

**Dr. ROBERT N. TREBITS**



**Principal Research Scientist and Director,  
Sensors and Electromagnetic Applications Laboratory  
Georgia Tech Research Institute**

*Education*

Doctor of Philosophy, Physics Georgia Institute of Technology	1972
Master of Science, Applied Physics Georgia Institute of Technology	1967
Bachelor of Science, Applied Physics Georgia Institute of Technology	1965

*Employment History*

Georgia Institute of Technology	
Director, Sensors and Electromagnetic Applications Laboratory	1993-Present
Principal Research Scientist	1990-Present
Director, Radar Systems Applications Laboratory	1990-1993
Senior Research Scientist	1977-1990
Chief, Radar Application Division	1982-1990
Area Manager, Radar Systems Area	1981-1982
Research Scientist II	1972-1977
Graduate Research/Teaching Assistant	1965-1971
DeKalb Community College, Evening Division	
Adjunct Faculty	1972-1987

*Experience Summary*

At Georgia Tech, has participated in a variety of research and development programs in the areas of radar system analysis, radar clutter measurements and characterization, radar signal processing, and electronic countermeasures. Has participated in several programs to analyze radar system concepts, including forward area air defense (FAAD) radars, air traffic control systems, synthetic aperture radar systems, and

millimeter wave radar systems. Has participated in numerous radar cross section measurement exercises of ground and sea clutter and of tactical targets in ground clutter. Investigated radar target signal enhancement techniques which employ polarization agility and frequency agility, leading to the design, fabrication, and both ground-based and airborne field test evaluation of two digital radar signal processing devices.

### Current Fields of Interest

Characterization of radar reflectivity of clutter and targets; synthetic aperture radar system applications; radar system analysis; and radar systems engineering.

### IEEE Activities and Responsibilities

- IEEE Fellow, 1996, for *contributions and leadership in measuring and characterizing millimeter wave radar reflectivity and propagation effects*
- President, Atlanta chapter, IEEE Aerospace and Electronic Systems Society 1988
- Vice President - Administrative, IEEE Aerospace and Electronic Systems Society, Board of Governors, 1995 - 2001
- President, IEEE Aerospace and Electronic Systems Society, Radar Systems Panel, 2000 - 2002
- General Chairman, 1994 IEEE National Radar Conference
- TAC/ABET Accreditor for electrical engineering technology programs, 1996 - present

### Major Reports and Publications

1. Proceedings of SPIE, The International Society for Optical Engineering, Radar Sensor Technology V, Volume 3395, Orlando, Florida, April, 2000, co-editor
2. Proceedings of SPIE, The International Society for Optical Engineering, Radar Sensor Technology IV, Volume 3395, Orlando, Florida, April, 1999, co-editor
3. Proceedings of SPIE, The International Society for Optical Engineering, Radar Sensor Technology III, Volume 3395, Orlando, Florida, April, 1998, co-editor
4. ENCYCLOPEDIA OF APPLIED PHYSICS, "Radar," VCH Publishers, American Institute of Physics, coauthor
5. MILLIMETER-WAVE RADAR CLUTTER, Artech House, 1992, coauthor
6. "Vulnerabilities of Millimeter Wave Radars to Defeating Aerosols," Smoke/Obscurants Symposium, 13 April 1992, coauthor
7. "Aerosol Obscuration Phenomenology Affecting Millimeter Wave Systems," Smoke/Obscurants Symposium, 13 April 1992, coauthor
8. "Measures of Effectiveness of Millimeter Wave Defeating Aerosols," Technical Report for the U.S. Army Research Office, Delivery Order No. 1669, July 1991, coauthor
9. "Analysis of the Effectiveness of MMW Smoke Materials in Improving the Survivability of Armored Vehicles," Annual Technical Report on Contract SMCCR-MUS-A, July 1991, coauthor
10. "Effects of Obscurants on Millimeter Wave Seekers," IEEE Telesystems Conference, March 1991, coauthor
11. "Millimeter Wave Seeker Performance," Combat Vehicle Survivability Symposium, 26-29 March 1990, coauthor
12. "Noncooperative Identification Friend or Foe Technology Evaluation FY '89 Demonstration (NIFFTE '89)," Interim Technical Report, Vol. I, II, III, IV, and V on Contract No. DAAL02-88-C-0054, August 1989, coauthor
13. "Radar Cross Section," Chapter 2 in TECHNIQUES OF RADAR REFLECTIVITY MEASUREMENT, Second Edition, Artech House, 1989, N. C. Currie, editor
14. "Antenna Integrity Measurement," SOUTHCON 89 Proceedings, Atlanta, Georgia, March 1989, coauthor
15. "MATCAL Investigations," Final Technical Report on Contract No. N00039-83-C-04481, December 1988

