," *J. Engineering Materials and Technology*, 112 (2), 125-130, 1990.
15. Lu, Xianqiang and Liu, Dahsin, "Finite Element Analysis on Strain Energy Release Rates at Delamination Front," *J. Reinforced Plastics and Composites*, 10 (3), 279-292, 1991.

16. Lee, Chun-Ying and Liu, Dahsin, "Interlaminar Stresses Continuity Theory for Laminated Composite Analysis," *AIAA Journal*, 29 (11), 2010-2012, 1991.
17. Lee, C.Y., Liu, D., and Lu, X., "Static and Vibration Analysis of Laminated Beams by Using an Interlaminar Shear Stress Continuity Theory," *International J. for Numerical Methods in Engineering*, 33 (2), 409-424, 1992.
18. Lee, C.Y. and Liu, D., "An Interlaminar Stresses Continuity Theory for Laminated Composite Stress Analysis," *Computers and Structures*, 42 (1), 69-78, 1992.
19. Lu, X. and Liu, D., "Interlayer Shear Slip Theory for Cross-Ply Laminates with Nonrigid Interfaces," *AIAA Journal*, 30 (4), 1063-1073, 1992.
20. Lu, X. and Liu, D., "An Interlaminar Shear Stress Continuity Theory for both Thin and Thick Composite Laminates," *J. Applied Mechanics*, 59(3), 502-509, 1992.
21. Lee, C.Y. and Liu, D., "Layer Reduction Techniques for Composite Laminate Analysis," *Computers and Structures*, 44(6), 1305-1315, 1992.
22. Lee, C.Y. and Liu, D., "Nonlinear Analysis of Composite Laminates Using Interlaminar Shear Stress Continuity Theory," *Composite Engineering*, 3 (2), 151-168, 1993.
23. Lu, X. and Liu, D., "Assessment of Interlayer Shear Slip Theory for Delamination Modeling," *Composite Materials: Fatigue and Fracture*, 4th Volume, ASTM STP 1156, W.W. Stinchcomb and N.E. Ashbaugh, Eds., 218-235, 1993.
24. Liu, D., Lee, C.Y., and Lu, X., "Repairability of Impact-induced Damage in SMC Composites," *J. Composite Materials*, 27 (13), 1257-1271, 1993.
25. Liu, Dahsin, Lan Xu, and Xianqiang Lu, "An Interlaminar Bonding Theory for Delamination and Nonrigid Interface Analysis," *J. Reinforced Plastics and Composites*, 12 (11), 1198-1211, 1993.
26. Liu, Dahsin, Lan Xu, and Xianqiang Lu, "Stress Analysis of Imperfect Composite Laminates with an Interlaminar Bonding Theory," *International J. for Numerical Methods in Engineering*, 37 (16), 2819-2839, 1994.
27. Li, X. and Liu, D., "A Zigzag Theory for Composite Laminates," *AIAA Journal*, 33 (6), 1163-1165, 1995.
28. Zimmerman, Kristin and Dahsin Liu, "Geometrical Parameters in Composite Repair," *J. Composite Materials*, 29 (11), 1473-1487, 1995.
29. Li, X. and Liu, D., "A Laminate Theory Based on Global-Local Superposition," *Communications in Numerical Methods in Engineering*, 11 (8), 633-641, 1995.
30. Zimmerman, Kristin and Dahsin Liu, "An Experimental Investigation of Composite Repair," *Experimental Mechanics*, 36 (2), 142-147, 1996.
31. Liu, D. and Li, X., "An Overall View of Laminate Theories Based on Displacement Hypothesis," *J. Composite Materials*, 30 (14), 1539-1561, 1996.
32. Li, X. and Liu, D., "Generalized Laminate Theories Based on Double Superposition Hypothesis," *International J. for Numerical Methods in Engineering*, 40 (8), 1197-1212, 1997.
33. Liu, D., Raju, B.B., and Dang, X., "Size Effects on Impact Response of Composite Laminates," *International J. of Impact Engineering*, 21(10), 837-854, 1998.
34. Liu, D. and Dang, X., "Testing and Simulation of Laminated Composites Subjected to Impact Loading", ASTM STP 1330, R.B. Bucinell, Ed., 273-284, 1998.
35. Liu, D., Raju, B.B., and You, J., "Thickness Effects on Mechanical Joints for Composites," *J. Composite Materials*, 33(1), 2-21, 1999.

