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Curriculum Vitae
of
Dr. Gary L. Cloud

**University Distinguished Professor
Ph.D., P.E., FSEM, FInstP, CPhys,
Engineering Consultant**

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This Curriculum Vitae, a narrative biographical sketch, and a short resume for Dr. Cloud are available on-line at www.egr.msu.edu/~cloud

Education

- Advanced Study, Imperial College of Science and Technology, Applied Optics Section, Dept. Physics, London, England., 1977
- Ph.D., Michigan State University, 1966; Advisor-J.T. Pindera; Dissertation: Infrared Photoelasticity; Principles, Methods, and Applications.
- M.S., Michigan Technological University, 1961; Advisor-C.E. Work; Thesis: A Study of Stress-Strain-Optical Retardation Properties of Columbia Resin CR-39 and Paraplex P-43.

- B.S., Michigan Technological University, 1959

Professional Registrations

- Professional Engineer, Michigan, ca. 1970 - present, License No. 19077
- Chartered Physicist, Institute of Physics, 2001 - present
- Chartered Scientist, Institute of Physics, 2005 - 2009

Professional Experience

- 31 Dec. 2016 - present, University Distinguished Professor, Part-time Fixed-Term, Mechanical Engineering Dept, Michigan State University
- 1 Jan. 2013-31 Dec. 2016, University Distinguished Professor, Part-time Term Agreement, Mechanical Engineering, Michigan State University
- 2007-31 Dec. 2012, University Distinguished Professor, Mechanical Engineering, Michigan State University
- 2008-present, Director Emeritus, MSU Composite Vehicle Research Center
- 2005-2008, Founding Director, MSU Composite Vehicle Research Center
- 2001-2007, Professor, Department of Mechanical Engineering, Michigan State University
- 1979 - 2001, Professor, Department of Materials Science and Mechanics, Michigan State University
- 1986 - 1994, Professor, Department of Biomechanics, College of Osteopathic Medicine, Michigan State University (Joint appointment)
- 1976 - 1977, National Science Foundation Science Faculty Fellow, Imperial College of Science and Technology, London, United Kingdom (on leave from Michigan State University)
- 1975 - 1976, National Research Council, Senior Resident Research Associate, Air Force Materials Laboratory, Dayton, Ohio (on leave from Michigan State University)
- 1970 - 1979, Associate Professor, Metallurgy, Mechanics and Materials Science, Michigan State University
- 3/1969 -12/69, Lecturer, University of Zambia, Lusaka, Zambia, Africa (on leave from Michigan State University)

- 1966 - 1970, Assistant Professor, Department of Metallurgy, Mechanics and Materials Science, Michigan State University.
- 1961 - 1966, Assistant Instructor, Metallurgy, Mechanics and Materials Science, Michigan State University
- 1959 - 1961, Graduate Assistant, Department of Engineering Mechanics, Michigan Technological University
- 1956 – 1957, Planning Assistant, City Planning Department, Muskegon, Michigan

Summer and Interim Posts

- 1998, Visiting Professor, Università degli Studi di Palermo, Dept. Aeronautica e Meccanica, Palermo, Sicily.
- 1978, Southeastern Consortium for Electrical Engineering Education, Auburn University; Visiting Scientist at Air Force Materials Lab Wright-Patterson AFB, OH;
- 1970, 71, 72, Lecturer, Research Staff, Juneau Icefield Research Program, Juneau, Alaska, for the Foundation for Glacier and Environmental Research, Seattle, Washington
- 1971, NSF Short Course in Coherent Optics and Holography, Oakland University
- 1965, Research Engineer, Lawrence Radiation Laboratory, Livermore, California
- 1961 - 1964, Research Assistant, Division of Engineering Research, Michigan State University
- 1959, Mechanical Engineer, Sealed Air Corporation, Muskegon, Michigan

Honors and Awards

- C.E. Taylor Award, 2023, Society for Experimental Mechanics.
- Honorary Member, 2022, Society for Experimental Mechanics.
- Who's Who Lifetime Achievement Award, 2017.
- William. M. Murray Medal and Lecture, 2012. Society for Experimental Mechanics.
- Carroll Smith Mentor's Cup, 2008. Bestowed by Society for Automotive Engineers and Sports Car Club of America to Formula SAE Faculty Advisor of the Year.
- Named "University Distinguished Professor" by Michigan State University, 2007.
- Fellow, Society for Experimental Mechanics, 2001.
- Fellow, Institute of Physics (London), 2001.

- Chartered Scientist, Institute of Physics, 2005 (note: this category was phased out by IOP approx. 2009).
- Chartered Physicist, Institute of Physics, 2001.
- F.G. Tatnall Award, Society for Experimental Mechanics, 2006.
- M.M. Frocht Award, Society for Experimental Mechanics, 1999.
- John D. and Dortha J. Withrow Excellence in Teaching Award, College of Engineering, Michigan State University, 2004.
- University Distinguished Faculty Award, Michigan State University, 1994.
- Withrow Distinguished Scholar Award, College of Engineering, Michigan State University, 1995.
- Past President Award, Society for Experimental Mechanics, 1994.
- Outstanding Engineer in Education Award, Michigan Society of Professional Engineers, 1992.
- John D. and Dortha J. Withrow Excellence in Teaching Award, College of Engineering, Michigan State University, 1992.
- Invited Plenary Lecturer, IX Symposium on Mechanical Engineering, Instituto Tecnológico de Merida, Merida, Yucatan, Mexico, Oct. 1995.
- Best Academic Paper of Conference, SAE/ESD 11th Advanced Composites Conference, Nov. 1995.
- D.R. Harting Award (formerly E/T Award), Soc. Exp. Mech., Best paper published in *Experimental Techniques* 9/87 through 12/88.
- National Science Foundation Science Faculty Fellowship, 1976-77.
- National Research Council Senior Research Associate, 1975-76.
- Sigma Xi, inducted ca. 1966
- Tau Beta Pi, inducted 1959
- Phi Kappa Phi, inducted 1959

Endowment Programs

- The Gary L. Cloud MSU Formula Racing Team Endowment

This fund was endowed by MSU Formula SAE Racing Team alumni in appreciation of "Doc" Cloud's many years of dedication and service as advisor to the team. Proceeds benefit team development and enhance the training of skilled engineers.

([Online donations](#) or phone 517-355-8339)

- Gary Lee Cloud Scholarship Fund ("Endowment")

This fund was founded and initially endowed by an associate of Prof. Cloud in his honor and is administered by the Society for Experimental Mechanics. Its purpose is to support and nurture promising students in the field of experimental mechanics.

([Contact SEM Director Dr. Kristin Zimmerman](#))

Technical, Honorary, and Professional Societies; with Offices Held

- Society for Experimental Mechanics

1993-94 President

1992-93 President-Elect

1991-92 Vice President

1985-88 Technical Editor of journal *Experimental Mechanics*

1978-85 Assoc. Tech. Ed. of *Experimental Mechanics*

1990- SEM Educational Foundation Board

1991-93 Chair of Editorial Council

1991-96 Executive Board

1968- Papers Committee

1970- Optical Methods Division

1991-92 Dues Committee

1994-97 Nominating Committee (Vice-Chair and Chair)

1994-95 Administrative Council (Chair)

1994-97 Strain Gage Certification Development Committee

1994-95 Intersociety Liaison Committee (Vice-Chair and Chair)

1995-97 Honors Committee (Chair and Vice-Chair)

1992- Finance Committee

2005-08 Fellows Committee

2009- Cloud Scholarship Endowment Selection Committee

- British Society for Strain Measurement
- Society of Automotive Engineers International
- Society of Photo-optical Instrumentation Engineers
- Institute of Physics (London)

Biographical Listings

Note: Dates of listings can be provided.

