

## **DR. MICHAEL R. GORMAN, PRESIDENT**

### ***Journal Publications***

1. Gorman, M. R. (1997), "Some Connections Between AE Testing of Large Structures and Small Samples," *Nondestructive Testing and Evaluation*, in press.
2. Gorman, M. R. (1997), "Modal AE: A New Understanding of Acoustic Emission," abstract in *Journal of Acoustic Emission*, **14**(3), S102.
3. Gorman, M. R. and W. H. Prosser (1996), "Application of Normal Mode Expansion to AE Waves in Finite Plates," *Journal of Applied Mechanics*, **63**, 555-557.
4. Carpenter, S.H. and M. R. Gorman (1994), "A Waveform Investigation of the Acoustic Emission Generated during the Deformation and Cracking of 7075 Aluminum," *Progress in Acoustic Emission VII*, Japanese Society for NDI, 105-111.
5. Prosser, W. H. and M. R. Gorman (1994), "Plate Mode Velocities in Graphite/Epoxy Plates," *Journal of the Acoustical Society of America*, **96**(2), Pt. 1, 902-907.
6. Gorman, M. R. (1994), "Relating Acoustic Emission Theory to Practice," *International Advances in Nondestructive Testing*, **17**, 287-300.
7. Gorman, M. R. (1991), "Acoustic Emission in 2-D Carbon-Carbon Coupons in Tension," *Journal of Composite Materials*, **25**(6), 703-714.
8. Gorman, M. R. (1991), "Plate Wave Acoustic Emission," *Journal of the Acoustical Society of America*, **90**(1), 358-364.
9. Gorman, M. R. and S. M. Ziola (1991), "Plate Waves Produced by Transverse Matrix Cracking," *Ultrasonics*, **29**, 245-251.
10. Gorman, M. R. (1991), "Acoustic Emission in 2-D Carbon-Carbon Coupons Loaded in Tension," *Journal of Composite Materials*, **25**(6), 703-714.
11. Gorman, M. R. (1991), "Ultrasonic Polar Backscatter Imaging of Transverse Matrix Cracking," *Journal of Composite Materials*, **25**(11), 1499-1514.
12. Prosser, W. H., M. R. Gorman and J. Dorigi(1992), "Extensional and Flexural Waves in a Thin-Walled Graphite/Epoxy Tube," *Journal of Composite Materials*, **26**(14), 2016-2027.
13. Ziola, S. M. and M. R. Gorman (1991), "Source Location in Thin Plates Using Cross-Correlation," *Journal of the Acoustical Society of America*, **90**(5), 2551-2556.
14. Gorman, M. R. (1990), "Burst Prediction by Acoustic Emission in Filament-Wound Pressure Vessels," *Journal of Acoustic Emission*, **9**(2), 131-140.
15. Gorman, M. R. and W. H. Prosser (1990), "AE Source Orientation by Plate Wave Analysis," *Journal of Acoustic Emission*, **9**(4), 283-288.
16. Awerbuch, J., M. R. Gorman, and M. Madhukar (1985), "Monitoring Damage Accumulation in Filament-Wound Graphite/Epoxy Laminate Coupons during Quasi-Static Loading and Unloading," *Materials Evaluation*, **43**(6).

17. Awerbuch, J., M. Madhukar, and M. R. Gorman (1984), "Monitoring Damage Accumulation in Filament-Wound Graphite/Epoxy Laminate Coupons during Fatigue Loading through Acoustic Emission," *Journal of Reinforced Plastics and Composites*, **3**, 1-96.

