

Curriculum Vitae

Hal F. Brinson

Personal Data:

Citizenship: U.S. (Birthplace; Morehead City, North Carolina)
Marital Status: Married, Clara Hudson
Children: Catherine and Jonathan

Degrees:

- D.H.C. Honorary Doctor of Science, University of Brussels (VUB), May 1986
- Ph.D. Engineering Mechanics, Stanford University, 1965
Dissertation: "Studies in Photoviscoelasticity"
- - *NSF Science Faculty Fellow, Theoretical and Applied Mechanics, Northwestern University, 1961-1962 (transferred to Stanford University in 1962)*
- M.S. Civil Engineering, North Carolina State University, 1961
Thesis: "The Structural Behavior of a Circular Membranal Structure"
- B.C.E. Civil Engineering, North Carolina State University, 1956

Honors and Recognitions:

Academic:

- Virginia Tech Alumni Award for Research Excellence, April 1988
- Honorary Doctor of Science, 1986 (See Degrees above).
- ASEE-NASA Summer Fellow, NASA-Ames and Stanford Univ., 1967 and 1968.
- Ford Foundation Fellow, 1962-1965.
- NSF Science Faculty Fellow, 1961-1962
- Sigma Xi, 1961
- Chi Epsilon (Civil Engineering), 1955.

Professional:

- Fellow, American society of Mechanical Engineers (1994).
- Murray Medal, Society for Experimental Mechanics (1992).
- Lazan Award for "Fundamental Contributions to the Theories of Viscoelasticity and Adhesion Mechanics" Society for Experimental Mechanics, 1989.
- Tatnal Award for "Long and Distinguished Service to the Society", Society for Experimental Mechanics, 1985.
- Fellow, Society for Experimental Mechanics (1984), Citation; "In recognition of his distinguished contributions to the field of experimental mechanics and of his service to that field through the Society.

Biographical Listings:

Personalities in the South (date of first listing, 1976)
Who's Who in Engineering (date of first listing, 1977)
Who's Who in Science and Engineering (date of first listing, 1992)

Academic Experience:

Deputy Director: CEAC. University of Houston (1994-1999)
Director and Professor: Division of Engineering, University of Texas at San Antonio (1988-1994)
Director: Center for Adhesive and Sealant Science, Virginia Tech (1982-1988)
President: Society for Experimental Mechanics (1978-1979)
Professor of Engineering Science and Mechanics, Virginia Polytechnic Institute and State University (Virginia Tech) 1965-1988.

Professional Service:

Member, Advisory Board for Materials Science Foundations (1998-1999)
Member, Advisory Board for (Journal of) Science and Engineering of Composite Materials (1989-1999)
Member, National Academy of Science Committee on the Reliability of Structural Adhesive Bonds in Severe Environments, (1984)
Member, Advisory Board for the International Journal for Composite Structures (1982-1999)

Teaching:

ESM Student Society, Departmental Outstanding Professor, Virginia Tech, 1967-1968
Twice nominated for The Virginia Tech College of Engineering Sporn Award for Teaching Excellence

PUBLICATIONS:

Books:

- Brinson, H. F. and Brinson, L. C., *Polymer Engineering Science and Viscoelasticity: An Introduction*, Springer, NY, 2015 (2nd Edition).
- Brinson, H. F. and Brinson, L. C., *Polymer Engineering Science and Viscoelasticity: An Introduction*, Springer, NY, 2008.
- Brinson, Hal F. (Chairman of Handbook Committee) , *Engineering Materials Handbook on Adhesives and Sealants*, Vol. 3, ASM International, 1992,
- Brinson, H. F., Ward, T. C. and Wightman, J. P., (Ed.'s), *Adhesion Science Review 1*, VT-CASS, February 1988.