36. Chen, H.-T., Liu, D., and Lee, A., "Moire in Atomic Force Microscope," *Experimental Techniques*, 24(1), 31-32, 2000.
37. Liu, D., Raju, B.B. and Dang, X., "Impact Perforation Resistance of Laminated and Assembled Composite Plates," *International J. Impact Engineering*, 24(6-7), 733-746, 2000.
38. Chen, H. and Liu, D., "Advances in SEM Moire," *Experimental Mechanics*, 41(2), 165-173, 2001.
39. Liu, D. and Chen, H., "Carbonaceous Grating Technique for AFM Moire and SEM Moire," *Experimental Techniques*, 25(3), 26-29, 2001.
40. Liu, D., Shakour, E. and Lu, X., "Joining Rigidity of Assembled Composite Beams," *J. Composite Materials*, 35(22), 1985-2008, 2001.
41. Liu, D. and Hou, Li, "Three-dimensional Size Effects in Composite Pin Joints," *Experimental Mechanics*, 43(2), 115-123, 2003.
42. Hou, Li and Liu, D., "Size Effects and Thickness Constraints in Composite Joints," *J. Composite Materials*, 37(21), 1921-1938, 2003.
43. Liu, D., "Characterization of Impact Properties and Damage Process of Glass/Epoxy Composite Laminates" *J. Composite Materials*, 38(16), 1425-1442, 2004.
44. Liu, D., Hou, L. and Raju, B., "Thickness Constraint in Composite Joints," Technical Paper TP04PUB217, Society of Manufacturing Engineers, 2004.
45. Liu, D., Manchiraju, S., Templeton, D. and Raju, B.B., "Finite Element Simulations of Composite Vehicle Structures Subjected to Impact Loading," *SAE Transaction J. Materials and Manufacturing*, 114(5), 203-216, 2005.
46. Pilchak, A.L, Uchiyama, T. and Liu, D., "Low Velocity Impact Response of Small Angle Laminated Composites," *AIAA Journal*, 44(12), 3080-3087, 2006.
47. Li, Q., Liu, D., Templeton, D.W. and Raju, B.B., "A Shock Tube-Based Impact Testing Facility," *Experimental Techniques*, 31(4), 25-28, 2007.
48. Coppens, G.C. and Liu, D., "Effects of Though-Thickness Fiber Geometry and Small Angle on Impact Resistance," *J. Advanced Materials*, 39(4), 44-54, 2007.
49. Atas, C. and Liu, D., "Impact Response of Woven Composites with Small Weaving Angles," *International J. Impact Engineering*, 35, 80-97, 2008.
50. Li, G., Li, Q., Liu, D., Raju, B.B. and Templeton, D.W., "Designing Composite Vehicles against Blast Attack," (to appear in *SAE Transactions J. Passenger Cars – Mechanical System*).
51. Schulz, P.J. and Liu, D., "Effects of Camber Height and Boundary Condition on Energy Absorption of Arched Composite Laminates," (to appear in *Composite Science and Technology*).
52. Lee, C.-Y. and Liu, D., "Effect of Impact Velocity on the Indentation of Thick Composite Laminates," (to appear in *Experimental Techniques*).
53. Shakour, E.S., Ropp, P.A. and Liu, D., "Effects of Fiber Geometry on Energy Absorption of Arched Composites," (to appear in *J. Composite Materials*).
54. Li, G. and Liu, D., "Drop-Weight Impactor for Low-Strain Rate Measurements," (submitted to *Experimental Techniques*).
55. Rosario, K. and Liu, D., "Impact Properties of Quasi-three-dimensional Composites," (submitted to *J. Composite Materials*).
56. Long, K. and Liu, D., "Blast Simulations based on Shock Tube Testing and Computational Fluid Dynamic Analysis," (submitted to *AIAA Journal*).

57. Icten, Bulent, and Liu, D., "Effect of Composite Cell Size on Impact Response," (in preparation).
58. Liu, D. and Shakour, E.S. "Impact Response of Composite Domes," (in preparation).