- Covington Who's Who
- Who's Who in America
- Who's Who in Science and Engineering
- Who's Who in Technology
- American Men and Women of Science
- Who's Who in Midwest
- Who's Who in Engineering
- Men of Achievement

Patents and Disclosures

- Cloud, G.L., "Improved technique and apparatus for performing electronic speckle pattern interferometry," U.S. Patent 6,128,082, Date of patent 3 Oct. 2000.
- Cloud, G.L., "Apparatus for electronic speckle pattern interferometry," U.S. Patent 6,188,482 B1, Date of patent 13 Feb. 2001.
- Cloud, G.L., Hybrid Fastener, U.S. Patent 9,464,658. Issued 11 October 2016. Assigned to Michigan State University.
- Haq, M., Khomenko, A., Cloud, G., Scanning interferometry technique for through-thickness evaluation in multi-layered transparent structures, U.S. Patent 9,500,468. Issued 22 November 2016. Assigned to Michigan State University.
- Cloud, G.L., "Hybrid Rivet," U.S. Patent no.: US 10,400,813, B2, Issued 3 September, 2019. Assigned to Michigan State University.

Publications

Books Authored

- Cloud, G.L., *Optical Methods of Engineering Analysis*, ISBN 9780521450874, Cambridge University Press, New York, First edition, hardbound, 1995.
- Cloud, G.L., *Optical Methods of Engineering Analysis*, ISBN 9780521636421, Cambridge University Press, New York, Revised second printing , softbound, 1998.
- Cloud, G.L., *Optical Methods of Engineering Analysis*, ISBN 9780511575013, Cambridge University Press, New York, Cambridge On-line edition, Jan 2010.

Books Edited

- *Composite Materials and Joining Technologies for Composites*, Vol. 7, Edited by Patterson, E., Backman, D. and Cloud, G., Springer, New York, 2012, <http://dx.doi.org/10.1007/978-1-4614-4553-1>.
- Cloud, G.L., Patterson, E.A., Backman, D. (Editors), *Joining Technologies for Composites and Dissimilar Materials, Volume 10*, Springer, New York. ISBN 978-3-319-42425-5 (print), ISBN 978-3-319-42426-2(ebook), DOI: 10.1007/978-3-319-42426-2.

Handbook Chapters and Sections

- Cloud, G., "Experimental Stress Analysis," *Marks' Standard Handbook For Mechanical Engineers - 11th Edition*, Edited by E. Avallone, T. Baumeister III, and E. Sadegh, McGraw Hill, New York, NY, 2007.
- Cloud, G., "Optics for Experimental Mechanics," *Handbook of Experimental Stress Analysis, 3rd Edition*, Edited by William N. Sharpe, Society for Experimental Mechanics, Bethel, CT, Publisher: Springer Science+Business Media, New York, NY, 2008.
- Cloud, G.L., "Moire interferometry using grating photography and optical processing," *Handbook of Moire Measurement*, Ed. Colin Walker, Institute of Physics Publishing, Bristol, UK (Dec. 2003) Chapter 9.1, pp 299-310.
- Cloud, G.L., "Moire Interferometry for the measurement of strain near mechanical fasteners in composites," *Handbook of Moire Measurement*, Ed. Colin Walker, Institute of Physics Publishing, Bristol, UK (Dec. 2003) Chapter 10.3, pp 361-370 .
- Cloud, G., "Experimental Stress Analysis," *Marks' Standard Handbook For Mechanical Engineers - 12th Edition, 100th Anniversary Edition, Sec. 3.5*, (Ed. E. Avallone, T. Baumeister III, and A. Sadegh), McGraw Hill, New York, NY, 2017.
- Lanza di Scalea, F., Cloud, G.L., "Nondestructive Testing," *Marks Standard Handbook for Mechanical Engineers, 12th Edition, 100th Anniversary Edition, Sec. 3.4* (Ed. Ali Sadegh, et. al.), McGraw Hill, 2017.

Book Chapters, Anthologies

- Cloud, G., "Practical Speckle Interferometry for Measuring In-plane Deformation," in *Selected Papers on Speckle Metrology*, Ed. R. S. Sirohi, SPIE Milestone Series, Vol. 135, Society Photo-optical Instrumentation Engineers, 1991.
- Conley, E. and Cloud, G., "Application of the White-Light Speckle Method Through Turbulent Media," in *Industrial Applications for Optical Data Processing and Holography*, ed. E. Conley and J. Robillard, pp 159-167, CRC Press, Boca Raton, 1992.

- Cloud, G.L., "The Brewster Legacy," In *Sir David Brewster 200 Years On*, by Eddie O'Brien, Published in association with the Society for Experimental Mechanics and the British Society for Strain Measurement, 2015.
- Koricho E.G., Haq M., Cloud GL, "Numerical and Experimental Characterization of Hybrid Fastening System with Adhesive Inserts in Composite Joints, *Joining Technologies for Composites and Dissimilar Materials*, Volume 10, Ch. 8, Springer, New York, (June 2016), DOI: 10.1007/978-3-319-42426-2_8.
- Khomenko A., Koricho E.G., Haq M., Cloud G.L., "Short-term preload relaxation in composite bolted joints monitored with reusable optical sensors," *Joining Technologies for Composites and Dissimilar Materials*, Volume 10, Ch. 13, Springer, New York, (June 2016), DOI: 10.1007/978-3-319-42426-2_13.
- Cloud, Gary . "Laser and White-Light Speckle Techniques – A Tutorial Review ". *Advancement of Optical Methods & Digital Correlation in Experimental Mechanics*. Springer. Vol. 3, Chapter 21. pp. 141-172. (2018).

Papers

Note: papers are in rough chronological order. Except for a few cases, project reports for funding agencies are not included.

Archival papers

- Pindera, J.T. and Cloud, G.L., "On Dispersion of Birefringence of Photoelastic Materials," *Experimental Mechanics*, 6, 9, 470-480 (September 1966).
- Cloud, G.L., "Critical Reviews of Papers on Fatigue of Small Engine Components," *Transactions of Society of Automotive Engineers*, Vol. 76, Sec. 1 (1966) pp. 114-115.
- Cloud, G.L., "Improvement in Use of Photometric Methods for Measurement of Birefringence," *Experimental Mech.*, 8, 3, 138-141 (March 1968).
- Pindera, J.T. and Cloud, G.L., "Techniques in Infrared Photoelasticity," *Experimental Mech.*, 8, 5, 193-210 (May 1968).
- Cloud, G.L., "Mechanical-optical Properties of Polycarbonate Resin and Some Relations with Materials Structure," *Experimental Mech.*, 9, 11, 489-500 (Nov. 1969).
- Nyquist, G. and Cloud, G., "Stress-dependent Dispersion of Corneal Birefringence: a Proposed Optical Technique for Intraocular Pressure Measurement," *Journal of Biomechanics*, 3, 249-253 (1970).
- Cloud, G.L., "My Teaching Experience in Zambia," *Engineering Education*, 6, 3, 290-292 (Dec.1970).
- Cloud, G., "Correlations Between Dispersion of Birefringence and Transmittance of Three Polymers," *Jour. Optical Society of America*, 60, 8, 1042-1045 (Aug. 1970).

