

ARISTOS CHRISTOU
University of Maryland, College Park, MD 20742

EDUCATION

B.A. Physics, 1967	Columbia University, New York, NY
Ph.D. Materials Science, 1971	University of Pennsylvania, Philadelphia, PA

PRESENT POSITION

***Professor of Materials Science and Engineering,
Professor of Mechanical Engineering and
Professor of Reliability Engineering.***

July 1, 1993 to 2003

*Professor and **Chairman**, Department of
Materials and Nuclear Engineering, University of
Maryland at College Park.
Professor of Materials Science, Professor of
Mechanical Engineering,
Professor of Reliability Engineering and Director
Reliability Engineering Program.*

*Headed a Department with Academic and
Research programs in Materials Engineering,
Reliability Physics and Radiation Sciences (1993-
2003)*

Concurrent Positions:

*Space Lidar Materials Technology Center. **Director**
of a University- NASA Joint Center of LIDAR
technology research from 1997-2002.*

***Director** of NSF University-Industry Cooperative
Research Center in Optoelectronic Devices
Interconnects and Packaging (COEDIP) from 2002-
2005. **Director** of Microelectronics Devices
Laboratory, University of Maryland.*

PREVIOUS POSITIONS

1990-1993	<i>Professor, Department of Mechanical Engineering, University of Maryland,</i>
1989-1990	<i>Professor, Department of Electrical and Computer Engineering, Rutgers University.</i>
1985-1989	<i>Branch Head, Surface Physics Branch Electronics Science and Technology Division, Naval Research Laboratory, Washington DC.</i>
1985-1987	<i>Professor, University of Crete and Research Center of Crete Greece and Director of Microelectronics Research Group at the Institute for the Electronic Structure and Lasers (FORTH), during sabbatical year and as Fulbright Scholar.</i>

1976-1985 *Section Head*, Advanced Semiconductor Technology and **Reliability Section**, Electronics Science and Technology Division, Naval Research Laboratory.

1971-1976 *Researcher* in Materials Science Branch Electronics Technology Division, Naval Research Laboratory and Materials Engineer, NSWC, Dahlgren Va.

PROFESSIONAL BACKGROUND

1990-2007 ***Professor and Chairman***(1993-2003), carrying out novel research programs in the mechanics and physics of microelectronic and optoelectronic packaging. His research included the reliability of electronic packaging materials, the reliability physics of compound semiconductor devices as well as process-performance-reliability correlations. Dr. Christou made advances in high frequency devices, photonics materials and optical interconnects and biomolecular devices, materials, surfaces and interfaces. *Dr. Christou headed a department with undergraduate programs in Materials Science, and in Nuclear Engineering, and graduate degree programs in Materials Science and Engineering, Reliability Engineering and Nuclear Engineering.*

In 2002, Professor Christou became the first Chair of the new Materials Science and Engineering Department at the University of Maryland. The new department was the reformulation of the Materials and Nuclear Engineering Department which he Chaired since 1993.

Professor, University of Maryland and President of the Federation of Materials Societies (2004-2007): Professor Christou led the Federation of Materials Societies and its multiple activities in enhancing the role of materials education and materials innovations within the nation's economy.

1990-9/90 Dr. Christou became ***Director*** of the Rutgers University Microelectronics Research Laboratory which was established as a collaborative University-Industry Research Center to address key microelectronics research issues.

1985-1990 ***Head, Surface Physics Branch***, Naval Research Laboratory. Dr. Christou directed research in the area of semiconductor surfaces and interfaces, thin films and microelectronic device fabrication science. Directed programs in the area of Molecular Beam Epitaxy of compound semiconductors, and **Reliability Physics of Devices and Packages.**

(1987-1988) *Professor* of Materials Physics and Visiting Member of the Institute of Electronics and Lasers, University of Crete and Research Center of Crete, Heraklion, Greece.

1976-1985 ***Section Head***, Reliability Physics Section, Naval Research Laboratory. Established the Navy's research program in reliability

science. Initiated novel programs in the area of compound semiconductor devices and physics, as well as silicon power electronics and silicon CMOS technology.