B. Conference Proceedings, Abstracts and Presentation PowerPoints (Speaker Underlined)

1. Hyer, M.W. and Liu, Dahsin, "Load Distribution in Photoelastic Bolted- Joint Models," Proceedings of the 1981 Spring Meeting, Society of Experimental Stress Analysis, Dearborn, MI, May 31-June 4, 1981, pp. 367- 371.
2. Liu, Dahsin, Malvern, L.E., and Sun, C.T., "Delaminations in Central Impact in Graphite/Epoxy Laminates," Proceedings of the 1986 Spring Meeting, Society for Experimental Mechanics, New Orleans, LA, June 9-13, 1986, pp. 863-868.
3. Liu, Dahsin, "Delamination and Matrix Cracking in Impacted Glass/Epoxy Plates," Preprints (ESP23.86005) of the 23rd Annual Technical Meeting, Society of Engineering Science, Buffalo, NY, Aug. 25-27, 1986, pp. 1-8.
4. Liu, Dahsin, Kim, Y.G., and Hong, S., "Stitching as Joint in Woven Composite Plate," Proceedings of the Third Annual Conference on Advanced Composites, Detroit, MI, September 15-17, 1987, pp. 343-347.
5. Liu, Dahsin, "Delamination Resistance in Stitched and Unstitched Composite Plates Subjected to Impact Loading," Proceedings of the American Society for Composites, Second Technical Conference, Newark, DE, September 22-25, 1987, pp. 147-155.
6. Malvern, L.E., Sun, C.T., and Liu, D., "Damage in Composite Laminates from Central Impacts at Subperforation Speeds," *Recent Trends in Aeroelasticity, Structures, and Structural Dynamics*, Proceedings of the Symposium in Memory of Professor Bisplinghoff, P. Hajela, ed., University Presses of Florida, Gainesville, FL, 1987, pp. 298-312.
7. Hong, Seongho and Dahsin Liu, "Design of Delamination Resistance in Composite Plates Subjected to Impact Loading," Proceedings of the Fourth Annual Conference on Advanced Composites, Dearborn, MI, September 13-15, 1988, pp. 25-30.
8. Lee, Chienhom and Dahsin Liu, "Stitching Joint in Woven Composite Material," Recent Advances in the Macro- and Micro-Mechanics of Composite Materials Structures, D. Hui and J.R. Vinson, ed., the Winter Annual Meeting of the American Society of Mechanical Engineers, AD-Vol. 13, 1988, pp. 115-123.
9. Hong, Seongho and Dahsin Liu, "Stress Analysis in Composite Laminate under Central Loading," Preprints (ESP26.89001) of the 26th Annual Technical Meeting, Society of Engineering Science, Ann Arbor, MI, Sept. 18-20, 1989, pp. 1-9.
10. Lu, Xianqiang and Dahsin Liu, "Strain Energy Release Rates at Delamination Front," Proceedings of the American Society for Composites, Fourth Technical Conference, Blacksburg, VA, October 2-5, 1989, pp. 277-286.
11. Lu, Xianqiang and Dahsin Liu, "An Interlaminar Stress Continuity Theory for Composite Laminates," Proceedings of the American Society for Composites, Fifth Technical Conference, East Lansing, MI, June 12-14, 1990, pp.479-488.
12. Liu, Dahsin and X. Lu, "An Interlayer Bonding Theory for Delamination and Imperfect Interface Analysis," Proceedings of the American Society for Composites, Sixth Technical Conference, Albany, NY, October 6-9, 1991, pp. 89-96.
13. Liu, D. and Zimmerman, K.B., "Composite Repair," the Sixth Japan-U.S. Conference on Composite Materials, Orlando, FL, June 22-25, 1992.

14. Xu, Lan and Liu, Dahsin, "Analysis of Composite Materials with Homogenization Method," Proceedings of the American Society for Composites, Seventh Technical Conference, University Park, PA, October 13-15, 1992, pp. 856-865.
15. Zimmerman, K.B. and Liu, D., "The Repairability of Damaged Structural Composites," Proceedings of the 1993 Spring Meeting, Society for Experimental Mechanics, Dearborn, MI, June 7-9, 1993, pp. 715-720.
16. Liu, D. and Zimmerman, K.B., "Experimental Investigations on Composite Repairability," Proceedings of the American Society for Composites, Eighth Technical Conference, Cleveland, OH, October 19-21, 1993, pp. 583-591.
17. Liu, D. and Li, X., "Analysis of Composite Laminates with a Generalized Zigzag Theory," Proceedings of the American Society for Composites, Ninth Technical Conference, Newark, DE, September 20-22, 1994, pp. 913-920.
18. Liu, D. and Li, X., "An Optimal Theory for Laminated Composite Designs," Proceedings of the International Conference on Composite Materials and Energy, Montreal, Quebec, Canada, May 8-10, 1995, pp. 43-50.
19. Liu, Dahsin and Sudarisman, "Photoelastic Study of Fully-Stressed Composite Beams," Proceedings of the 1995 Spring Conference, Society for Experimental Mechanics, Grand Rapids, MI, June 12-14, 1995, pp. 861-866.
20. Liu, Dahsin and Xu, Lan, "Effects of Fiber Waviness and Bonding on Composite Performance", Proceedings of the Tenth International Conference on Composite Materials, Vancouver, BC, Canada, August 14-18, 1995, pp. IV-277-284.
21. Liu, D., X. Dang, and Z. Wang, "Impact Response of Foamed Composites," Post Conference Proceedings of the 1996 VIII International Conference on Experimental Mechanics, Nashville, TN, June 10-13, pp. 95-102.
22. Liu, D., X. Dang, and D.X. Lu, "Analysis of Initial Response of Composite Laminates under Low-Velocity Impact Using LSDYNA3D, Proceedings of the American Society for Composites, Eleventh Technical Conference, Atlanta, GA, October 7-9, 1996, pp. 12-19.
23. D. Liu, Dang, X. and Wang, Z., "Impact Response of Foam Composites," Proceedings, of the 1997 SAE International Congress and Exposition, (SAE paper 971065), Detroit, MI, February 24-27, 1997.
24. Liu, D., Gupta, B. and Lu, D.X., "Modeling the Lower Torso of Hybrid III Dummy," Proceedings of the Tenth International Conference on Vehicle Structural Mechanics and CAE, (SAE paper 971528), Troy, MI, April 10-12, 1997, pp. 123-136.
25. Liu, D. and Dang, X., "Testing and Simulation of Laminated Composites Subjected to Impact Loading" Presentation in the American Society for Testing and Materials, the Seventh Symposium on Fatigue and Fracture, St. Louis, MO, May 5-7, 1997.
26. Liu, D., Raju, B.B., You, J., and Cloud, G.L., "Scaling Effects of Composite Thickness on Mechanical Fastening," Proceedings of the American Society for Composites, Twelfth Technical Conference, Dearborn, MI, October 6-8, 1997, pp. 766-773.
27. Liu, D., Raju, B.B., and Dang, X., "Size Effects on Impact Response of Composite Laminates," Abstracts of the 13th U.S. National Congress of Applied Mechanics, Gainesville, FL, June 21-26, 1998, pp. MB7.
28. Raju, B.B., Liu, D., and Dang, X., "Scaling Effects on Impact Response of Composite Lamintes," Proceedings of the American Society for Composites, Thirteen Technical Conference, Baltimore, MD, September 21-23, 1998.