### ***Proceedings***

1. Carpenter, S. H. and M. R. Gorman (1997), "A Comparison of AE Measurements from Aluminum Alloys and Glass/Epoxy Composites with Different AE Techniques," *Review of Progress in Quantitative Nondestructive Evaluation*, **17**, in press.
2. Mal, A., Z. Chang, M. R. Gorman (1997), "Interaction of Lamb Waves with Defects in a Semi-Infinite Plate," *Review of Progress in Quantitative Nondestructive Evaluation*, **16A**, 153-160.
3. Guo, D., A. Mal, K. Ono, and M. R. Gorman (1997), "Lamb Waves from Microfractures in Composite Plates," *Review of Progress in Quantitative Nondestructive Evaluation*, **16A**, 397-404.
4. Gorman, M. R. (1996), "Progress in Detecting Transverse Matrix Cracking Using Modal Acoustic Emission," *Review of Progress in Quantitative Nondestructive Evaluation*, Maine, July, Plenum, NY, in press.
5. Gorman, M. R. (1994), "New Technology for Wave Based Acoustic Emission and Acousto-Ultrasonics," *Wave Propagation and Emerging Technologies AMD-Vol. 188*, American Society of Mechanical Engineers, 47-59.
6. Gorman, M. R. (1991), "Acoustic Emission for the 1990s," *Proceedings of the IEEE 1991 Ultrasonic Symposium*, **2**, 1039-1046.
7. Gorman, M. R. (1990), "Plate Wave Acoustic Emission in Composites," in *Impact Response and Elastodynamics of Composites, Applied Mechanics Division Vol. 116*, American Society of Mechanical Engineers, New York, NY, A.K. Mal and Y.D.S. Rajapakse, editors.
8. Gorman, M. R., S. M. Ziola, and J. L. Koury (1989), "Acoustical Detection of Transverse Cracking in a Crossply Composite," *Proceedings of the 3rd International Symposium on Acoustic Emission from Composite Materials (AECM-3)*, Paris, France, July.
9. Gorman, M. R., D. S. Gardiner, T. H. Rytting, and K. Sakai (1988), "Results Obtained during Acoustic Emission Monitoring of Impact Damaged Graphite/Epoxy Pressure Vessels," JANNAF Composite Motor Case Subcommittee Meeting, San Francisco, CA, May, Proceedings available through CPIA, JHU/APL, Laurel, MD.
10. Gorman, M. R., and R. F. Foral (1986), "Acoustic Emission Studies of Fiber/Resin Double Cantilever Beam Specimens," *Proceedings of the Second International Symposium on Acoustic Emission from Reinforced Composites (AECM-2)*, Montreal, July, Society of the Plastics Industry, New York.
11. Gorman, M. R. and T. M. Rytting (1983), "Long Duration AE Events in Filament-Wound Graphite/Epoxy in the 100-300 kHz Band Pass Region," *Proceedings of the First International Symposium on Acoustic Emission from Reinforced Plastics*, San Francisco, CA, July.

12. Russell, J.C. and M. R. Gorman (1983), "Acoustic Emission Prediction of Burst Pressures in Twenty-Inch Diameter Filament-Wound Graphite/Epoxy Bottles," *Proceedings of the First International Symposium on Acoustic Emission from Reinforced Plastics*, San Francisco, CA, July.
13. Awerbuch, J., M. R. Gorman, and M. Madhukar (1983), "Monitoring Damage Accumulation in Filament-Wound Graphite/Epoxy Laminate Coupons during Fatigue Loading through Acoustic Emission," *Proceedings of the First International Symposium on Acoustic Emission from Reinforced Plastics*, San Francisco, CA, July.
14. Awerbuch, J., M. R. Gorman, and M. Madhukar (1983), "Monitoring Damage Accumulation in Filament-Wound Graphite/Epoxy Laminate Coupons during Quasi-Static Loading through Acoustic Emission," *Proceedings of the First International Symposium on Acoustic Emission from Reinforced Plastics*, San Francisco, CA, July.

### ***Books and Book Chapters***

1. Sachse, W. and M. R. Gorman (1990), "Acoustic Emission Measurements of Aerospace Materials and Structures," Materials Science Center Report #7038, Cornell University, Ithaca, New York. Chapter to be published in a book on NDE for Aerospace, J. D. Achenbach, editor.