1972-1976 **Research Materials Scientist**, Electronics Technology Division Naval Research Laboratory. Initiated the Navy's Physics of Failure Physics approach to reliability and to novel device design.

1967-1971 **Graduate Researcher**, University of Pennsylvania, Laboratory for the Research on the Structure of Matter and *Metallurgist*, Naval Surface Weapons Center (Dahlgren VA.).

PROFESSIONAL ACTIVITIES

SOCIETY MEMBERSHIP

Institute of Electrical and Electronic Engineers (Fellow)

American Physical Society

Materials Research Society

The Minerals, Metals and Materials Society

Society of Photonic and Instrumentation Engineers (SPIE)

Member 1993-2003 of the *University Materials Council*. *The UMC is the national council of materials department chairmen.*

Member 1993-2003 of *NEDHO*

(The Nuclear Engineering Department Heads Organization)

Member of Board of Trustees of Federation of Materials Societies, 2000-Present.

Vice President 2003, Federation of Materials Societies.

President 2005-2007, Federation of Materials Societies.

International Network of Engineering Education Research (iNEER)

Member, American Society of Metals, International (ASM, International)

EDITORIAL BOARD

2000-Present, Editor IEEE Transactions on Device and Materials Reliability.

1998-Present, Associate Editor IEEE Trans on Electron Devices

1998-Present, Editor, Reliability and Quality International, John Wiley Publisher

1990-1996, Editorial Board Member and Technical Committee Member of
GaAs Applications Conference,

1988-1995, Academic Press, Journal of Superlattices and Microstructures,
Member of the Board

1987-1988, Institute of Physics-Solid State Series (UK)

1987-1989, Kluwer Publishing Company, NATO ASI Series

1978-1981, IEEE Transactions on Parts, Hybrids and Packaging, Member of
Editorial Board

1976-1978, IITRI Series on Scanning Electron Microscopy

CONFERENCE CHAIRMAN

Chair and Technical Program Chair of FMS/NMAB Symposiums on Materials Education for the 21st Century Workforce, May 23-25, 2004.

Chair of MRS Symposium on Molecular and Nanomolecular Electronics, April 2001.

June 1995, NATO Advanced Study Institute, *Rapid Thermal Processing*.

December 1995, Co-Chair of MRS Symposium on the Mechanics of Nanocrystalline Materials

July 1991, *Reliability of GaAs Monolithic Microwave Integrated Circuits Workshop*

August 1990, *Fifth International Conference on Superlattices, Microstructures and Electro-optical Devices*

June 1989, 1989 NATO Advanced Study Institute on "Semiconductor Device Reliability".

September 1987, 14th International GaAs and Related Compounds Symposium.

1982-1985, IEEE Integrated Circuits "Compound Semiconductor Reliability Workshop".

TECHNICAL PROGRAM COMMITTEES

Feb 2007 TMS Annual Meeting, Organizer of Symposium "Photonic Materials-Future Challenges" Feb 25-Mar 1, 2007, Orlando Florida.

Oct 2005 MS&T Annual Meeting, Organizer of Symposium on "The Physics and Material Challenges for Integrated Optics" Pittsburgh Pa.

May 2004 FMS/ NMAB Technical Conference on Materials, Wash. DC

July 2002 NATO ASI Advanced Study Institute, Nanomaterials, Crete

May 2000 EXMATEC 2000 Symposium on Materials and Electronic Process Science

Dec. 1995 MRS 95 Symposium on the Mechanics of Nanocrystalline Materials

Oct. 1994 ESREF 94 European Symposium on Reliability

Oct 1995, ESREF 95 European Symposium on Reliability

Oct 1997 ESREF 97 European Symposium on Reliability

April 1992 IRPS 92, International Reliability Physics Symposium

April 1993 IRPS 93, International Reliability Physics Symposium

June 1992 SAMPE Society for the Advancement of Materials, and Processes Engineering.

April 1992 IRPS 92, International Reliability Physics Symposium

Oct. 1991 ESREF 91 Symposium on Reliability and Failure Analysis (France).