29. Raju, B.B., Liu, D., and Dang, X., "Thickness Effects in Composite Structures," Proceedings of the Fourteenth Annual Conference on Advanced Composites, Dearborn, MI, September 13-15, 1998.
30. Liu, D. and Raju, B.B., "Impact Perforation Resistance of Assembled Composite Plates," Impact Response of Materials and Structures, V.P.M. Shim, S. Tanimura, and C.T. Lim, Ed., Oxford University Press, 545-551, 1999.
31. Liu, Dahsin and Shakour, Elias, "Moire Method for Simultaneous Microscopic Measurement and Observation," Proceedings of the SEM Annual Conference on Theoretical, Experimental and Computational Mechanics, Cincinnati, OH, June 7-9, 1999, pp. 467-470.
32. Liu, Dahsin and Shakour, Elias, "Joining Effects on Performance of Assembled Composite Plates," Proceedings of the SEM Annual Conference on Theoretical, Experimental and Computational Mechanics, Cincinnati, OH, June 7-9, 1999, pp. 518-520.
33. Liu, Dahsin and Shakour, Elias, "Studies of Moire Interferometry on Composite Structures," Abstracts of the 1999 ASME Mechanics and Materials Conference, Blacksburg, VA, June 27-30, 1999, pp. 169.
34. Liu, Dahsin and Raju, Basavaraju, B., "Thickness Effects on Impact Perforation Resistance of Composite Laminates," Abstracts of the 1999 ASME Mechanics and Materials Conference, Blacksburg, VA, June 27-30, 1999, pp. 114.
35. Liu, Dahsin and Raju, Basavaraju, "Strength of Mechanical Fasteners in Joining Composite Laminates with Various Thicknesses," Abstracts of the 1999 ASME Mechanics and Materials Conference, Blacksburg, VA, June 27-30, 1999, pp. 133.
36. Liu, D., Kokolakis, M. and Raju, B.B., "Effects of Stacking Sequence on Perforation Resistance of Composite Laminates," Proceedings of the American Society for Composites, Fourteenth Annual Conference, Dayton, OH, September 27-29, 1999, pp. 121-130.
37. Liu, Dahsin and Chen, Huatang, "Microscopic Measurements Based on AFM Moire," Proceedings of the SEM IX International Congress on Experimental Mechanics, Orlando, FL, June 5-8, 2000, pp. 424-426.
38. Raju, B.B., Liu, D. and Richman, T., "Impact Resistance of SiCp/SiCw/Al Metal Matrix Composites," Proceedings of the International Conference on Composite Engineering, Denver, CO, July 2-8, 2000, pp. 731-732.
39. Liu, D., Li, G., Reeves, B.L. and Holifield, D.F., "Energy Absorption in Sandwich Composite Structures," Proceedings of Midwest Advanced Materials and Processing Conference, Dearborn, MI, September 12-14, 2000.
40. Liu, D., Li, G., Richman, T. and Raju, B.B., "Energy Absorption in Sandwich Composites," Proceedings of the American Society for Composites, Fifteen Annual Conference, College Station, TX, September 24-27, 2000, pp. 267-274.
41. Raju, B.B., Liu, D. and Richman, T., "Energy Absorbed Capability of SiCp/SiCw/Al Composites," Proceedings of the American Society for Composites, Fifteen Annual Conference, College Station, TX, September 24-27, 2000, pp. 923-934.
42. Liu, D., Richman, T., Li, G. and Raju, B., "Penetration and Perforation Resistance of Laminated Glass/Epoxy Composite Plates," Proceedings of the Thirteenth International Conference on Composite Materials, Beijing, China, June 25-29, 2001, paper 1320.
43. Liu, D. and Dang, X., "Simulation of Composite Laminates under Impact Loading," Sixth US National Congress on Computational Mechanics, Dearborn, MI, July 31 – August 4, 2001.