Book Chapters:

- Brinson, H. F., "Accelerated Life Predictions", *Engineering Materials Handbook, Vol. 2, Engineering Plastics*, ASM Int., Metals Park, 1988, pp. 788-795.
- Lefebvre, D., Ward, T. C., Dillard, D. A. and Brinson, H. F., "A Nonlinear Constitutive Behavior for Diffusion in Polymers," *Adhesion Science Review 1*, (H. F. Brinson et al., Ed.'s.), The Virginia Tech Center for Adhesion Science, Blacksburg, VA, February 1988.
- Moussiaux, E., Cardon, A. H. and Brinson, H. F., "Bending of a Bonded Beam as a Test Method for Adhesion Properties," *Adhesion Science Review 1*, (H. F. Brinson et al., Ed.'s.), The Virginia Tech Center for Adhesion Science, Blacksburg, VA, February 1988.
- Roy, S., Reddy, J. N. and Brinson, H. F., "Geometries and Viscoelastic Nonlinear Analysis of Adhesive Joints," *Mechanical Behavior of Adhesive Joints* (A. H. Cardon and G. Verchery, Ed.'s.), Euromech Colloquium 227, August 1987, Pluralis, Paris.
- Moussiaux, E., Cardon, A. H. and Brinson, H. F., "Bending of a Bonded Beam as a Test Method for Adhesive Properties," *Mechanical Behavior of Adhesive Joints* (A. H. Cardon and G. Verchery, Ed.'s.), Euromech Colloquium 227, August 1987, Pluralis, Paris.
- Brinson, H. F., "Durability (Lifetime Predictions) of Adhesively Bonded Joints," Plenary paper in *Mechanical Behavior of Adhesive Joints* (A. H. Cardon and G. Verchery, Ed.'s.), Euromech Colloquium 227, August 1987, Pluralis, Paris, pp. 3-26
- Brinson, H. F., "Experimental Mechanics Applied to the Accelerated Characterization of Polymer Based Composites," *New Trends in Experimental Mechanics*, (J. T. Pindera, Ed.), Springer-Verlag, Vienna, 1981.

Published Works:

(Including Journal, Proceedings and Transaction Articles as well as Extended Abstracts):

- Spaggiari A, Dragoni E and Brinson HF, "Measuring the shear strength of Structural adhesives with bonded beams under anti-symmetric bending"; *International Journal of Adhesion & Adhesives*; Vol. 67, p. 112-120.
- Dragoni E, Brinson HF; "Modeling and optimization of the sandwich beam specimen in three-point bending for adhesive bond characterization"; *International Journal of Adhesion & Adhesives*; Vol. 68, 2016, p. 380-388.
- Brinson, Hal F., "The Genesis of the Time-Temperature-Superposition-Principle and its Application to the Viscoelastic Durability of Polymer Based Composite and/or Adhesively Bonded Structures"; *Proceedings of the 24th Annual Technical Conference of the American Society for Composites 2009 and 1st Joint Canadian-American Technical Conference on Composites*; Vol. 4, p. 2820
- Brinson, Hal F., "Reflections on Professor Miklos Hetenyi – An SESA Founder, Graduate Advisor and Friend", *Experimental Mechanics*, May/June, 2002, p. 16 & 65-66.
- Brinson, Hal F., "Matrix Dominated Time Dependent Failures Prediction in Polymer Matrix Composites", *J. of Composite Structures*, 47 (1999) 445-456.
- Miyagi, Z., Zaghi, S., Hunston, D. and Brinson, H., "The Sandwich Beam Specimen for Characterizing Adhesive Properties", Proceedings of the 22nd Annual Meeting of the Adhesion Society, (D.R. Speth, Ed.), Feb. 1999, p. 119-121.
- Corleto, C. R., Bradley, W.L. and Brinson, H. F., "An Experimental Micromechanics Measurement Technique for Submicron Domains", *J. of Materials Science* 31, 1996, pp. 1803-1808.