Aug. 1990 International Conference on the Physics of Semiconductors (Greece).

April 1990 International Conference on GaAs Applications 1990 (Italy).

May 1990 IEEE MTT Symposium, Panel on Microwave Circuit Reliability.

1988, 1989 IEEE GaAs I.C. Manufacturing Technology Symposium

1988, 1989 International Symposium on GaAs and Related Compounds (Japan).

1990 EEC Symposium on Device and Circuit Reliability (Italy) (ESREF '90).

1986 EEC Conference on Metastable Phases (Netherlands).

1985 NATO ASW on Solid State Reliability (Denmark).

1982-1985 IEEE International Reliability Physics Symposium Committee Member (U.S.).

1981 IEDM International Electron Device Meeting, Committee Member.

TECHNICAL ADVISORY COMMITTEES

2006 Member of the NMAB, National Research Council, Materials Societies Roundtable.

2006 Member of the Board of Visitors, University of California, Berkeley, CA, Materials Science and Engineering Department.

2000,2002 Member of Review Panel for NERI program

1991-2000 Member of a number of NSF Review Panels.

1997-98 Naval Studies Board, Head of Subcommittee on Materials for the Navy of the 21st Century.

1994-95 National Research Council Advisory Committee on Materials for Microwave Devices.

1994 National Research Council Committee on High Temperature Electronics.

1992-94 Chairman IRPS Committee on Compound Semiconductors.

1988-94 Member of the Advisory Committee of GaAs and Related Compounds Symposium.

1992-94 Member of National Science and Technology Council (NSTC) Working Group on Electronic Materials.

1987-88 Member, NATO Scientific Affairs Committee.

1979-1981 Member of the UNESCO Science Committee and UNESCO Scientific Advisory

1988-1990 Member of DARPA Advisory Committee on GaAs Reliability/Radiation Effects

1988 Member of the National Academy of Sciences Committee on Interconnects and Electronic Packaging.

1987 Member of the IEE (UK) Committee on Heterojunctions and Heterostructures.

1987-1996 Member of International Advisory Committee on GaAs and Related Compounds, GaAs and Related Compounds Conference.

1986-1987 Member of EEC ESPRIT Review Committee, review of European Program on the special action on Information Technology.

AWARDS

1969-1970 *Ford Foundation* Fellowship, for graduate studies in Materials.

1974 *Alan Berman Publication Award*. Two separate archival publications were awarded, power transistors.

1976 *Alan Berman Publication Award*. Award for the archival publication in the area of microwave power transistors.

1977 *Outstanding Service Awards* from **1978-1983** for contributions to solid state electronics for phased array radar and for contributions to reliable microelectronics materials.

- 1981 UNESCO Award for Scientific Excellence
- 1985 *Fullbright Scholar Award*. Granted to Dr. Christou for the academic year 1985-86 for research in Molecular Beam Epitaxial Materials in Europe.
- 1987 *Millenium Medal* from the University of Bologna, Celebrating the millennium anniversary of the University of Bologna, Centenial Award for Contributions in Compound Semiconductors
- 1989, 1990 *The Naval Research Laboratory Outstanding Performance Award*. Granted to Dr. Christou for outstanding research and management during 1989 and 1990.
- 1991 *Navy (NRL) Patent Award* for Electron Device Inventions
- 1993 *Fellow of the IEEE*. For contributions in the area of GaAs device and circuit reliability.
- 1999-2002 *IEEE National Lecturer* in Electron Devices.
- 1999 *University of Maryland Invention of the Year Award* in the Physical Sciences.
- 2000 *IEEE National Lecturer* in Optoelectronic Devices and Device and Materials Reliality Physics.
- 2004 *iNEER Lifetime Achievement Award*, International Network of Engineering Education Research Award for Contributions to international engineering education.
- 2006 *FMS Recognition Award*, for contributions to FMS as its President for years 2005 and 2006.
- 2007 ASM Burgess Memorial Award, for Seminal Contributions to Electronic Materials, Packaging and Devices.