- Warner, G.G. and Cloud, G.L., "Measurement of Surface Strain Rates in Glaciers Using Embedded Wire Strain Gages," *Experimental Mechanics*, 14, 1, 24-28 (Jan. 1974).
- Cloud, G.L., "Practical Speckle Interferometry for Measuring In-plane Deformations," *Applied Optics*, 14, 4, 878-884 (Apr. 1975).
- Cloud, G.L., "Slotted Apertures for Multiplying Grating Frequencies and Sharpening Fringe Patterns in Moire Photography," *Optical Engineering*, 15, 6, 578-582 (Nov. - Dec. 1976).
- Cloud, G.L., "Lasers in Engineering Education," *Engineering Education*, 66, 8, 837-840 (May 1976).
- Cloud, G.L., "Slotted Apertures for Multiplying Grating Frequencies and Sharpening Fringe Patterns in Moire Photography," Air Force Material Lab., Technical Report AFML-TR-76-164, WPAFB, OH (1977).
- Cloud, G.L., "Residual Surface Strain Distributions Near Fastener Holes which are Coldworked to Various Degrees," Air Force Materials Lab., Tech. Report AFML-TR-78-1-53, 217 pp, WPAFB, Oh (1978).
- Cloud, G., Radke, R. and Peiffer, J., "Moire Gratings for High Temperatures and Long Times," *Experimental Mech.*, 19, 10, 19N-21N (Oct. 1979).
- Hamelink, J.M. and Cloud, G.L., "Ocular Tonometry Through Sonic Excitation and Laser Doppler Velocimetry," *Jour. Biomechanical Engineering*, 101, 4, 267-270 (Nov. 1979).
- Cloud, G.L., "Measurement of Strain Near Coldworked Holes," *Experimental Mech.*, 20, 1, 9-16 (Jan. 1980).
- Cloud, G. L., "Simple Optical Processing of Moire Grating Photographs," *Experimental Mech.*, 20, 8, 265-272 (Aug. 1980).
- Cloud, G. and Sulaimana R., "An Experimental Study of Large Compressive Loads Upon Residual Strain Fields and the Interaction Between Surface Strain Fields Created by Coldworking Fastener Holes," Air Force Technical Report, AFWAL-TR-80-4206, 219 pp, WPAFB, OH (Feb. 1981).
- Cloud, G. and Tipton, M., "An Experimental Study of the Interaction of Strain Fields Between Coldworked Fastener Holes," Air Force Technical Report AFWAL-TR-80-4205, 123 pp, WPAFB, OH (March 1981).
- Cloud, G. and Paleebut, S., "Three-dimensional Nature of Strain Field Near Coldworked Holes", Air Force Technical Report AFWAL-TR-80-4204, 64 pp, WPAFB, OH (May, 1982).

- Cloud, G. and Paleebut, S., "Surface and Internal Strain Fields Near Coldworked Holes Obtained by Multiple Embedded-grid Moire Method," *Engineering Fracture Mechanics* 19, 2, 375-381 (1984).
- Cloud, G. and Conley, E., "A Whole-field Interferometric Scheme for Measuring Strain and Flow Rates of Glacier and Other Naturally Occuring Surfaces," *Journal of Glaciology*, 29, 103, 492-497 (1983).
- Sikarskie, D., Cloud, G., Mahajerin, E. and Herrera Franco, P. "Theoretical and Experimental Investigation of Mechanically Fastened Composites," Tehnical Report TR 13004, U.S. Army Tank-Automotive Command TACOM, Warren, MI 48090, 56 pp. (July 1984).
- Conley E. and Cloud, G., "Practical Applications of Double-exposure Noncoherent-light Speckle," *Applied Optics*, 25, 14, 2247-8 (July 1986).
- Cloud, G., Sikarskie, D., Vable, M., Herrera Franco, P. and Bayer, M., "Experimental and Analytical Investigation of Mechanically Fastened Composites," Report TR 12844, U.S. Army Tank-Automotive Command, TACOM, Warren, MI 48090, 370pp, Feb. 1987.
- Cloud, G. and Bayer, M., "Moire to 1370 C," *Experimental Techniques*, 12, 4, 24-27, Apr. 1988. (Note: This paper received the SEM D.R. Harting Award for Best Paper Published in *Experimental Techniques* 9/87 - 12/88.)
- Cloud, G., "What is Happening to My Paper?," *Experimental Techniques*, vol. 11, no. 11, pp 31-33 (Nov. 1987).
- Conley, E. and Cloud, G., "Whole-Field Interferometric Measurement of Ice Surface Displacement Rates," *ASME Transactions: Journal of Offshore Mechanics and Arctic Engineering*, 110, pp169-171, May 1988.
- Dhar, S., Cloud, G. and Paleebut, S., "Measurement of Three-Dimensional Mode-1 Stress Intensity Factor Using Multiple Embedded Grid Moire Technique," *Theoretical and Applied Fracture Mechanics*, vol. 12, no. 2, 141-147 (Dec. 1989).
- Conley, E. and Cloud, G., "Enhancing Sensitivity of the White-light Speckle Method in Terrestrial Applications," *Experimental Mechanics*, vol. 29, no. 2, pp. 138-144 (June 1989).
- Conley, E. and Cloud, G., "Resolution Experiments Using the White-Light Speckle Method," *Applied Optics*, vol. 30, no. 7, pp795-800 (Mar 1991).
- Dhar, S. and Cloud, G., "Energy Density Approach for Calculation of Inelastic Three-Dimensional Strain and Stress at the Crack Tip in Compact Tension Specimens of Polycarbonate," *International Journal Fracture*, vol. 52, pp 229-248, (1992).
- Herrera Franco, P. and Cloud, G., "Strain-Relief Inserts for Composite Fasteners - An Experimental Study," *Jrnl. Composite Materials*, vol. 26, no. 5, pp 751-758, (1992).

- Cloud, G. and Paleebut, S., "Surface and Interior Strain Fields Measured By Multiple Embedded Grid Moire and Strain Gages," *Experimental Mechanics*, 32, 3, 273-281 (Sept. 1992).
- Nokes, J. and Cloud, G., "The Application of Interferometric Techniques to the Nondestructive Inspection of Fiber Reinforced Materials," *Experimental Mechanics*, 33, 4, 314-9 (Dec. 1993).
- Lanza di Scalea, F., Cappello, F. and Cloud, G.L., "A Study on the Effects of Clearance and Interference Fits in a Pin-Loaded Cross-Ply FGRP Laminate," *Journal of Composite Materials*, 32, 8, 783-802 (1998).
- Lanza di Scalea, F., Hong, S.S., and Cloud, G.L., "Whole-Field Strain Measurement in Pin- Loaded Plate by ESPI and FEM," *Experimental Mechanics* 38, 1, 55-60 (March 1998).
- Dejardin, L.M., Arnoczky, S.P. and Cloud, G.L., "Determination of Strain Patterns in the Normal Equine Hoof Using Photoelasticity - An *In Vitro* Study," *Equine Veterinary Journal*, 31, 3, 232-237, 1999.
- Dejardin, L.M., Arnoczky, S.P., and Cloud, G.L., "Photoelastic stress analysis of equine hoof wall strains following 4-point trimming," (Abstract), *Vet. Surg.* 1998, 27(5):505.
- Dejardin, L.M., Arnoczky, S.P., Cloud, G.L., "Localization of strain on the loaded equine hoof - an *in vitro* experimental study using photoelastic stress analysis," *Journal of Biomechanics*, 31(suppl.1), 103 (1998).
- Lanza di Scalea, F., Cappello, F., and Cloud, G.L., "On the Effect of Interference Fits in Composite Pin-Joints," *Journal of Thermoplastic Composite Materials*, 12, pp.23-32, January 1999.
- Lanza di Scalea, F., Cappello, F., and Cloud, G.L., "On the Elastic Behavior of a Cross-Ply Composite Pin-Joint with Clearance Fits," *Journal of Thermoplastic Composite Materials*, 12, pp.13-22, January 1999.
- Dejardin, L.M., Arnoczky, S.P., Cloud, G.L., Stick, J.A., "Photoelastic stress analysis of equine hoof strains following 4-point trim - an *in vitro* study," *American Journal Veterinary Research*, Vol. 62, No. 4, pp. 467-473 (April 2001).
- Morris, S.C., Neal, D.R., Foss, J.F., Cloud, G.L., "A moment of momentum flux mass air flow measurement device," *Measurement Science and Technology*, Vol. 12, No. 2, pp N9-13 (Feb. 2001).
- Cloud, G.L., Ding, X. and Basavaraju, B.B., "Real-time digital speckle interferometry to measure crack length," *Experimental Techniques*, 26, 1, 19-21 (Jan/Feb 2002). Paper also available on the web at www.sem.org/Publications.asp.