- Brinson, H. F., Dickie, R. A. and DeBolt, M. A., "Measurement of Adhesive Bond Properties Including Damage by Dynamic Mechanical Thermal Analysis of a Beam Specimen", *J. of Adhesion*, vol. 55, 1995, pp. 17-30.
- Brinson, Hal F., "Micro-Measurement of Mechanical Properties of Adhesives and Composites based on a Digital Imaging Technique" *Proceedings of the 1995 Spring SEM Meeting*, p. 484-490.
- Brinson, H. F. and Brock, E.R., "Digital Imaging Micro-Measurements of Mechanical Properties for Adhesive Joints and Polymer Matrix Composites, Proceedings of the Society of Engineering Science 31st Annual Technical Meeting, Texas A&M University, College Station, TX, October 10-12, 1994.
- Brinson, Hal F., "Digital imaging and micro-measurements of Properties for Adhesives and Composites", *Proceedings of the 10th International Conference on Experimental Mechanics*, Plenary Lecture Volume, 1994.
- Brinson, H. F., "A Nonlinear Viscoelastic Approach to the Durability Predictions for Polymer Based Composite Structures", *Durability of Polymer Based Composite Systems for Structural Applications*, (A. H. Cardon and G. Verchery, Ed.'s.), Elsevier, NY, 1991, p.46-65.
- Gramoll, K. C., Dillard, D. A., Brinson, H. F., "Thermoviscoelastic Characterization and the Prediction of Kevlar/Epoxy Composite Laminates", *Composite Materials: Testing and Design* (Ninth Volume), ASTM STP 1059, S. P. Garbo, Ed., ASTM, Phil., 1990, pp. 477-493.
- Dwight, D. D., Sabot, P. J. and Brinson, H. F., "Interfacial Shear Strength in Fiberglass Composites", *Fourth Technical Conference*, (Society of Composite Materials), Technomic, 1990, p. 356-366.
- Gramoll, K. C., Dillard, D. A. and Brinson, H. F., "A Stable Numerical Solution Method for the In-plane Loading of Nonlinear Viscoelastic Laminated Orthotropic Materials," *Composites Structures*, Vol. 13, No. 4, pp. 251-274, 1989.
- Dillard, D. A., Gramoll, K. C. and Brinson, H. F., "The Implications of the Fiber Truss Concept for Creep Properties of Laminated Composites, *Composite Structures*, 11, pp. 85-100, 1989.
- Lefebvre, D. R., Dillard, D. A., and Brinson, H. F., "A Model for the Diffusion of Moisture in Adhesive Joints, Part II: Experimental", *J. of Adhesion*, Vol. 27, pp. 19-40, 1989.
- Lefebvre, D. R., Dillard, D. A. and Brinson, H. F., "The Development of a Modified Double Cantilever Beam Specimen for Measuring the Fracture Energy of Rubber to Metal Bonds," *Experimental Mechanics*, March 1988, p. 38-44.
- Lhotellier, F. C. and Brinson, H. F., "Matrix-Fiber Stress Transfer in Composite Materials: Elasto-plastic Model with an Interphase Layer, *Composite Structures*, Vol. 10, No. 4, 1988, pp. 281-301.
- Dillard, D. A., Hamadeh, R., and Brinson, H. F., "Durability Predictions for Adhesive Joints," *Proceedings of the Symposium on Structural Adhesive Bonding*, U.S. Army Armament Research Development and Engineering Center, Picatinny Arsenal, Dover, NJ, Nov. 1986, pp. 385-396.
- Brinson, H. F., Wightman, J. P., Dillard, D. A., Lefebvre, D., and Filbey, J., "Test Specimen Geometries for Evaluating Adhesive Durability," *Proceedings of the 19th International SAMPE Technical Conference*, Vol. 19, Oct. 1987, pp. 152-164.
- Gramoll, K. C., Dillard, D. A., and Brinson, H. F., "Accelerated Testing Techniques for Viscoelastic Characterization of Composites," *Proceedings of the Sixteenth North American Thermal Analysis Society*, Sept. 1987, pp. 290-297.
- Dillard, D. A., Liechti, K., Lefebvre, D., Lin, C., Thornton, J. S., and Brinson, H. F., "The Development of Alternate Techniques for Measuring the Fracture Toughness of Rubber to Metal Bonds in Harsh Environments," *International Symposium on Adhesively Bonded Joints*, Baltimore, MD, Sept. 10-12, 1986, STP, 1988, p. 83-97.
- Roy, S., Reddy, J. N., and Brinson, H. F., "Geometries and Viscoelastic Nonlinear Analysis of Adhesive Joints," *Mechanical Behavior of Adhesive Joints* (A. H. Cardon and G. Verchery, Ed.'s.), Euromech Colloquium 227, August 1987, p. 509-522.
- Moussiaux, E., Cardon, A. H., and Brinson, H. F., "Bending of a Bonded Beam as a Test Method for Adhesive Properties," *Mechanical Behavior of Adhesive Joints* (A. H. Cardon, and G. Verchery, Ed.'s.), Euromech Colloquium 227, August 1987, Pluralis, Paris, 163-174.
- Brinson, H. F., "Durability (Lifetime Predictions) of Adhesively Bonded Joints," Plenary paper in *Mechanical Behavior of Adhesive Joints* (A. H. Cardon and G. Verchery, Ed.'s.), Euromech Colloquium 227, August 1987, Pluralis, Paris, pp. 3-25.