PATENTS

1. "Method for Epitaxial Growth of GaAs Films Independent of Substrate," Patent Number 4,226,649 (1980).
2. "Refractory-Refractory Oxide InP MIS Schottky Diodes," N.C. 63,334 Granted (1988).
3. "Low Barrier Height Epitaxial Ge-GaAs Mixer Diode," Patent Number 4,316,201 (1980).
4. "Multi-Refractory Films for GaAs Devices," Patent Number 4,179,533 (1980).
5. "Electron Collector for Forming Low-Loss Electron Images," Patent Number 4,179,604 (1978).
6. "Ion Implanted Evaporated Germanium Layers as n^+ Contacts to GaAs," Patent Number 4,298,403 (1981).
7. "Semiconductor Encapsulant for Annealing Ion Implanted GaAs," Patent Number 4,267,014 (1980).
8. "Refractory Passivated Ion Implanted GaAs Ohmic Contacts," Patent Number 4,330,343 (1981).
9. "Ohmic Contacts for Group III-V N-Type Semiconductors Using Epitaxial Ge Films," Patent Number 4,188,710 (1979).
10. "Ion Implanted Improved Ohmic Contacts to GaAs," Patent Number 4,263,605 (1980).

11. "Formation of Epitaxial Si-Ge Heterostructures by Solid Phase Epitaxy," Patent Number 4,975,387 (January 1991).

12. "Method of Making Self-Aligned GaAs/AlGaAs FETs," Patent Number 4,927,782 (May 1990).

PUBLICATIONS

Eleven books. (Six authored and five edited)
200 archival articles and conference papers.

PUBLISHED BOOKS

Reliability of Analogue Microwave Integrated Circuits
Published by RIAC, December 2006

Reliability of High Temperature Electronics, second edition
Published by RIAC, December 2006

Photonic Materials, Devices and Reliability, second edition
Published by RIAC, December 2006

Reliability of GaAs Monolithic Integrated Circuits
Published by John Wiley and Sons, October 1992, second edition 1995.

Electromigration and Related Failure Mechanisms
Published by John Wiley, December 1994.

Integrating Reliability into Microcircuit Manufacturing
Published by John Wiley, 1994.

ARCHIVAL PUBLICATIONS and CONFERENCE PROCEEDINGS

1. S. Yang, A.Christou, "Failure Model for Silver Electromigration" IEEE Trans Materials, Device Reliability, Vol2, Feb 2007.

2. S. Yang, J.Wu, A. Christou, "Initial Stages of Silver Electrochemical Migration Degradation," Microelectronics Reliability vol.46 (2006) 1915-1921.

3. C.C. Zhang, Aris Christou, "Reliability of Leadless Interconnects in GaAs ASICS", J. of RIAC, 2006, No.2, 20-26.

4. Ahangir Alam, Andrei E. Botchkarev, James A. Griffin, John M. Zavada, Aristos Christou and S. Noor Mohammad, "Optical properties of MBE-grown GaAs_{1-x}N_x alloys", Phil Mag, 1121-1134, 2006.

5. M. Linnick, Chichang Zhang and A. Christou, "Dielectric Constants for AlGaInAs Quaternary Semiconductor Alloys Grown by MBE for VCSEL Bragg Mirror Applications", in The Physics and Challenges for Integrated Optics Symposium, MS&T 2005, pp. 23-31.

6. M. Al-Sheikhley, A. Christou, "The Limitations of GaAs/DNA Based Bio-Memory and Sensing Device," WOCSDICE 2005, pp. 143-148, Cardiff Wales, UK (2005).

7. A. Christou, "Advances in Engineering Education: Building alliances With Professional Societies", Proceedings of Int Conf on Engineering Education, ISBN: 1562-3580, July 2005, Gliwice Poland.

8. L. Mohaddes-Ardahilli, L. Martinez-Miranda, L. Salamanca-Riba, A. Christou, William Bentley and M. Al-Sheikhley, "Preferred Orientation of DNA Oligonucleotide probes on the (2x4) Reconstructed Surface of (001) GaAs," J Appl. Physics Vol 95, No. 11, Part 1 (6021-6024), June 2004.