### ***Reports***

1. "Detection of Matrix Damage in Graphite/Epoxy Laminates by Ultrasonics and Acoustic Emission," Air Force Astronautics Laboratory Contract Report, May 1989.
2. "AE and the Fracture Behavior of 2D C-C," UES/AFOSR Summer Faculty Report, October, 1987.
3. "Strength Determination of Graphite/Epoxy Laminates by Acoustic Emission," Report for the period January 1986 to May 1987, Aerojet Solid Propulsion Company, Sacramento, CA.
4. "Acoustic Emission in 2D C-C Loaded in Compression and Tension," Final Report for the period April 1986 to October 1987, Aerojet Solid Propulsion Company, Sacramento, CA.
5. "AE Techniques for Testing Solid Rocket Motor O-Ring Seals," Report to NASA Langley Research Center for the period March to August, 1987.
6. "Acoustic Emission Monitoring of Cut Damaged Six-Inch Diameter Filament-Wound Kevlar/Epoxy and Graphite/Epoxy Pressure Bottles," Trident OSC Technical Report, No. SE083-A2A-C4-007, Naval Strategic Projects Office, Washington, D.C., 1983.
7. "Acoustic Emission Monitoring of the 'A-basis' Allowables Pressure Vessels for FWD," Final Report, NASA Marshall Space Flight Center.

## **DR. STEVEN M. ZIOLA, VICE PRESIDENT OF ENGINEERING**

### ***Journal Publications***

1. Ziola, S. M., "Digital Signal Processing of Modal Acoustic Emission Signals," Journal of Acoustic Emission, to be published.
2. Ziola, S. M. and M. R. Gorman (1991), "Source Location in Thin Plates Using Cross-correlation," Journal of the Acoustical Society of America, **90**(5), 2551-2556.
3. Gorman, M. R. and S. M. Ziola (1991), "Plate Waves Produced by Transverse Matrix Cracking," Ultrasonics, **29**, 245-251.
4. Ziola, S. M. and M. R. Gorman (1989), "Transverse Cracking and Longitudinal Splitting in Graphite/Epoxy Tensile Coupons as Determined by Acoustic Emission," Journal of Acoustic Emission, **8**(3), 51-60.
5. Ziola, S. M. and M. R. Gorman (1989), "Transverse Matrix Cracking and Longitudinal Splitting in [02,±30]s Graphite/Epoxy Tensile Coupons with Edge Notches as Determined by Acoustic Emission," Journal of Acoustic Emission, **8**(3), 51-60.

### ***Proceedings***

1. Searle, I., S. M. Ziola, and B. Seidel (1997), "Crack Detection on a Full Scale Aircraft Fatigue Test," *SPIE Proceedings*, San Diego, CA, March 1997, to be published.
2. Ziola, S. M. and Searle, I. (1996), Automated Source Identification Using Modal Acoustic Emission," *Review of Progress in Quantitative Nondestructive Evaluation*, **16A**, 413-419.
3. Cawthorne, M. and S. M. Ziola (1996), "Modal Acoustic Emission Monitoring of Helicopter Rotor System Dynamic Components During Bench Fatigue Tests," *Review of Progress in Quantitative Nondestructive Evaluation*, **16B**, 1999-2004.
4. I. Searle, S. M. Ziola, and P. Rutherford, P. (1995), "Crack Detection in Lap-Joints Using Acoustic Emission," *SPIE Proceedings*, San Diego, CA, **2444**, 212-223.
5. Martin, C. A., C. B. Van Way, A. J. Lockyer, J. N. Kudva and S. M. Ziola, "Acoustic Emission Testing on an F/A-18 E/F Titanium Bulkhead," *SPIE Proceedings*, San Diego, CA, **2444**, 204-211.
6. Ziola, S. M. and M. R. Gorman (1992), "Source Location in Thin Plates Using Cross-correlation," *Proceedings of the Fourth International Symposium on Acoustic Emission from Composite Materials*, Seattle, WA, 411-417.
7. Ziola, S. M. and M. R. Gorman (1991), "Experimental Plate Wave Dispersion Analysis," *Review of Progress in Quantitative Nondestructive Evaluation*, **10B**, 1921-1928.
8. Ziola, S. M. and M. R. Gorman (1990), "Experimental Plate Wave Dispersion Analysis," *Review of Progress in Quantitative Nondestructive Evaluation*, La Jolla, CA, **10B**, 1921-1928.