- Cloud, G.L., "Unifying concepts in teaching optical methods," *Experimental Techniques*, 26, 2, 31-34 (Mar/Apr 2002). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 1: The nature and description of light," *Experimental Techniques*, 26, 3, 19-21 (May/June 2002). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 2: Interference of light waves," *Experimental Techniques*, 26, 4, 13-15 (Jul/Aug 2002). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 3: Path length and the generic interferometer," *Experimental Techniques*, 26, 5, 13-15 (Sept/Oct 2002). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 4: Some basic methods of interferometry," *Experimental Techniques*, 26, 6, 21-24 (Nov/Dec 2002). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 5: A classic interferometry: Newton's rings," *Experimental Techniques*, 27, 1, 17-19 (Jan/Feb 2003). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 6: Another classic interferometry: Young's experiment," *Experimental Techniques*, 27, 2, 19-21 (Mar/Apr 2003). Paper also available on the web at www.sem.org/Publications.asp.
- Clayton, H.M., Singleton, W.H., Lanovaz, J.L., Cloud, G.L., "Measurement of rein tension during horseback riding using strain gage transducers," *Experimental Techniques*, vol. 27, No. 3, pp34-6 (May/June 2003).
- Cloud, G.L., "Optical methods in experimental mechanics, Part 7: Colored interferometry fringes," *Experimental Techniques*, 27, 3, 21-24 (May/June 2003). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Speckle interferometry made simple and cheap," *Experimental Techniques*, 27, 4, 27-30 (July/Aug. 2003).
- Cloud, G.L., "Optical methods in experimental mechanics, Part 8: Michelson Interferometry," *Experimental Techniques*, 27, 5, 15-17 (Sept./Oct. 2003). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 9: The Diffraction Problem," *Experimental Techniques*, 27, 6, pp.27-29 (Nov./Dec. 2003). Paper also available on the web at www.sem.org/Publications.asp.

- Ding, X., Cloud, G., Raju, B., "Improved max-min scanning method for phase determination," *Optical Engineering*, 43, 1, 63-68 (Jan 2004).
- Cloud, G.L., "Optical methods in experimental mechanics, Part 10: Complex Amplitude," *Experimental Techniques*, 28, 1, 15-17 (Jan./Feb. 2004). Paper also available on the web at www.sem.org/Publications.asp
- Cloud, G.L., "Optical methods in experimental mechanics, Part 11: Diffraction Theory, Part I," *Experimental Techniques*, 28, 2, 15-17 (March/April 2004). Paper also available on the web at www.sem.org/Publications.asp
- Cloud, G.L., "Optical methods in experimental mechanics, Part 12: Diffraction Theory: Part II," *Experimental Techniques*, 28, 4, pp 15-17 (Jul./Aug. 2004). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 13: Diffraction Theory: Part III," *Experimental Techniques*, 28, 5, pp 15-18. (Sept./Oct. 2004). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 14: Diffraction at a clear aperture," *Experimental Techniques*, 28, 6, pp.25-28(Nov./Dec 2004). Paper also available on the web at www.sem.org/Publications.asp.
- Ding, X., Cloud, G.L., Raju, B.R., "Noise tolerance of improved max-min scanning method for phase determination," *Optical Engineering*, 44, 3, pp. 035605-1 to 7 (Mar. 2005)
- Cloud, G.L., "Optical methods in experimental mechanics, Part 15: Fourier optical processing," *Experimental Techniques*, 29, 1, pp. 17-20 (Jan./Feb. 2005). Paper also available on the web at www.sem.org/Publications.asp.
- Clayton, H.M., Singleton, W.H., Lanovaz, J.L., and Cloud, G.L., "Strain Gauge Measurement of Rein Tension during Riding: A Pilot Study," *Equine and Comparative Exercise Physiology*, vol.2, no. 3, pp. 203-205.
- Iancu, F., Ding, X., Cloud, G.L., Raju, B.B., "Three-D Investigation of Thick Single Lap Bolted Joint," *Experimental Mechanics*, vol. 45, no. 4, pp. 351-358 (Aug. 2005).
- Cloud, G.L., "Optical methods in experimental mechanics, Part 16: The Doppler effect," *Experimental Techniques*, 29, 2, pp. 17-19 (Mar./Apr. 2005) . Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 17: Laser Doppler interferometry," *Experimental Techniques*, 29, 3, pp. 27-30 (May/June 2005). Paper also available on the web at www.sem.org/Publications.asp.

- Cloud, G.L., "Optical methods in experimental mechanics, Part 18, Geometric moiré phenomena and simulations," *Experimental Techniques*, 29, 4, pp. 15-18 (July/Aug. 2005) . Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 19, Basic strain measurement by geometric moiré," *Experimental Techniques*, 29, 6, pp. 25-27 (Nov./Dec. 2005). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 20, Parametric analysis of geometric moiré," *Experimental Techniques*, 30, 1, 17-19 (Jan./Feb. 2006). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 21: Shadow moiré," *Experimental Techniques*, 30, 2, 15-18 (Mar./Apr. 2006). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 22: Projection moiré," *Experimental Techniques*, 30, 4, 15-18 (July/Aug. 2006). Paper also available on the web at www.sem.org/Publications.asp.
- Cloud, G.L., "Optical methods in experimental mechanics, Part 23: Reflection moiré," *Experimental Techniques*, 30, 5, 19-22 (Sept./Oct. 2006). Paper also available on the web at www.sem.org/Publications.asp.
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- Cloud, G.L., Iancu, F., Ding, X., Raju, B., "3-D Experimental and FEA investigations of thick single-lap bolted joints," Proc. International Modal Analysis Conference XXIII on Structural Dynamics, Society for Experimental Mechanics, Orlando Fla., 31 Jan.-3 Feb. 2005.
- Cloud, G.L., Ding, X., Thelander, S., Raju, B., "Strains beneath washers in thick single-lap composite bolted joint using embedded DSPI and RSG's," Proc. SEM 2005 Conference on Experimental and Analytical Mechanics, Portland, OR, Society for Experimental Mechanics (June 2005).
- Isaicu, G., Ding, X., Cloud, G.L., Raju, B., "3-D experimental analyses of single-lap bolted joints in thick composites," Proc. SEM 2005 Conference on Experimental and Analytical Mechanics, Portland, OR, Society for Experimental Mechanics (June 2005).
- Cloud, G.L., Patterson, E.A., "Simple demonstrations to teach geometric, shadow, and projection moire," Proc. SEM 2005 Conference on Experimental and Analytical Mechanics, Portland, OR, Society for Experimental Mechanics (June 2005).
- Isaicu, G., Ding, X., Cloud, G.L., Raju, B., "Analysis of Single-lap Bolted Joints in Thick Composites using Finite Element Analysis and Fiber-optic Strain Gages," Proc. Fifth Canadian-International Composites Conference, Vancouver, Can. (16-19 Aug.2005).