9. Mohamad Al-Sheikhley, D. Sweet, Lourdes Salamanca-Riba, B. Varughese, J. Silverman, Aris Christou and William Bentley, "Radiation-Induced Failure Mechanisms of GaAs -Based Biochips," IEEE Trans on Device and materials Reliability, vol. 4, No. 2 (192-197), June 2004.

10. C. Zhang, P. Yalamanchili, M. Al-Sheikhley and A. Christou, "Metal migration in epoxy encapsulated ECL devices", Microelectronics Reliability 44 (2004) 1323-1330.

11. N. Strifas, P. Yalamanchili and A. Christou, "Reliability Model for Polyimide-Metal Interconnect Shorts in GaAs ASICs," J. of Quality and Reliability Engineering International, Vol 20, 747-759, (2004).

12. L. Mohaddes-Ardahilli, L. Martinez-Miranda, J. Silverman, A. Christou, L. Salamanca Riba and M. Al-Sheikhley, "Attachment of DNA Probes on GaAs Surfaces", Appl. Physics Lettrs, 83, No. 1, pp. 192-194 (2003).

Prior to 2003

1. A. A. Iliadis and A. Christou, "Design and Deveopment of Short and Long Wavelength Infrared Vertical Channel Surface Emitting Lasers", Invited Paper OE15 29-02, 2003 Photonics West.

2. M. Linnick and A. Christou, "Calculations of optical properties for Quaternary III-V semiconductor alloys in the transparent region and above", Physica B, 318, pp 140-161 (2002).

3. M. Linnick and A. Christou, "Vertical Cavity Surface Emitting Laser with GaInSbAs/AlInSbAs Bragg Mirrors for Operation at 1.5 μ m," IEEE Transactions on Electron dev. Vol 48, No. 10, pp. 2228-2237 (2001).

- 4 A. Christou, A Dimoulas, A. Cornet, "Epitaxial Growth Morphologies of AlAsIn/InGaAs heterostructures on non-(100) InP Index Substrates," *Materials Science and Engineering B87* pp. 249-255 (2001).
- 5 M. Linnik and A. Christou, "Optimization of III-V Compound Semiconductor Heterostructures for Distributed Bragg Reflector Applications in VCSELs," *Materials Science and Engineering B80* pp. 245-247 (2001).
- 6 M. Linnik and A. Christou, "AlGaInAs/InP and GaInSbAs/Inp Highly Reflective Mirrors for VCSEL Applications Operating at 1.55 microns", *SPIE*, vol 4278, pp 125-131 (2001).
- 7 A. Christou, "Charge Transport in Low Dimensional Nitride Semiconductor Heterostructures," *Physica B*, Vol 296, No. 1-3, pp264-271 (2001).
- 8 L. Guan, A. Christou, and D. Barbe, "The Effect of Corrosion on the Performance of High Speed Multi-Chip Module Interconnects," *Quality and Reliability Engineering International*, Vol. 16, pp. 1-6 (2000).
- 9 L. H. Zhu, A. Christou, and D. F. Barbe, "High Temperature Device Performance and Thermal Characteristics of GaAs MESFETs on CVD Diamond Substrates," *Quality and Reliability Engineering International* Vol 16: 527-536 (2000).
- 10 T. Feng, M. Al-Sheikhly, and A. Christou, "Defect Formation in SiGe/Si Structures Grown on GaAs by CVD Techniques Utilizing a Si:H Template Layer," *Materials Science & Engineering*, B67m 70-75 (1999).
11. N. Strifas, P. Panayotatos and A. Christou, "Optical Interconnect Reliability", *Optical Engineering* (37)8, August 1998.
12. S. Krishnan, N. Goldsman and A. Christou, "Transport Simulation of Bulk $Al_xGa_{1-x}N$ and the Two-Dimensional Electron Gas at the $Al_xGa_{1-x}N/GaN$ Interface", *Journal of Applied Physics*, Vol. 83, No. 11, June 1998.
13. A. Christou, G. Halkias, "Degradation Mechanisms and Related Failure Modes in GaAs Digital ICs, Proceedings of ERRSDEC 1998 Conference, Brussels.
14. T. Feng, N. Strifas and A. Christou, "Degradation of Performance in MESFETs and HEMTs: Simulation and Measurement of Reliability", *Microelectronics Reliability* (38) pp.1239-1244 (1998).
15. A. Christou and A. Dimoulas, "Probabilistic Yield and Statistical Process Correlation in Manufacturing of Advanced Microelectronics", *PSAM 4 1998*, Springer-Verlag pp.57-69, (1998).