44. Liu, D., Hou, Li and Raju, B., "Effects of Three Dimensional Scaling on Joining Strength of Composite Laminates," Proceedings of the American Society for Composites, Sixteen Annual Conference, Blacksburg, VA, September 10-12, 2001, paper 012.
45. Raju, B., Liu, D., Richman, T., "Precracking on the Charpy Impact Properties of Silicon Carbide Reinforced Aluminum Metal Matrix Composites," Proceedings of the American Society for Composites, Sixteen Annual Conference, Blacksburg, VA, September 10-12, 2001, paper 009.
46. Liu, D. and Shakour, Elias, "Free-Edge Effect on Surface Measurements," Proceedings of 2002 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, Milwaukee, WI, June 10-12, 2002.
47. Liu, D. and Raju, B., "Analysis of Load-Displacement Relations of Glass/Epoxy Laminates Subjected to Low-Velocity Impact," Proceedings of the American Society for Composites, Seventeen Annual Conference, West Lafayette, IN, October 21-23, 2002, paper 017.
48. Liu, D., Hou, L. and Raju, B., "Thickness Constraint in Composite Joints," Proceedings of the Fourteenth International Conference on Composite Materials, San Diego, CA, July 14-18, 2003, paper 0809.
49. Liu, D. and Raju, B., "Analysis of Load-Displacement Relations of Glass/Epoxy Laminates Subjected to Low-Velocity Impact," Proceedings of the American Society for Composites, Eighteen Annual Conference, Gainesville, FL, October 19-22, 2003, paper 121.
50. Liu, D., Coppens, G.J., Raju, B.B. and Templeton, D., "Impact Resistance of Three-dimensional Woven Fabric Composites," Proceedings of the American Society for Composites, Nineteen Annual Conference, Atlanta, GA, October 17-20, 2004, paper IE4.
51. Lee, C.Y., Raju, B.B., Templeton, D. and Liu, D., "Impact-induced Mechanisms in Composites with Various Microstructures," Proceedings of the 2005 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, Portland, OR, June 7-9, 2005, paper 23.
52. Liu, D., Li, G., Raju, B.B. and Templeton, D., "Dynamic Material Behavior from Different Impacting and Measuring Techniques," Proceedings of the 2005 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, Portland, OR, June 7-9, 2005, paper 24.
53. Liu, D. and Uchiyama, T., "Characterization of Energy Absorption Capability of Composite Materials Subjected to Impact Loading," Proceedings of the American Society for Composites, Twentieth Annual Conference, Philadelphia, PA, September 7-9, 2005.
54. Li, Q., Liu, D., Templeton, D.W. and Raju, B.B., "A Shock Tube Based Facility for Impact Testing," Proceedings of the 2006 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, Saint Louis, MO, June 4-7, 2006.
55. Raju, B.B., Li, Q. and Liu, D., "Blast Strength of Glass/Epoxy Composite Plates," Proceedings of the American Society for Composites, Twenty-First Technical Conference, Dearborn, MI, September 17-20, 2006.
56. Icten, B.M. and Liu, D., "Effects of Weaving Size on Response of Composites Loaded with Transverse Impact," Proceedings of the Twelfth U.S.-Japan Conference on Composite Materials, Dearborn, MI, September 21-22, 2006, pp. 131-144.
57. Liu, D., "Characterization of Impact Resistance of Composites with Various Structures," Abstracts and Presentations of the 12th Composite Durability Workshop, Saint-Maximin, France, March 28-30, 2007.

58. Liu, D., "Response of Glass/Epoxy Composites to Blast Loading," Abstracts of the 17th Army Solid Mechanics, Baltimore, Maryland, April 3-5, 2007.
59. Li, G., Li, Q., Liu, D., Raju, B.B. and Templeton, D.W., "Designing Composite Vehicles against Blast Attack," SAE 2007 World Congress, Detroit, MI, April 16-19, 2007, Paper 2007-01-0137.
60. Liu, D., Schulz, P.J., Templeton, D. and Raju, B., "Dynamic Failure and Energy Absorption of Composites with Structural Control," Proceedings of the 2007 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, Springfield, MA, June 4-6, 2007.
61. Liu, D. and Schulz, P.J., "Dynamic Failure and Energy Absorption of Composites with Topological Control," Proceedings of the 16th International Conference on Composite Materials, Kyoto, Japan, July 9-13, 2007.
62. Liu, D., Ropp, P.A., Schulz, P.J. and Raju, B.B., "Effects of Fiber Geometry on Energy Absorption of Arched Composites," Proceedings of the American Society for Composites, Twenty-Second Technical Conference, Seattle, WA, September 17-19, 2007.
63. Liu, D., "Behavior of Quasi-three-dimensional Woven Composites," Abstracts of the Mechanics Conference to Celebrate the 100th Anniversary of the Department of Engineering Science and Mechanics, Blacksburg, VA, May 29-30, 2008.
64. Li, G. and Liu, D., "Instrumented Free Projectile for Impact Testing," Proceedings of the XI International Conference and Exposition on Experimental and Applied Mechanics, Orlando, FL, June 2-5, 2008.
65. Liu, D., Klann, S. and Rosario, K., "Behavior of Quasi-three-dimensional Composites," (to be presented in the American Society for Composites, Twenty-Third Technical Conference, Memphis, TN, September 9-11, 2008.)
66. Liu, D., Rosario, K., Fuller, J. and Raju, B., "Design and Manufacturing of Quasi-three-dimensional Woven Composite Materials," (to be presented in SAMPE Fall Technical Conference, Memphis, TN, September 8-11, 2008).