- Isaicu, G.A., Restivo, G., Cloud, G.L., Raju, B.B., "Through-the-thickness strain analysis of single-lap thick composite joints," Proc. 2006 SEM Annual Conference & Exposition on Experimental and Applied Mechanics, Soc. Exp. Mech., St. Louis, MO (June 2006).
- Restivo, G., Cloud, G.L., Raju, B.B., "Reliability and precision of embedded DSPI for the measurement of interior strain fields," Proc. 2006 SEM Annual Conference & Exposition on Experimental and Applied Mechanics, Soc. Exp. Mech., St. Louis, MO (June 2006).
- Restivo, G., Isaicu, G.A., G., Cloud, G.L., "Low-cost non-destructive inspection of thinning defects by simplified speckle interferometry ," Proc. 2006 SEM Annual Conference & Exposition on Experimental and Applied Mechanics, Soc. Exp. Mech., St. Louis, MO (June 2006).
- Isaicu, G.A., Cloud, G.L., "Optimization of clamp-up procedure for thick composite joints," Proc. 2006 SEM Annual Conference & Exposition on Experimental and Applied Mechanics, Soc. Exp. Mech., St. Louis, MO (June 2006).
- Restivo, G., Isaicu, G. A., Cloud, G. L., "Low-cost non-destructive inspection by simplified speckle interferometry," Proc. 21st Annual Technical Conference of the American Society for Composites (with ASTM International), Dearborn, MI (Sept 2006).
- Isaicu, G.A., Restivo, G., Cloud, G.L., Raju, B.B., "Extrinsic Fabry-Perot Interferometric (EFPI) Fiber-optic Strain Gages in Single-lap Composite Bolted Joints with Finite Element Validation," Proc. 12th US-Japan Conference on Composite Materials, Dearborn, MI (Sept. 2006).
- Bouchard, B., Hall, B., Restivo, G., Cloud, G., "Novel insert design for thick single lap bolted joint," Proc. Soc. Exp. Mech. 2010 Annual Conference, June 7-10, 2010, Indianapolis, Indiana.
- Cloud, G., Some curious unresolved problems, speculations and advances in mechanical fastening," William M. Murray Lecture, 2012 SEM XII International Congress and Exposition on Experimental and Applied Mechanics, Costa Mesa, CA June 11-14, 2012.
- Ripberger J, Khomenko A, Haq M, Gianaris N, Cloud G., "A Tailorable Fastening System for Dissimilar Material Joining," Proc. 13th Annual Society of Plastic Engineers (SPE) and Automotive Composites Conference & Exhibition (ACCE), Novi, MI, USA, Sept. 2013.
- Haq M, Drzal LT, Cloud G., "Metal-Composite Bonded Pi- joints," Proc. SEM 2013 Annual Conference & Exposition on Experimental and Applied Mechanics, Chicago, IL, USA, June 3-5, 2013.
- Haq M, Cloud, G., "Flexible Hybrid Fastening System," Proc. SEM 2013 Annual Conference & Exposition on Experimental and Applied Mechanics, Chicago, IL, USA, June 3-5, 2013.

- Khomenko A., Koricho E.G., Haq M., Cloud G.L., “In-Service Preload Monitoring of Bolted Joints Subjected to Fatigue Loading using a Novel ‘MoniTorque’ Bolt,” *Proceedings of the 2015 Annual Conference on Experimental and Applied Mechanics*, 8-11 June 2015, Costa Mesa, CA, USA.
- Koricho E.G., Khomenko A., Haq M., Cloud G.L., “Fatigue Behavior of Novel Hybrid Fastening System with Adhesive Inserts,” *Proceedings of the 2015 Annual Conference on Experimental and Applied Mechanics*, 8-11 June 2015, Costa Mesa, CA, USA.
- Koricho E.G., Haq M., Cloud GL: “Numerical and Experimental Characterization of Hybrid Fastening System with Adhesive Inserts in Composite Joints, 2nd International Symposium on Fastening of Composites and Dissimilar Materials, June 2016, DOI: 10.1007/978-3-319-42426-2_8.
- Khomenko A., Koricho E.G., Haq M., Cloud G.L. “Short-term preload relaxation in composite bolted joints monitored with reusable optical sensors,” 2nd International Symposium on Fastening of Composites and Dissimilar Materials, June 2016, DOI: 10.1007/978-3-319-42426-2_13.
- Khomenko A., Karpenko O., Koricho E.G., Haq M., Cloud G.L., Udpa L., “Optical transmission scanning for damage quantification in impacted GFRP composites,” *Proceedings of SPIE*, 9804:98040R(11), (2016), [DOI: 10.1117/12.2216115](https://doi.org/10.1117/12.2216115).
- Koricho E.G., Karpenko O., Khomenko A., Haq M., Cloud G.L., Udpa L., “Evaluation of progressive damage of nano-modified composite laminates under repeated impacts,” *Proceedings of SPIE*, 9800:980011(13), (2016), [DOI: 10.1117/12.2219410](https://doi.org/10.1117/12.2219410)
- Stitt, E., Haq, M., Cloud, G.L., “Numerical Modeling and Experimental Validation of CFRP/Aluminum Sandwich Structures,” *Proceedings of CAMX-The Composites and Advanced Materials Expo*, sponsored by ACMA and SAMPE, Anaheim, CA, Sept. 26-29, 2016.
- Karpenko O., Khomenko A., Koricho E., Haq M., Cloud G., Udpa L., “Monitoring of impact damage accumulation in GFRP composites using guided waves and optical transmission scanning,” *Proceedings of CAMX-The Composites and Advanced Materials Expo*, sponsored by ACMA and SAMPE, Anaheim, CA, Sept. 26-29, 2016.

Some Non-Technical and Pedagogical Publications

- Cloud, G. L. "Comments from Incoming President," *Experimental Techniques*, 17, 4, 7-8 (Jul./Aug. 1993).
- Cloud, G. L., "Presidents Corner," *Experimental Techniques*, 17, 5, 2 (Sept./Oct. 1993).
- Cloud, G. L., "Presidents Corner," *Experimental Techniques*, 17, 6, 2 (Nov./Dec. 1993).
- Cloud, G. L., "President's Corner," *Experimental Techniques*, 18, 1, 2 (Jan/Feb 1994).

- Cloud, G. L., "President's Corner," Experimental Techniques, 18, 2, 2 (Mar/Apr 1994).
- Cloud, G. L., "Comments from Gary L. Cloud, SEM President 1993-1994," Experimental Techniques, 18, 3, 2 (May/June 1994).
- Cloud, G., "Renaming the rose," Experimental Techniques, 20, 6 (Nov/Dec 1996).