16. D. Girginoudi, A. Thanailakis, V. Kasabyan and A. Christou, "Two Dimensional Clusters in SiGe/Si Heterostructures, J. Superlattices and Microstructures", 23, No.2, 407-411, 1998.
17. M. Al-Sheikhly, W. L. McLaughlin, A. Christou and A. Kovács, "Radiochromic Blue Tetrazolium Film Dosimeter", IAEA-SM-356/62, November 1997.
18. T. Feng, A. Dimoulas, A. Christou, G. Constandtinidis, "Failure Mechanisms of GaAs MESFETs with Cu/Refractory Metallized Gates, in Microelectronic Reliability, Vol. 37, No. 10/11, pp. 1699-1702. 1997.
19. L. Guan, A. Christou, D. F. Barbe, "The Effect of Corrosion on the Performance of High Speed Multichip Module Interconnects", in Microelectronic Packaging, Vol. 3, pp 1-7, 1997.
20. D. Young, A. Christou, R. Ramesh, D. K. Fork, and B. Krusor, "Integration of (001) Oriented LSCO/PLZT/LSCO Ferroelectric Capacitors on (001) GaAs with a MgO Buffer Layer", Integrated Ferroelectrics, 12, 63 (1996).
21. C. Pusarla, A. Dasgupta, M. G. Pecht, & A. Christou, "A Physics of Failure Design Philosophy Applied to Flip-Chip Bonding", Microelectronics International-Journal of ISHM-Europe, No. 36, January 1995, pp. 6-13.
22. P. Yalamanchili, P. McClusky and A. Christou, "Optimum Processing Prevents PQFP Popcorning", Journal of Surface Mount Technology, pp. 39-42, May 1995.
23. L. Guan, A. Christou, G. Halkias and D. F. Barbe, "Modeling of Current-Voltage Characteristics for Strained and Lattice Matched HEMTs on InP Using a Variational Charge Control Model", IEEE Trans. Electron Dev., Vol. 42, No. 4, pp. 612-617, 1995.
24. P. Yalamanchili, R. Gannamani, P. McClusky and A. Christou, "Optimum Processing Prevents PQFP Popcorning", Journal of Surface Mount Technology, May 1995, pp. 39-42.
25. C. Pursala, A. Dasgupta, M. G. Pecht and A. Christou, "A Physics of Failure Design Philosophy Applied to Flip-Chip Bonding", Microelectronics International-Journal of ISHM-Europe, No. 36, pp. 6-13, January 1995.
26. L. Guan, C. Pusarla, G. Halkias, & A. Christou, "Module Level Performance Simulator for the Figure of Merit of Electrical and Optical Interconnects," The International Journal of Microcircuits and Electronic Packaging, Volume 17, Number 1, 1994, pp. 50-61.