- Gramoll, K. C., Dillard, D. A., and Brinson, H. F., "Observations on Measured and Predicted Creep Properties of Laminated Composites," *Proceedings of the 1987 SEM Spring Conference on Experimental Mechanics*, SEM, Bethel, MA, pp. 529-535.
- Dillard, D. A., Straight, M. R., and Brinson, H. F., "The Nonlinear Viscoelastic Characterization of Graphite/Epoxy Composites," *Polymer Engineering and Science*, Jan. 1987, Vol. 27, No. 2, pp. 116-123.
- Dillard, D. A., and Brinson, H. F., "Method for Predicting Nonlinear Viscoelastic Properties of Composites," *Proceedings of the 1986 ISEM Fall Conference on Experimental Mechanics*, SEM, Bethel, CT, pp. 217-221
- Tuttle, M. E., and Brinson, H. F., "Prediction of Long Term Creep Compliance of General Composite Laminates," *Proceedings of the 1985 SEM Spring Conference on Experimental Mechanics*, SEM, CT, 1985, pp. 764-774; *Experimental Mechanics*, March 1986, pp. 89-102.
- Brinson, H. F., and Grant, J. W., "Mechanical Properties for Durability Predictions of FRP Bonded Joints," *Composite Structures*, 6, 1986, pp. 107-121.
- Zhang, M. J., and Brinson, H. F., "Cumulative Creep Damage for Polycarbonate and Polysulfone," *Experimental Mechanics*, Vol. 26, June 1986, pp. 155-162. Also, *Proceedings of the 1985 Spring SEM Conference*, pp. 205-212.
- Tuttle, M.E., and Brinson, H. F., "Prediction of the Long-Term Creep Compliance of General Composite Laminates", *Experimental Mechanics*, Vol 26 (1), March 1986.
- Tuttle, M. E., and Brinson, H. F., "The Impact of Experimental Measurement Error on Long-Term Viscoelastic Predictions," *Proceedings of the 1986 SEM Conference*, pp. 335-343.
- Brinson, H. F., "Mechanics Applied to Adhesion Science," *Applied Mechanics Review* (Guest Editorial), 38, Sept. 9, 1985, pp. ii-iv.
- Brinson, H. F., "The Nonlinear Viscoelastic Response of Polymers on Adhesives Applications," Long Abstract, The Adhesion Society Annual Meeting, 1985, P. 71a-c.
- Brinson, H. F., "Durability Predictions of Adhesively Bonded Composite Structures Using Accelerated Characterization Methods," *Composite Structures* (I. Marshall, ed.), Elsevier Applied Science, London, 1985, pp. 1-18.
- Brinson, H. F., "Viscoelastic Behavior and Lifetime Predictions," *Mechanical Characterization of Load Bearing Fibre Composite Laminates* (A. H. Cardon and G. Verchery, Ed.'s.), Elsevier Applied Science, NY, 1985, pp. 3-20.
- Brinson, H. F., Cardon, A. H., and Hiel, C. C., "Comportement Viscoelastique Non-Lineaire Des Composite A Matrice Polymerique," *JNC 4*, Sept. 10-11, 1984, Paris.
- Hiel, C. C., Brinson, H. F., and Cardon, A. H., "The Viscoelastic Behavior of Polymer Adhesives and Polymer Matrix Composites," *Proceedings First International Conference on Polymer Additives, Blends and Composites*, SPE, Luxemburg, April 10-11, 1984.
- Hiel, C. C., Brinson, H. F., and Cardon, A. H., "Comportment Viscoelastique Non-Lineaire Des Composites a Matrice Polymerique," *Journées Nationales sur les Composites, 4, Paris, 1984*.
- Hiel, C. C., Cardon, A. H., and Brinson, H. F., "Viscoelastic Modeling of Epoxy-Resins for Adhesive and Composite Applications," *Proceedings, 5th International Conference on Experimental Mechanics*, Montreal, Canada, June 1984.
- Tuttle, M. E., Barthelemy, B. M., and Brinson, H. F., "Strain Measurement Within a Single Lap Joint Using Embedded Strain Gages," *Experimental Techniques* (June 1984, pp. 31-35) and *Proceedings, 5th International Conference on Experimental Mechanics*, Montreal, Canada, June 1984.
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- Hiel, C. C., Brinson, H. F., and Cardon, A. H., "A Nonlinear Viscoelastic Characterization Method for Matrix Resin Composites," *Proceedings, 4th International Conference of the Society for the Advancement of Materials and Process Engineering, High Performance Composite Materials, New Applications and Industrial Production*, Bordeaux, France, 1983.
- Brinson, H. F., Hiel, C. C., Cardon, A. H., and DeWilde, W. D., "Nonlinear Viscoelastic Characterization of Polymeric Materials," *Proceedings of the European Conference on Polymer Processing and Properties*, (Gianni Astarita and Luigi Nicolais, Eds.), Capri, Italy, Plenum Press, p. 311-318, 1983.
- Hiel, C., Brinson, H. F., and Cardon, A. H., "The Nonlinear Viscoelastic Response of Resin Matrix Composites," *Composite Structures*, 2, (I. H. Marshall, ed.), Applied Science, 1983, pp. 271-281.