16. "Polarimetric Emission Data Analysis," TEO Symposium, Ft. Meade, Maryland, May 1988, coauthor
17. "Computer Simulated Seeker Model for Terrain Countermeasures Analysis," Proceedings of the Ground Vehicles Signature Symposium, Houghton, Michigan, September 1987, coauthor
18. "LTV Bagheera System for FAAD LOS-F-H RFP," Technical Memorandum, LTV Purchase Order No. C-3103833, April 1987
19. "Millimeter Wave Clutter Reflectivity and Attenuation Handbook," Final Technical Report on Contract DAAH01-84-D-A029, Delivery Order 0051, March 1987, coauthor
20. "MMW Propagation Phenomena," Chapter 4 in PRINCIPLES AND APPLICATIONS OF MILLIMETER-WAVE RADAR, Artech House, 1987, N. C. Currie and C. E. Brown, editors
21. "Synthetic Aperture Radar," Chapter 16 in PRINCIPLES OF MODERN RADAR, Van Nostrand Reinhold Company, 1987, J. L. Eaves and E. K. Reedy, editors
22. "MATCALs Investigations," Interim Technical Report on Contract No. N00039-83-C-04481, December 1985, coauthor
23. "The Application of Synthetic Aperture Radar Technology for Autonomous Antiarmor Weapons," Technical Report for the U.S. Army Research Office, Delivery Order No 0814, April 1984, author
24. "Radar GMTI Pilot Cueing Enhancement," Final Technical Report, Fairchild Republic, Purchase Order No. 9/240051, February 1984, coauthor
25. "Radar Evaluation Support for Radar Signal Processing for Advanced Tactical Aircraft," Interim Technical Report, General Dynamics, Purchase Order No. 1089016, January 1984, coauthor
26. "Radar Cross Section," Chapter 2 in TECHNIQUES OF RADAR REFLECTIVITY MEASUREMENT, N. C. Currie, editor, Artech House, October 1983
27. "Marine Air Traffic Control and Landing System (MATCALs) Investigation," Final Technical Report on Contract N00039-80-C-0082, May 1983, coauthor
28. "Multifrequency Radar Sea Backscatter Data Reduction," Final Technical Report, Contract N60921-80-C-0176, September 1982, coauthor
29. "Performance Evaluation of the AN/VPS-2 Radar for Light DIVADS Utilization," Final Technical Report, General Electric, Purchase Order No. D24-SJ35OK, July 1982, coauthor
30. "Millimeter Wave Measurements Test Plan," Technical Report, Westinghouse Corporation, Purchase Order No. 86AJ DN-69391-03, May 1982, coauthor
31. "Performance Evaluation of the AN/VPS-2 Radar for Light DIVADS Utilization," Letter Technical Report, General Electric, Purchase Order No. 024-SJ350K, February 1982, coauthor
32. "Marine Air Traffic Control and Landing System (MATCALs) Investigation," Final Technical Report, Contract No. N00039-80-C-0082, February 1982, coauthor
33. "Target Identification Algorithms," Interim Technical Report, Boeing Aerospace Corporation, Purchase Order No. D67821, January 1982
34. "Millimeter Wave Trade Study," Final Technical Report, Rockwell International, Contract No. A1EM-3000044, November 1981
35. "Marine Air Traffic Control and Landing System (MATCALs) Investigation," Interim Technical Report, Contract N00039-80-C-0082, June 1981, coauthor
36. "Seeker Track Error Models," Final Technical Report on Contract DAAK40-79-D-0028, August 1980, coauthor
37. MILLIMETER WAVE RADAR, Stephen L. Johnston, ed., Sections 2.C.2, 2.C.3, and 2.C.4, Artech House, Inc., 1980, contributor
38. "Multifrequency Radar Sea Return," North American Radio Science Meeting and IEEE/AP-S International Symposium, (June 1980), coauthor
39. "Multifrequency Radar Sea Clutter Measurements," Final Technical Report on Contract N60921-78-C-A179, April 1980, coauthor
40. "Investigation of Marcor Landing System," Final Technical Report on Contract N00228-78-C-2215, January 1980, coauthor
41. "Near Millimeter Wave Radar Technology," Phase 1 Interim Technical Report on Contract DAAK70-79-C-0108, January 1980, coauthor
42. "Design Study for a Coherent Polarization-Diversity Radar," Interim Technical Report on Contract