27. P. Yalamanchili, A. Christou, S. Martell and C. Rust, "C-SAM Sounds the Warning for IC Packaging Defects", IEEE Circuits and Devices, Vol. 10, No. 4, July 1994, pp. 36-41.
23. M. Linnik and A. Christou, "Optimization of III-V Compound Semiconductor Heterostructures for Distributed Bragg Reflector Applications in VCSELs", EXMATEC 2000, May 23-25, 2000 (Crete)
24. M. Linnik and A. Christou, "Highly Reflective Bragg Mirrors for VCSEL Applications at 1.3 and 1.55 μm ", SPIE, January 27-29, 2000, San Jose, CA.
25. M. Linnik and A. Christou, "Optical Properties of AlGaAsSb, AlGaInP, AlGaInAs, and GaInAsP for Optoelectronic Applications," MRS, December 1-3, 1999 (Boston).
26. H.-W. Fang, M.C. Shen, U. Cho, J. Tesk and A. Christou and S. M. Hsu, "Generation of Different UHMWPE Particle Shape by Wear through Surface Texturing", Society for Biomaterials Annual Meeting, Apr. 27 - May 2, 1999.
27. J. Arbiol, F. Peiro, A. Cornet, and A. Christou, "Growth Characterization of InAlAs/InGaAs Structures on InP non_(001) Index Substrates", MSMC, Oxford, March 22 - 25 1999.
28. A. Christou, T. Feng, and A. Georgakilas, "Twins and Stacking Faults in Heteroepitaxial Compound Semiconductor Materials", TMS/ISAT, San Diego, CA, February 28, - March 4, 1999
29. J. Arbiol, F. Peiro, A. Cornet, and A. Christou, "Growth Characterization of InAlAs/InGaAs Structures on InP Novel Index Substrates", 1999 Microscopy Conf., Jan. 1999.
30. M. Linnik and A. Christou, "GaInSbAs/AsInSbAs Vertical Cavity Surface Emitting Laser (VCSEL) for Operations at 1.5 μm , SPIE, January 27-29, 1999, San Jose, CA.
31. M. Linnik, O. Wilson and A. Christou, "Thick PLZT Films Grown by Sol-gel for Optical Device Applications", 1998 Materials Research Society Annual Meeting, Dec. 1998.
32. T. Feng, A. Dimoulas, N. Strifas, and A. Christou, "High Performance Cu-Metallized Ga As HEMTs Processing and Reliability", MRS Fall Meeting, Boston, MA, Nov. 30 - Dec. 5, 1998.
33. M. Al-Sheikhly, W. L. McLaughlin, A. Christou, and A. Kovacs, "Radiochromic Blue Tetrazolium Dosimeter", IAEA, Vienna, November 2 - 5 1998.

34. R. H. Esser, A. Dimoulas, N. Strifas, A. Christou and N. Papanicolau, "Materials Interfaces in Flip Chip Interconnects for Optical Components; Performance and Degradation Mechanisms", ESREF 1998, Copenhagen, Denmark, Oct. 5-9, 1998.
35. Ting Feng, N. Strifas, and A. Christou, "Degradation of Performance in MESFETs and HEMTs: Simulation and Measurement of Reliability", ESREF, Denmark, October 5-9, 1998.
36. M. Linnik and A. Christou, "Vertical Cavity Surface Emitting Laser (VCSEL) Structure with Optimized Reflection and Transmission Multilayers for Operation at 1.55 μ m", Compound Semic Conference, Kyoto, Japan, September 1998.
37. M. Shen, S. Hsu, A. Christou, "A Novel Multiaxial Wear Tester for Accelerated Testing of Materials", 45th Annual Meeting, Orthopaedic Research Society Proceedings, Feb. 1998.
38. T. Feng, A. Dimoulas, and A. Christou, "GaAs-on-Si MSM Photodetector-FET Receiver Characterization and Reliability", Proceedings of ESREF 1997, October 1997.
39. K. Katsikini, E. C. Paloura, A. Ginoudi, E. Holub-Krappe and A. Christou, "N-K-edge EXAFS of AlN grown by ECR-MBE", Proceedings of ICPS XXII, Berlin, Germany, July 1996.
40. N. Strifas, P. Yalamanchili and A. Christou, "Modeling of Physical Failure of Microwave and Optical Modules for Assessment of System Risk", International Conference on Probabilistic Safety Assessment and Management, Crete, Greece, June 24-28, 1996.
41. K. Katsikini, E. C. Paloura, A. Ginoudi, E. Holub-Krappe and A. Christou, "N-K-edge EXAFS of GaN and AlN grown by ECR-MBE", E-MRS, Strasbourg, France, May 28-30, 1996.
42. C. Pusarla and A. Christou, "Solder Bonding Alignment of Microlens in Hybrid Receiver for Free Space optical Interconnects", Electronic Components and Technology Conference, Orlando, Florida, May 28-31, 1996.
43. K. Lagadas, Z. Hatzopoulos, N. Kornilios, M. Androulidaki and A. Christou, "Electrical Properties of GaAs Epilayers, FET and HEMT Structures Grown on LTGaAs by MBE", Expert Evaluation and Control of Compound Semiconductor Materials and Technologies EXMATEC '96, Freiburg, Germany, May 12-15, 1996.
44. C. Pusarla and A. Christou, "Solder Bump Bonding Alignment in Hybrid Process", International Conference on Emerging Microelectronics and Interconnection Technologies, Bangalore, India, February 12-16, 1996.