C. Contract Reports

1. Hyer, M.W. and Liu, D.H., "Use of Two-Dimensional Transmission Photoelastic Models to Study Stresses in Double-Lap Bolted Joints," NASA Contractor Report 165812, November 1981.
2. Hyer, M.W. and Liu, D.H., "Stresses in a Quasi-isotropic Pin Loaded Connector Using Photoelasticity," NASA Contractor Report 172135, August 1983.
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4. Hyer, M.W. and Liu, D.H., "An Assessment of the Accuracy of Orthotropic Photoelasticity," NASA Contractor Report 3773, 1984.
5. Liu, D. and C. Lee, "Preliminary Design Analysis for a Naval Composite Flange," Quantum Composites, Inc., August 1989.
6. Lee, C. and D. Liu, "Feasibility Study of Using Composite Materials in the Design of a TRW Inflator," TRW Vehicle Safety Systems Inc., April 1990.
7. Lee, C. and D. Liu, "Feasibility Study of Using Latex 9063 in the Design of a Schroeder's In-Line Filter," Quantum Composites, Inc., September 1990.
8. Liu, D., C.Y. Lee, and X. Lu, "Repairability of Damaged Structural Composites," Michigan Materials and Processing Institute, September 1991.

9. Zimmerman, K.B. and Liu, D., "An Experimental Investigation on the Repairability of Damaged Structural Composites," Michigan Materials and Processing Institute, September 1992.
10. Liu, D. and Gupta, B.B., "Simulation of Knee Response for Dummy Model," Ford Company, April 1995.
11. Liu, D., Cloud, G.L., and J. You, "Scaling Effect of Composite Thickness on Mechanical Fastening," U.S. Army Tank Automotive Research, Development, and Engineering Center, October 1996.
12. Liu, D., "Design of Composite Vehicle Structures and Armors against Blast Attacks," U.S. Army Tank Automotive Command, October, 2006.
13. Liu, D., "Design of Composite Vehicle Structures and Armors against Blast Attacks," U.S. Army Tank Automotive Command, September, 2007.

D. Invited Presentations

1. "Experimental Investigations on Impact Response of Laminated Composite Plates," Oakland University, Oakland, MI, April 15, 1985.
2. "Impact Response of Composite Laminates," Michigan State University, East Lansing, MI, May 1, 1985.
3. "Low-velocity Impact in Composite Plates," American Society for Metals, Michigan Chapter, Saginaw, MI, October 20, 1988.
4. "Layerwise Theory for Laminated Composite Plates," National Taiwan Ocean University, Keelung, Taiwan, December 20, 1990.
5. "Theories for Laminated Composite Plates," National Sun Yat-Sen University, Kaohsiung, Taiwan, December 24, 1990.
6. "Interlaminar Stress Continuity Theories for Laminated Composites," Ohio State University, Columbus, OH, October 10, 1991.
7. "Experimental Investigations on the Optimization of Composite Repair," Michigan Materials and Processing Institute, East Lansing, MI, May 17, 1993.
8. "Modeling the Lower Torso of Hybrid III Dummy – with a Study on Impact Behavior of Foam Composites," Dayeh University, Changhua, Taiwan, November 26, 1998.
9. "On Modeling of Laminated Composite Plates with Delamination," Hong Kong University, Hong Kong, December 3, 1998.
10. "Delamination in Laminated Composite Plates and its Modeling," National Cheng Kong University, Tainan, Taiwan, December 22, 1998.
11. "Characteristics of Composite Materials," US Army TACOM, Warren, MI, March 12, 2001.
12. "Impact Response on Composite Laminates," US Army TACOM, Warren, MI, March 12, 2001.
13. "Computational Simulation of Composite Laminates," US Army TACOM, Warren, MI, March 13, 2001.
14. "Mechanical Fastening in Thick Composites," US Army TARDEC, Warren, MI, September 14, 2004.
15. "Increasing Delamination Resistance – Road to Thick and Complex Composite Structures," Airbus Company, Bristol, England, September 27, 2006.
16. "Glass/Eoxy Resistance to Blast Wave," Qinetiq, Farnborough, England, September 29, 2006.

17. "Survivability of Composite Structures," Da-Yeh University, Changhua, Taiwan, October 23, 2007.
18. "Survivability of Composite Structures," National Changhua University of Education, Changhua, Taiwan, October 24, 2007.
19. "Survivability of Composite Structures," National Sun Yat-Sen University, Kaohsiung, Taiwan, October 24, 2007.
20. "Survivability of Composite Structures," Chung-Shan Institute of Science and Technology, Taoyuan, Taiwan, October 25, 2007.
21. "Survivability of Composite Structures," Spartan Ventures, Lansing, MI, December 7, 2007.