Research Support

- National Science Foundation, "A New Three-Dimensional Moire Technique and its Application in Nonlinear Fracture Mechanics and Similar Design Problems," 1 Sept. 1978-30 Aug. 1981, \$74,493.
- Air Force Materials Laboratory, "Effects of Inplane Overloads, Multiple Holes, Near Plate Edges, and Plate Thickness on Residual Stress Distribution Created by Coldworking Fastener Holes," 1 May 1979 - 3 Dec. 1979, \$49,000.
- National Institutes of Health, National Eye Institute, "Ocular Tonometry using Laser Doppler Velocimetry," 1980-1983, \$100,061.
- National Science Foundation, "Whole-Field Interferometric Measurement of Surface Flow and Strain Rate in In-Situ Ice Masses," 1980-1982, \$49,389.
- Pratt-Whitney Corp., "Moire Measurement of Strain near Holes in Turbine Disc," 1981, \$4,968
- Union Carbide Corp., "Moire Measurement of High-Temperature Creep in Stainless Steel Weldments," 1979.
- Mar-Test Corp., "Development of Optical Crack Monitor," 1979-80, \$12,000.
- National Science Foundation, "Science Faculty Fellowship," 1976-77 Half salary one year for study and research at Imperial College and for visits to various laboratories, United Kingdom.
- National Research Council, "Senior Resident Research Associate," 1975-76, full salary one year for research at Air Force Materials Laboratory, Ohio.
- Division of Engineering Research, Michigan State University, "Faculty Research Support" (half-time support based on competitive proposals) 1972-1975.
- Southeastern Consortium for Electrical Engineering Education, Auburn University; Visiting Scientist at Air Force Materials Lab Wright-Patterson AFB, OH; Dr. Ted Nicholas; optical strain measurement, Salary summer 1978.
- Department of Defense, "Theoretical and Experimental Investigation of Mechanically Fastened Composites," with D. Sikarskie, 1982-1983, Total Contract \$39,996.

- General Electric Co, "Experimental Verification Data for Constitutive Models of Isotropic Materials," with John F. Martin, 1984, Total contract \$55,000, Cloud's portion approx. \$6,000.
- Department of Defense, "Theoretical and Experimental Investigation of Mechanically Fastened Composites," with D. Sikarskie of MTU, 1985-1986, Total contract \$142,556, MSU portion with Cloud as PI, \$95,678.
- Department of Defense and State of Michigan Research Excellence Fund, "Study of Interface/Interphase in Thick-Section Composites," 1986-89 (Cloud a contributor: Principal Investigators: Hawley and Drzal), Composites Materials and Structures Center, MSU, \$328,040. Portion allocated to Cloud's Research approx. \$26,600.
- Kaydon Corp., "Measurement of Cavities," 1988-1989, \$23,334.
- Research Excellence Fund, State of Michigan, "NDE of Composite Members Using Laser Doppler Techniques," 1988-1989, \$28,659; renewed 1989-90, \$22,500; Total \$51,069.
- Research Excellence Fund of Michigan, "NDI of Composite Materials by Electronic Speckle Pattern Interferometry," 1989-90, \$8,772.
- Motor Wheel Corp., "Fastening of Composite Wheel," 1989-90, \$40,028.
- Research Excellence Fund of Michigan, "Fatigue and Fracture Studies of Silicon Carbide Whisker Reinforced Aluminum Matrix," 1989-90, \$32,075, Renewed 1990-1991, \$31,000; Renewed 1991- 92, \$22,000; Total \$85,075.
- Michigan Materials and Processing Institute, "Systematic Innovative NDE/NDI of Advanced Composites," with F. Fink, 1990-91, \$103,746; Renewed 1991-92, \$66,254; Total \$170,000.
- Motor Wheel Corp. and Research Excellence Fund, "Fastening of Composite Vehicle Wheels," 1990-91, \$22,365 (REF) plus \$34,500 (MWC); Renewed 1991-92, \$22,000 (REF) plus \$36,500 (MWC); Total \$115,365.
- Research Excellence Fund of Michigan, "A Novel Fastening System for Composites," 1992-93, \$15,000; 1993-94, \$21,000; 1994-95, \$22,466; 1995-96, \$31,131; Total \$99,597.
- Research Excellence Fund of Michigan, "Thermal and Mechanical Fatigue of Ceramic Composites as a Function of Volume Fraction Reinforcement," with E. D. Case (PI) and M. J. Crimp, 1992-93, \$25,000; 1993-94 \$34,000; Total \$59,000.
- Brunswick Corp. (now Lincoln Composites), Cybernet Corp. and Research Excellence Fund of Michigan, "Electronic Holography and Shearography for Inspection of Composite Vessels," 1993-94, \$21,000 (REF) plus \$21,000 (Brunswick); 1994-95,

\$40,700 (REF) plus \$25,700 (Brunswick); 1995-96, \$30,774 (REF) plus \$13,135 (Lincoln) plus \$10,000 (Cybernet) Total \$162,309.

- Michigan Manufacturing and Processing Institute and Lincoln Composites Corp., "Electro-Interferometric Assessment of Integrity of Composite Structures," 1 June 1994-1 June 1995, \$49,750.
- Michigan Manufacturing and Processing Institute and Cybernet Corp., "Rapid Nondestructive Optical Inspection of Advanced Composite Structures," 1 July 1994-31 Aug. 1995, \$28,625.
- Research Excellence Fund of Michigan, "Mechanical Fastening of Composites," 1 July 1996-30 June 1997, \$31,759.
- Research Excellence Fund of Michigan, "Mechanical Fastening of Composites," 1 July 1997-30 June 1998, \$20,000.
- Research Excellence Fund of Michigan, "NDE and Fastening of Composites," 1 July 1998-30 June 1999, \$22,000.
- U.S. Army Tank Automotive Command, Development and Engineering Center, "Scaling effects of composite thickness on mechanical fastening," with D. Liu, 24 June 1996-30 Sept. 1996, \$17,809.
- U.S. Army Tank Automotive Command, Development and Engineering Center, "Mechanical fastening and impact of composites," with D. Liu, 1 Jan. 1997-30 Sept. 1997, \$35,000.
- U.S. Army Tank Automotive Command, Development and Engineering Center, "NDE and impact dynamics of composites," with D. Liu, 1 Jan. 1998-30 Dec. 1998, \$35,000.
- U.S. Army Tank Automotive Command, Development and Engineering Center, "Strain measurement, NDE and impact dynamics of composites," with D. Liu, 1 Jan. 1999-30 Dec. 1999, \$35,000.
- Research Excellence Fund of Michigan, "Mechanical fastening and impact of composites: Fracture testing and strain analysis," 1 August 2000-31 Dec. 2000, \$34,389.
- U.S. Army Tank Automotive Command, Development and Engineering Center, "NDE, impact and strain analysis of composites," with D. Liu, 6/13/2000- 3/1/2001, \$35,000.
- Research Excellence Fund of Michigan, "Mechanical fastening and impact of composites: Fracture testing and strain analysis," 1 June 2001-1 June 2002, \$34,389.
- U.S. Army Tank Automotive Command, Development and Engineering Center, "NDE, impact and fastening of composites," with D. Liu, 4/30/2001- 3/1/2002, \$35,000.