45. P. Yalamanchili and A. Christou, "Migrated Copper Resistive Shorts in Plastic Encapsulated Devices", International Conference on Emerging Microelectronics and Interconnection Technologies, Bangalore, India, February 12-16, 1996, Proceedings of Conference.
46. P. Yalamanchili and A. Christou, "Failure Analysis of Printer Wiring Boards", International Conference on Emerging Microelectronics and Interconnection Technologies, Bangalore, India, February 12-16, 1996. Proceedings of Conference.
47. C. Pusarla and A. Christou, "Diffraction Loss and Optical Crosstalk in Hybrid Receiver for Free Space Optical Interconnection", SPIE's Photonics West '96 Symposium, San Jose, California, January 27-February 2, 1996, Proceedings of Conference.
48. M. Al-Sheikhly, W. McLaughlin, and A. Christou, "UV, Soft X-Ray and Gamma-Ray High Resolution Imaging and Discrimination by Novel Photo-Polymer Film System on GaAs", Denver 96 SPIE Symposium, Denver, Colorado, 1996.
49. M. Al-Sheikhly, W. McLaughlin, and A. Christou, "Radiation Gel-Core Fluorinated-Ethylene Polyethylene Fiber Optics Integrated with GaAs MMICs for Distributed Sensing of X and Gamma Rays", Denver 96 SPIE Symposium, Denver, Colorado, 1996.
50. N. Strifas and A. Christou, "Diamond Heat Sinks for High Temperature Electronics: Simulation, and Thermal Analysis", 1995 MRS Fall Meeting, Boston, Massachusetts, November 27-December 1, 1995.
51. H.D. Young R. Ramesh, A. Christou, D. K. Fork, and B. Krusor, "Ferroelectric La-Sr-Co-O/Pb La-Zr-Ti-O/La-Sr-Co-O Oxide Heterostructures Grown on (001) GaAs and (001) GaAs and (001) Si", 1995 MRS Fall Meeting, Boston, Massachusetts, November 27-December 1, 1995 .
52. N. Strifas and A. Christou, "Thermal Stress Analysis and Simulation of Voids and Fracture at the GaAs-Ceramic (Al₂O₃) Interface", 1995 MRS Fall Meeting, Boston, Massachusetts, November 27-December 1, 1995.
53. N. Strifas, P. Yalamanchili and A. Christou, "Die Attache Void Formation and Delamination at the GaAs MMIC/Ceramic Substrate Interface", 1995 GaAs Reliability Workshop, Sand Diego, California, October 29, 1995.
54. P. Yalamanchili and A. Christou, "Migrative Copper Resistive Shorts in Plastic Encapsulated Devices", 1995 International Integrated Reliability Workshop, Lake Tahoe, California, October 22 25, 1995.

55. C. Pularla, L. Ling and A. Christou, "Reliability Issues in Hybrid Optoelectronics Interconnect Systems", 6th European Symposium on Reliability of Electron Devices, Failure Physics and Analysis, Bordeaux, France, October 3-6, 1995.
56. A. Christou, "Integration of the Materials Science Curriculum within an Engineering College", Materials Education Workshop, Cancun, Mexico, August 27-September 1, 1995.
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