- F19628-79-C-0076, October 1979, coauthor
43. "Multifrequency Radar Sea Clutter Measurements," Proceedings of the IEEE Electronics and Aerospace Conference, October 1979, coauthor
  44. "Millimeter Radar Sea Return Study," Final Technical Report on Contract N60921-77-C-A168, April 1979
  45. "Multifrequency Millimeter Radar Sea Clutter Measurements," Proceedings of the Eighth ARPA-Tri-Service Millimeter Wave Conference, April 1979, coauthor
  46. "A Near-Millimeter Synthetic Aperture Radar Concept," Technical Report, U.S. Army Research Office, Delivery Order No. 0983, February 1979, author
  47. "Millimeter Wave Reflectivity of Land and Sea," Microwave Journal, August 1978, coauthor
  48. "Millimeter Radar Sea Return Study, Addendum," Technical Report on Contract N60921-77-C-A168, July 1978, coauthor
  49. "Millimeter Radar Sea Return Study," Interim Technical Report on Contract N60921-77-C-A168, July 1978, coauthor
  50. "CYCLOPS Proposal Support," Final Technical Report for AVCO under Project A-1908, April 1978, coauthor
  51. "Radar Sea Clutter at Millimeter Wavelengths, Characteristics and Pivotal Unknowns," Proceedings of the Sixth ARPA/Tri-Service Millimeter Wave Conference, November 1977, coauthor
  52. "Radar Alerting and Fire Control System Study," Final Technical Report, General Electric Company, GTRI Project A-1952, October 1977, coauthor
  53. "Stationary Target Detection and Classification Studies," Second Interim Report on Contract N00014-76-C-0961, September 1977, coauthor
  54. "Development and Evaluation of Stationary Target Indication Techniques," Final Technical Report on Contract F33615-75-C-1049, May 1977, coauthor
  55. "Radar Data Gathering and Analysis Using an L-Band System," Interim Technical Report on Contract DAAG53-76-C-0112, January 1977, coauthor
  56. "Conceptual Design for Adverse Climatic Environment Helicopter Utilized Navigation/Targeting Effect Radar (ACE HUNTER)," Final Technical Report on Contract DAAH-01-76-C-0525, January 1977, coauthor
  57. "Flight Evaluation of Stationary Target Indication Techniques," Proceedings of the Twenty-Second Tri-Service Radar Symposium, July 1976, coauthor
  58. "Investigation of Stationary Target Indication Techniques with a Frequency Agile Radar," Final Technical Report on Contract F33657-75-C-0118, November 1974, coauthor
  59. "Technical Manual for Georgia Tech STI Processors," Technical Report on Contract F33615-71-C-1612, October 1974, coauthor
  60. "Investigation of Target Enhancement Techniques," Final Technical Report on Contract F33615-71-C-1612, October 1974, coauthor
  61. "Polarization Modulation Techniques," Final Technical Report on Contract F33615-71-C-1519, June 1973, coauthor
  62. "Analysis of WEST IX Data," Interim Technical Report No. 2 on Contract No. F33615-71-C-1519, January 1973
  63. "Measurement of Third-Order Elastic Constants of NaCl Using Longitudinal and Transverse Ultrasonic Waves," Georgia Institute of Technology, Ph.D. Dissertation, March 1972
  64. "Measurement of the Non-Linearity Parameters of Single Crystal Aluminum," Conference of the Georgia Academy of Science, Shorter College, May 1968, coauthor