- Research Excellence Fund of Michigan and MSU Composite Materials and Structures Center, "Mechanical fastening and impact of composites: Fracture testing and strain analysis," 1 July 2002-30 June 2003, \$34,389.
- U.S. Army Tank Automotive Command, Development and Engineering Center, "NDE, impact and fastening of composites, Option 1," with D. Liu, 4/30/2002- 4/30/2003, \$35,00 .
- MSU Composite Materials and Structures Center and Research Excellence Fund of Michigan, "Mechanical fastening and impact of composites: Fracture testing and strain analysis," 1 July 2003-, \$34,389.
- U.S. Army Tank Automotive Command, Development and Engineering Center, "NDE, impact and fastening of composites," with D. Liu, 5/15/2003- 7/15/2004, \$250,000.
- U.S. Army Tank Automotive Command, Development and Engineering Center, "NDE, impact and fastening of composites," with D. Liu, 7/15/2004- 7/15/2005, \$300,000.
- U.S. Army Tank Automotive Command, Development and Engineering Center, "NDE, impact and fastening of composites," with D. Liu, 7/15/2005- 7/15/2006, \$230,000.
- Department of Defense, "Advanced composite materials research for air and ground vehicles," Through U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) and Office of Naval Research (ONR), with E. Patterson, D. Liu and L. Drzal, 1 Oct. 06-1 Oct. 07, \$5,500,000.
- Department of Defense, "Advanced composite materials research for air and ground vehicles," Through U.S. Army Research Laboratory (ARL), with E. Patterson, D. Liu and L. Drzal, 1 Oct. 07-1 Oct. 08, \$1,600,000.
- Department of Defense, "Advanced composite materials research for air and ground vehicles," Through U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) and Army Research Laboratory (ARL), with E. Patterson, D. Liu and L. Drzal, 1 Oct. '10 - 1 Oct. '11, \$6,800,000.
- Department of Defense, "Advanced composite materials research for air and ground vehicles," Through U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC), with E. Patterson and A. Loos, 1 June '11 - 1 June '12, \$104,096.
- Note: Research support data for 2011-2020 will be entered here soon.

Consulting

Provided engineering consulting on more than 75 projects to approximately 60 firms on topics of

measurements, design, fastening, failure analysis, materials, firearms, failure analysis, and product liability. A list of clients follows.

- General Electric Co., Evandale, Ohio; Mr. Roger Neimi; strain measurement, 1979-1980.
- Oak Ridge National Laboratory, Oak Ridge, Tennessee; Dr. Wallace McAfee; High-temperature strain measurement, 1978-1980.
- State Fire Marshal; Flint, Michigan; Sgt. Larry Julian; flexible gas pipe, 1979.
- Capital Area Transit Authority; Lansing, Michigan; Mr. Clare Loudensleger; coach for handicapped, 1979-79; steering system, 1979-79; bus design, 1982.
- The Cox Law Firm; Fowlerville, Michigan; Mr. Joseph K. Cox; garden tractor, 1978.
- State Police Crime Lab; Lansing, Michigan; Lt. Ralph Lundberg, Lt. George Hein; seat belt test, 1963; light truck steering, broken fuel line, 1979; lightweight handcuffs, 1982.
- Jerkins, Plaszczak, Hurley, Bauhof; Kalamazoo, Michigan; Mr. Roman Plaszczak; accidents involving trash bins, 1978; fork lifts, 1982.
- Katz, Victor, Yolles; Southfield, Michigan; Mr. Richard Lenter; baseball bat accident; truck steering, 1978; shotgun accident, 1982.
- Crawford Company; Traverse City, Michigan; Mr. Bernard Murphy; accident with shotgun, 1979.
- Plunkett, Cooney, Rututt, Watters, Stanczyk, Peterson; Detroit, Michigan; Mr. Frank Brochert; auto jack, 1979.
- McCray, Muzilla, Morey, Smith; Elyria, Oh; Mr. Charles Lockyer; CB antenna, 1979-1980.
- Loomis, Ederer, Parsley, David, Goffing, Birdsall; Lansing, Michigan; Mr. Phillip Birdsall; mall piping construction, 1975.
- Peter Barbara Associates; Detroit, Michigan; Mr. Murray Greyson; frame straightener design, 1979.
- Cicinelli and Associates; Saginaw Michigan, Mr. Jake Allen; test seatbelts, car design, 1974.
- Midwest School of Technology; Muskegon, Michigan; Mr. Paul Thunfors; curriculum design, 1970.
- Motorists Insurance Co., Lansing, Michigan; Mr. Bob Witwer; cargo trailer collapse; 1982.

- Citizens Insurance; Howell, Michigan; Fred Fay and Shirley Starkel; engine oil tests, 1980.
- Whirlpool Corporation; Benton Harbor, Michigan; Mr. Frank Harter; Design of machine tool, 1980.
- Warner, Hart, Morgan, Fuzak, and Williams; Lansing, Michigan; John Fuzak; chair collapse, 1981.
- University of Dayton Research Institute; Dayton, Ohio; Mr. Kevin Harding; moire strain measurement, 1981.
- Bushnell, Gage, etc.; Southfield, Michigan; Ms. Barbara Roulo; auto accident, 1981.
- Reid, Reid, and Mackay; Lansing, Michigan; Mr. Michael Perry; seat belts--auto accident, 1980; Hand grinder accident, 1984.
- Sinas, Dramis, Brake, Boughton; Lansing, Michigan; George Sinas, Barry Boughton, Lee Dramis; sprayer accident, 1981; van wheel chair lift, 1981-1986; backhoe accident, 1981-82; grinder accident, 1982; drill press accident, 1983; Mike Larkin, ladder accident, 1988.
- David Grant, P.C.; Southfield, Michigan; David Grant; semitrailer accident, 1981.
- Mr. John Devine, Jr.; Mt. Pleasant, Michigan; sprayer accident, 1981.
- Mr. Bob Vertalka; Lansing, Michigan; bucket design, 1982-84.
- Thurswell & Chayet; Southfield, Michigan; Mr. Brian Fischer; chain saw accident, 1982.
- McKay, Murphy & Guerre, P.C., Lansing Michigan; Mr. Thomas Meagher; crane accident, 1982.
- Tru-Green; Lansing, Michigan; Walter Sheffler; design of fiberglass tanks and suspension, 1982.
- Bill Hicks; Lansing, Michigan; shock absorbers for motor home, 1982.
- Bos & Hanes Lansing, Michigan; Bart Stupak; Van Wheelchair Lift, 1983-85.
- Dice, Sweeney, Sullivan, Feikens, Hurbis & Foster; Detroit, Michigan; Bruce VandeVusse; Dock leveler accident 1983-84.
- Allan & Jackson; Saginaw, Michigan; Jake Allan; power stud driver accident, 1983-84.
- O'Connell and Assoc; Pontiac, Michigan; Patrick Brennan; Ladder Accident, 1984.
- Gillard, Bauer, Mazrim & Florip; Alma, Michigan; Roger Bauer; School window design, 1984.