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- Gamby, D., Tougui, A., Lagarde, A., and Brinson, H. F., "The Nonlinear Photoviscoelastic Behavior of Polycarbonate," Proceedings of the 1983 SESA Spring Meeting, May 1983.
- Hiel, C. C., Cardon, A. H., and Brinson, H. F., "Nonlinear Viscoelastic Characterization of Graphite/Epoxy Laminates, Proceedings of the 1983 SESA Spring Meeting, May 1983.
- Dillard, D. A., Morris, D. H., and Brinson, H. F., "Predicting Viscoelastic Response and Delayed Failures in General Laminated Composites," *ASTM STP 787, Composite Materials: Testing and Design (6th Conference)*, Dec. 1982, pp. 357-370.
- Brinson, H. F., and Dillard, D. A., "The Prediction of Long Term Viscoelastic Properties of Fiber Reinforced Plastics," *Progress in Science and Engineering of Composites*, (T. Hayashi et al., Ed.'s.), Vol. 1, JSCM, ICCM IV 1982, pp. 795-802.
- Brinson, H. F., "The Viscoelastic Constitutive Modeling of Adhesives," Jointing in FRP Symposium, Imperial College, London, July 13-14, 1982, *Composites*, Oct. 1982, Vol. 13, No. 4, pp. 377-382.
- Dillard, D. A., and Brinson, H. F., "A Nonlinear Viscoelastic Characterization Procedure of Graphite/Epoxy Composites," *Proceedings of the 1982 SESA/JSME Joint Conference on Experimental Mechanics*, Oahu-Maui, HI, May 23-28, 1982, pp. 102-109.
- Dillard, D. A., and Brinson, H. F., "A Numerical Procedure for Predicting Creep and Delayed Failures in Laminated Composites," *Long Term Behavior of Composites*, ASTM-STP 31, Phil., PA, 1983. pp. 23-37.
- Sancaktar, E., Parkinson, T. F., and Brinson, H. F., "Neutron Radiography for Defect Detection in Adhesively Bonded Joints," *Experimental Techniques*, Feb. 1982, pp. 14-15.
- Kanninen, M. F., and Brinson, H. F., "On the Application of Fracture Mechanics for Strength and Lifetime Predictions in Fiber Reinforced Plastic Materials," *37th Conference on Reinforced Plastics/Composites*, Jan. 1982, Session 29, pp. 1-4.
- Dillard, D. A., Morris, D. H., and Brinson, H. F., "Environmental Effects and Viscoelastic Behavior of Laminated Graphite/Epoxy Composites," *Environmental Degradation of Engineering Materials*, Virginia Polytechnic Institute and State University, Sept. 1981, pp. 445-453.
- Brinson, H. F., Morris, D. H., Griffith, W. I., and Dillard, D. A., "The Influence of Environmental Effects on the Mechanical Properties of Graphite/Epoxy Laminates," British Society for Strain Measurement (BSSM), *Proceedings International Conference on Hostile Environments*, Edinburgh, Scotland, Sept. 1981, pp. 1-12.