SCHOLAR SPONSORING AND STUDENT SUPERVISION

A. Visiting Professors and Scholars

1. Mr. Guojing Li, visiting scholar, Harbin Aircraft Manufacturing Corporation, China, 4/00-8/03.
2. Prof. Terry Y-F Chen, visiting professor, National Cheng-Kong University, Taiwan, 7/00-9/00.
3. Mr. Qi Li, visiting scholar, Institute of Mechanics, Chinese Academy of Sciences, China, 8/00-1/01.
4. Prof. Jai-Sug Hawong, visiting professor, Yeungnam University, South Korea, 8/01-7/02.
5. Mr. Jiangcheng Liu, visiting scholar, Jiannan University, China, 3/02-3/03.
6. Mr. Cesim Atas, visiting scholar, Dokuz Eylul Univeristy, Turkey, 8/03-1/04.
7. Mr. Takashi Uchiyama, visiting scholar, Japan Patent Office, Japan, 7/04-6/05.
8. Prof. Chun-Ying Lee, visiting professor, Da-Yeh Univeristy, Taiwan, 7/04-11/04.
9. Mr. Qi Li, visiting scholar, Institute of Mechanics, Chinese Academy of Sciences, China, 10/04-9/06.
10. Mr. Bulent Icten, visiting scholar, Dokuz Eylul Univeristy, Turkey, 4/05-9/05.
11. Prof. Sijin Zhang, visiting professor, Hunan Uniersity, China, 10/06-10/07.
12. Mr. Hanqing Zhao, visiting scholar, Loyang Industrial University, China, 12/06-5/07.
13. Prof. Lu-Ping Chao, visiting professor, Fung-Chia University, Taiwan, 4/07-7/07.
14. Prof. Chun-Ying Lee, visiting professor, Da-Yeh Univeristy, Taiwan, 7/04-10/04.

B. Postdoctoral Research Associates

1. Dr. Wen Huang, "Characterization of Composite Materials Based on Split Hopkinson's Bar," 12/06-03/07.
2. Dr. Elias Shakour, "Manufacturing, Testing and Modeling of Arched Composites," 9/06-5/08.
3. Dr. Guojing Li, "Shock Tube Based Blast Testing," 08/08-present.

C. Ph.D. Dissertations

1. Hong, Seongho, "Central Delamination in Glass/Epoxy Laminates," March, 1990.
2. Lee, Chun-Ying, "A Study of Interlaminar Stress Continuity Theories for Composite Laminates," May, 1991.
3. Lu, Xianqiang, "An Interlayer Shear Slip Theory for Damaged Composite Beams," June, 1991.
4. Zimmerman, Kristin Beth, "An Experimental Investigation of the Optimum Joining and Repair of Structural Composites," April, 1993.
5. Li, Xiaoyu, "Investigation of Theories for Laminated Composite Plates," December 1994.
6. Xu, Lan, "Effects of Fiber Waviness and Interfacial Conditions on Composite Structures," October, 1996.
7. Lee, Chienhom, "A Continuum-Based Shell Element for Composite Laminates under Large Deformation," May, 1998.
8. Shakour, Elias Ruda, "Analysis of Composite Laminates by Moire Interferometry," May, 2000.
9. Dang, Xinglai, "Testing and Simulation of Composite Laminates under Impact Loading," May, 2000.
10. Chen, Huatang, "Techniques and Applications of SEM Moire and AFM Moire," September, 2000.
11. Hou, Li, "Some Three-dimensional Issues in Composite Joints," November, 2004.
12. Wang, Zhenwen, "Contact Mechanics in Layered Composites," November, 2004.
13. Brimhal, Tom J., "Friction Energy Absorption in Fiber Reinforced Composites," May, 2005.
14. Song, Gang, "Plastic Wave Propagation in Taylor's Impact Test," December, 2005.
15. Guojing, Li, "Development of Instrumented Wireless Projectile for Low-Velocity Impact," December, 2007.
16. Ma, Liangkai, "Certification of Composite Materials and Structures," expected December, 2009.
17. Jia, Tao, "Peridynamic in the Damage Analysis of Composite Materials and Structures," expected December, 2009.

D. Master Theses and Projects

1. Lee, Chienhom, "Finite Element Analysis on Stitching Techniques for Composite Joining and Reinforcement," (thesis), December, 1988.
2. Al-Moussawi, Hassan, "Compressive Strength of Damaged Glass-Epoxy Laminate," (project), March, 1988.
3. Ninh, Tom, "Complex Analysis for Composite Stress Concentrations," (project), June, 1990.
4. Liu, Shang-Sheng, "A Comparison Among ANSYS, I-DEAS, and ABAQUS," (project), April, 1993.
5. Tao, Xiaodong, "Modeling of Hybrid III Dummy Ankle," (project), December, 1995.
6. Sudarisman, "Composite Beam Optimization," (project), May, 1995.
7. You, Junling, "Thickness Effects on Composite Joints," (thesis), March, 1998.
8. Li, Guojing, "Construction, Calibration and Application of a Split Hopkinson's Pressure Bar," (thesis), December, 2002.

9. Coppens, George J., "Effects of Three-dimensional Geometry on Penetration and Perforation Resistance," (thesis) May, 2004.
10. Manchiraju, Sivom, "A Progressive Damage Analysis Including Delamination for Fiber Reinforced Composites," (thesis), June, 2004.
11. Schulz, Peter J., "Effects of Arch Camber and Boundary Condition on Impact-Based Energy Absorption," (thesis) August, 2006.
12. Ropp, Patrick A., "Manufacturing Composite Arches and Domes with VARTM for High Energy Absorption," (thesis) May, 2007.
13. Anoop, Goyal, "Analysis of Damage in Laminated Composite Plates Subjected to Blast Loading," (thesis) May, 2007.
14. Klann, Shawn, "Unit Cell Analysis for Quasi-three-dimensional Composite Materials," (thesis) May, 2008.
15. Long, Kai, "Blast Simulation with Shock Tube Testing and Computational Fluid Dynamics Analysis," (thesis) June, 2008.
16. Rosario, Kirit, "Testing of Quasi-three-dimensional Composite Materials," (thesis) July, 2008.
17. Dhyani, Anupam, "Refining VARTM Process," (thesis) August, 2008.
18. Gulker, Brandon, "Energy Separation in Impacted Composite Plates," (thesis), expected Dec. 2009.