- O'Rourke, Goldstein, Joseph & Kelly, Flint, Michigan; Jerome F. O'Rourke; Rope tests and load analysis; 1983.
- Besser Corp; Alpena, Michigan; Dipak Chowdhury; Strain measurement and fatigue analysis, 1983.
- Bob Blaske; Battle Creek, Michigan; Dumpster accidents, 1983-84.
- Willingham, Cote, Hanslovsky, Griffith & Foresman, E. Lansing, Michigan; Ray Foresman & John Yeager, Fish processing machine design, 1984; James Graves, air compressor accident, 1988.
- Nora and Essad, Plymouth, MI; Ernest Essad, Firearm accident; 1984.
- David Melkus, Flint, MI; Muzzle loader firearm accident; 1984.
- Seymour Beitner, Howell, MI; Fan blade failure, 1985; Welding machine accident, 1988.
- Grand Traverse County Prosecutor, Mr. White, Traverse City, MI; Steering linkage, 1985.
- Dean, Dean, Segar, Hart, Shulman, Flint, MI; Leonard Shulman; ladder accident, 1985.
- Lick, Emery, DeVine, Mallory, Lansing, MI; Arlyn J. Bossenbrook; bicycle fork, 1985.
- Morgan and Fuzak, P.C., Lansing, MI; Ronald Morgan; Lawn Chair, 1987; Rubber strap, 1988; Chair failure, 1988.
- Richard Polhemus, AAA Michigan, Lansing, MI; Ballistic testing of shotgun, 1987.
- McKay, Murphy, Brenton & Spagnuolo, Lansing, MI; Dale McKay, Rubber Machine design, 1987.
- Robert Beiser and Assoc., Chicago, IL; Robert Beiser; Birefringence in plastic bags, 1988.
- Barret and McNaghy, Fort Wayne, IN; Alan VerPlank; Muzzle loader firearm accident, 1988.
- Research & Technology Institute, Grand Rapids, MI; Ron Fredericks; Analysis of gyro bearings, 1989.
- Adkins & Assoc., Lansing, MI; Jerry Adkins; Firearms failure, 1991.
- Ford Motor Co., Dearborn, MI; Mr. John Jarrenson; Fastening of Composite Vehicle Component, 1992.
- Ford Motor Co., Dearborn, MI; Ms. Peggy Geier; Experimental Analysis of Dynamic Stresses in Composite Bumper, 1995-97

- Phillip Paul Weidner and Assoc., Anchorage, Alaska; Michael Cohn; Camp stove accidents, 1998.
- Auto Air Composites, Lansing, Mi.; Bruce Russell; Strain analysis in compressor case, 1998.
- Fred. E. Foster, Gaylord, MI; Router accident, 2005.
- Nicoletti Walker Trial Firm, Port Richey, FL, Michael Walker, Handgun failure, 2021-22.

Subjects Taught

Note: Prof. Cloud has carried full teaching loads during his entire career.

Subjects taught at MSU, Michigan Tech, Univ. of Zambia

MSU semester system equivalent course numbers given where possible

Statics MSM205

Dynamics MSM 306

Mechanics of Deformable Solids MSM211, ME222

Strength of Materials Laboratory MMM215, then MSM211 Lab, now ME222

Machine Design I

Machine Design II

Fluid Mechanics

Experimental Mechanics MSM405, ME425

Welding Processes and Design MSM465

Solid Mechanics MSM401

Intermediate Fluid Mechanics

Advanced Fluid Dynamics

Strain and Motion Measurement MSM805, ME825

Advanced Dynamics MSM801

Optical Methods of Metrology MSM905, ME925

Lighting and Illumination (in College of Human Ecology)

Senior Capstone Design ME481 and ECE480

Racing Vehicle Design ME491

Short Courses, Workshops, Seminars, Other Presentations

A comprehensive list of Dr. Cloud's many presentations at schools, colleges and professional meetings does not exist, but examples can be provided.

Most recent short courses:

- "Optical methods of measurement and NDI," 8-hour course at U.S. Army Tank and Automotive Command, Warren, MI, November 2000.

- "Optical methods of measurement and NDI," 8-hour course at Society for Experimental Mechanics Spring Conference on Experimental and Applied Mechanics, Portland, Oregon, June 2001.
- "Optical methods of measurement and NDI," 8-hour course at Society for Experimental Mechanics Spring Conference on Experimental and Applied Mechanics, Charlotte, North Carolina, June 2003.

Student Evaluation of Teaching

- Teaching awards are mentioned on page 3.
- Undergraduate Student Instructional Rating long-term average approx. 3.7/4.0
- Graduate Student Instructional Rating long-term average approx. 3.8/4.0
- Documentation of teaching performance for entire career can be furnished.

Advising of Student Activities

- Advisor of MSU Formula SAE Racing Team (Spartan Motor Sports), 1995-present
Note: During Dr. Cloud's tenure as advisor, the MSU FSAE team has developed into a first-rate professionally-run organization that consistently contends for top performance. Documentation can be provided.

Committee and Administrative

Normal term of office unless designated. Indicated terms of office are approximate. Actual dates of tenure can be determined if required.

University

Academic Council (2 terms)
 Faculty Council (2 terms)
 Grievance Hearings Board
 Committee on Academic Policy
 University Library Committee
 Ad-hoc Committee on Awards for Teaching
 Midwest Universities Consortium on International Activity (2 yr)
 Committee on Academic Environment

College of Engineering

Foreign Students Advisory Committee (7 years)
 Engineering Research Council (5 years)

Engineering Advisory Council
Search Committee for Director of Engineering Research
Promotion Evaluation Committees (several: teaching, research, service)
Curriculum Committee
Engineering Alumni Board (secretary) 5 years
College Library Committee
Alumni Advisory Board (Secretary-Treasurer)
Shop Committee
Engineering Scholarship Committee

Department of Materials Science and Mechanics and Department of Mechanical Engineering

Elected as interim Chair of MSM Dept.
Advisory Committee (4 terms)
Space and Equipment Committee (15 years)
Curriculum Committee
Seminar Committee (10 years)
Awards Committee
Graduate Committee
Several Promotion/Tenure Committees
Semester Conversion Committee
Biomechanics Committee
Ad-hoc Teaching Evaluation Committee
Lead faculty representative for ABET Accreditation of Mechanics program
Mechanics Task Force
Faculty search committees (four)
Strategic Planning Committee

Department of Mechanical Engineering

Strategic Planning Committee
Chair of Search Committee for Director of MSU Composite Vehicle Research Center
2008-2009.
Chair of Faculty Search committee 2007-08.
Promotion Committee
Honors College Advisor for Engineering Mechanics
Chair of ME Chairperson Search and selection Committee 2003-2004
Laboratory Equipment Committee

Other Service

Referee of research proposals for NSF and various other organizations
Review books for various publishers
Several presentations on lasers, measurement, and research in high schools
Invited speaker, Clinton County Gifted and Talented Program

Review papers for several technical journals
Lecture in Egr 150, Introduction to Engineering

Biographical Data

Gary Lee Cloud, b. Muskegon County, Michigan, September 8, 1937;
Married Elizabeth Anne Fee, July 1972;
Children: Sarah Elizabeth b. 1975, Abigail Anne b. 1978.

Personal Interests

Music - studied voice privately for 20 years, performed regularly as soloist and ensemble member in opera, oratorio, chamber works, recitals, etc. Currently sing in semi-professional arts chorale.

Sports - play squash, jogging, hunting, fishing, camping, competitive pistol shooting (IHMSA International Class in Unlimited, Production, and Revolver categories).

Study - study of psychology, philosophy, theology, World War II history, and related subjects as well as general reading..

Mechanical work - gunsmithing (hold Federal Firearms License), have own machine shop and wood shop, built house, restoring '62 MGA 1600 MkII and '29 Ford model A sedan (currently rather inactive in some of these areas). Restoring 1850's-vintage timber framed barn.