- Brinson, H. F., Morris, D. H., Griffith, W. I. and Dillard, D. A., "The Viscoelastic Response of Graphite/Epoxy Laminate," *Composite Structures*, (I. H. Marshall, ed.), Applied Science, 1981, pp. 285-300.
- Dillard, D. A., Morris, D. H., and Brinson, H. F., "Creep Rupture of General Laminates of a Graphite/Epoxy Composite," *Proceedings 1981 Spring SESA Meeting*, p. 151-155, Dearborn, MI.
- Brinson, H. F., Griffith, W. I., and Morris, D. H., "Creep Rupture of Polymer-Matrix Composites," *Experimental Mechanics*, pp. 329-335. (Also, *Proceedings, Fourth International Congress on Experimental Stress Analysis*, and *Experimental Mechanics*, Sept. 1981.)
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- Morris, D. H., Brinson, H. F., Griffith, W. I., and Yeow, Y. T., "The Viscoelastic Behavior of a Composite in a Thermal Environment," *Thermal Stresses in Severe Environments*, (D. P. H. Hasselman and R. A. Heller, Ed.'s.), Plenum Press, NY, 1980, pp. 693-707.
- Morris, D. H., Yeow, Y. T., and Brinson, H. F., "The Viscoelastic Behavior of the Principal Compliance Matrix of a Unidirectional Graphite/Epoxy Composite," *Polymer Composites*, Sept. 1980, Vol. 1, No. 1, pp. 32-36.
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- Sancaktar, E., and Brinson, H. F., "The Viscoelastic Shear Behavior of a Structural Adhesive," *Adhesion and Adsorption of Polymers*, Part A, (L. H. Lee, ed.), Plenum Press, NY, 1980, pp. 279-299.

- Yeow, Y. T., Morris, D. H., and Brinson, H. F., "The Time-Temperature Behavior of a Unidirectional Graphite/Epoxy Laminate," *Composite Materials: Testing and Design*, (5th Conference), STP 674, ASTM, Philadelphia, PA, 1979, pp. 263-281.
- Yeow, Y. T., Morris, D. H., and Brinson, H. F., "A Correlative Study Between Analysis and Experiment on the Fracture Behavior of Graphite/Epoxy Laminates," *J. of Testing and Evaluation*, March, 1979, pp. 117-125.
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- Cartner, J. S., Griffith, W. I., and Brinson, H. F., "The Viscoelastic Behavior of Composite Materials for Automotive Applications," *Composite Materials in the Automotive Industry*, ASME, NY, 1978, pp. 159-169.
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- Das Gupta, A., and Brinson, H. F., "Delayed Yielding of a Plane Stress Viscoelastic Dugdale Model," *J. of Testing and Evaluation*, Nov. 1977, pp. 437-447.
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