E. Senior Theses and Independent Projects

1. Lee, J.A., "Fabrication of Birefringent Composite Materials," (thesis) June, 1987.
2. Eusebi, C.A., "Temperature Effect on Delamination Resistance of Glass/Epoxy Laminates," (thesis) June, 1988.
3. Lander, W.R., "Photoelastic Characterization of Injection Molded Polystyrene Composites," (thesis) June, 1989.
4. Burns, C.A., "Material Evaluation for Automotive Body Side Molding Application Based on Mechanical Properties," (thesis) June, 1990.
5. Fairles, R.T., "The Investigation of Scale Modeling for the Impact Damage of Carbon/Bismaleimide Composite Plates," (thesis) June, 1990.
6. Katz, S.A., "NITINOL Shape Memory Alloy Actuator Used for Dampening Vibration in a Composite Cantilever Beam," (thesis) June, 1990.
7. Saoudi, A., "Fabrication of Carbon-Carbon Composites," (thesis) June, 1990.
8. Wood, M.D., "The Investigation of Delamination Resistance with Increasing Temperature for a Carbon/Bismaleimide Composite," (thesis) August, 1990.
9. Helmuth, J.A., "Composite Repair," (thesis) September, 1990.
10. Davis, T., "The Making of Holograms and Their Applications," (project) August, 1996.
11. Woodruff, J., "Mechanical Impact Dynamics," (project) December, 1996.
12. Kokolakis, M., "Effects of Stacking Sequence on Perforation Resistance of Composite Laminates," (thesis), May, 1999.
13. Reeves, B.L., "Energy Absorption of Multi-face and Multi-core Sandwich Composites," (thesis) May, 2000.
14. Holifield, D.F., "Energy Absorption of Unsymmetric Sandwich Composites," (thesis) August, 2000.
15. Soporean, A., "Energy Absorption of Closed-cell Styrofoam," (thesis) May, 2001.

16. Meyer, N.M., "Feasibility Study of Composite Materials for Musical Instruments," (thesis), May, 2001.
17. Melnykowycz, M.M., "Fabrication of Honeycomb-Foam Structures," (thesis), May, 2001.
18. Schultz, S., "Optimization of Sandwich Composite Structures," (thesis), December, 2001.
19. O'Conner, D., "Elasticity for Laminated Composites," (project), August, 2005.
20. Rowland, B., "Quasi-three-dimensional Weaving Mechanism," (project), August, 2006.
21. DiPetta, T., "Transparent Orthotropic Composite Materials," (project), August, 2007.
22. Fuller, J., "Quasi-three-dimensional Weaving Machine," (project), December, 2007.

INSTRUCTIONS

A. Undergraduate Courses

1. Statics, 2. Dynamics, 3. Mechanics of Materials, 4. Experimental Mechanics,
5. Introduction to Composite Materials, 6. Computational Mechanics.

B. Graduate Courses

1. Continuum Mechanics, 2. Viscoelasticity, 3. Advanced Mechanics of Materials,
4. Laminated Composite Structures, 5. Fiber-Reinforced Composite Materials,
6. Experimental Mechanics, 7. Introduction to Finite Element Methods, 8. Micromechanics,
9. Fracture Mechanics and Fatigue

SERVICES

A. Professional Affiliations

1. American Society for Composites (ASC): Fellow (08), Membership Secretary (02-05), Member-at-large (06-07)
3. Society for Experimental Mechanics (SEM): Member, Associate Editor of Experimental Techniques (03-present)
4. American Society for Testing and Materials (ASTM): Member, D30 and E07 Subcommittee Member (86-present)
5. American Institute of Aeronautics and Astronautics (AIAA): Member, MSU Student Chapter Advisor (86-present)

B. Reviewer of Journals

1. *Journal of Composite Materials*, 2. *Experimental Mechanics*, 3. *International Journal for Numerical Methods in Engineering*, 4. *AIAA Journal*, 5. *Journal of Engineering Materials and Technology*, 6. *Experimental Techniques*, 7. *Journal of Aircraft*, 8. *Composite Engineering*, 9. *ASTM STP*, 10. *Materials Science and Engineering A*, 11. *Journal of Biomechanical Engineering*, 12. *Finite Element in Analysis and Design*, 13. *International Journal of Solids and Structures*, 14. *Composite, Part A*, 15. *Applied Optics*, 16. *Composite*

Science and Technology, 17. Aerospace Science and Technology, 18. Journal of Elasticity, 19. Strains, 20. Journal of Strain Analysis, 21. International Journal of Impact Engineering