

# Personal Resume` & Qualifications for Dr. Richard T. Schneider

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**SCHNEIDER, Richard T., Ph.D.**  
*Registered Professional Engineer*

## PERSONAL RECORD

**Date of Birth:** July 29, 1927, Place of Birth: Munich, Germany

**Marital Status:** Married, 2 children

**Citizenship:** U.S.A.

## SCHOLASTIC TRAINING

1958 University Stuttgart, Germany Diplom-Physiker (Physics)

1961 University Stuttgart, Germany, Dr. rer. nat (Physics)

## EXPERIENCE

1992 to Present            President, Schneider Laboratories, Ltd., Alachua, FL

1989 to 1992            Vice President, Rein Energy Corp., Inc., Alachua, FL

1989 to 1992            Vice President, RTS Laboratories, Inc., Alachua, FL

1984 to 1990            President, Eye Research Laboratory, Inc., Alachua, FL

1968 to 1988            Professor, Department of Nuclear Engineering Sciences, University of Florida,  
Now retired (Professor Emeritus)

1984 to 1985	President, RTS Laboratories, Inc., Gainesville, FL
Year of 1983	IPA-Assignment, Eglin Air Force Base, FL
1974 to 1975	Liaison Scientist, Office of Naval Research, U.S. Navy, London, England
1965 to 1968	Associate Professor, Department of Nuclear Engineering Sciences, University of Florida
1961 to 1965	Section Chief, Plasma Physics, Allison Division, General Motors Corp., Indianapolis, Indiana

## **FIELDS OF INTEREST**

Lasers, Optics, and Engineering Physics

## **GRANTS AND CONTRACTS**

Principal Investigator on numerous grants and contracts with the Navy, NASA, DOE, USAF, and Army during the past 25 years.

## **AWARDS**

Eminent Engineer, Tau Beta Pi, 1970 NASA Medal for Exceptional Scientific Achievement NASA\*, 1975

Outstanding Service Award, College of Engineering, U of Florida. 1975 Certificate of Appreciation, ONR, U.S. Navy, 1975

Certificate of Appreciation, NASA, December, 1977

Outstanding Technical Achievement, North Central Chapter, Florida Engineering Society, 1978

Presidential Scholar, U. of Florida, 1978-79

Professor Emeritus, U. of Florida, 1988

(\* This is the highest honor that NASA gives to civilian persons) **PATENTS**

US 4,075,057	Non-Equilibrium Radiation Nuclear Reactor	02/21/78
US 4,106,984	Rotating Safety Drum Nuclear Reactor	02/21/78
US 4,132,130	Safety Flywheel	01/02/79
US 4,421,830	Battery Having Replaceable Electrodes	12/20/83
US 4,585,937	High Efficiency Fiber-Shaped Detectors	04/29/86
US 4,585,948	Non-Scanning Integrated Optical System with Wide Field of View Search Capability	04/29/86
US 4,611,124	Fly's Eye Sensor Nonlinear Signal Processing	09/09/86
US 4,619,657	Flexible Intraocular Lens Holder	10/28/86
US 4,648,400	Ophthalmic Surgery System	03/10/87
US 4,799,785	Cornea Contour Mapping	01/24/89
US 4,806,005	Spotting System for Binoculars & Telescopes	02/21/89
US 4,813,779	Perimeter	03/21/89
US	Image Transportation Device Using Incoherent Fiber Optics	03/28/89

4,815,816	Bundles and Method of Using Same	
US 4,869,729	Apparatus For Methane Production	09/26/89
US 4,873,443	Magnetic Superconducting Detector	10/10/89
US 4,894,542	Broadband Superconducting Detector	01/16/90
US 4,904,869	X-Ray Sensor Having A High Number Converter And A Superconducting Detector	02/27/90
US 4,935,626	Broadband Superconducting Detector Having A Thermally Isolated Sensing Element	06/19/90
US 4,944,771	Method for Methane Production	07/31/90
US 5,021,659	Broadband Superconducting Detector Using Microsphere Substrates	01/01/91
US 5,074,861	Medical Laser Device And Method	12/24/91
US 5,171,319	Foldable Intraocular Lens System	12/15/92
US 5,192,318	One-Piece Bifocal Intraocular Lens Construction	03/09/93
WO 87/07496	One-Piece Bifocal Intraocular Lens Construction	03/09/93

**MEMBERSHIPS OF ORGANIZATION COMMITTEES OF SCIENTIFIC MEETING**

International Symposium on Magneto-hydrodynamic Electrical Power Generation. Paris, France, July 6-11, 1964. Member of Program Committee.

Symposium on Research on Uranium Plasmas and Their Technological Applications.

Gainesville, Florida, January 7-8, 1970. General Chairman of Symposium.

Second Symposium on Uranium Plasmas: Research and Applications. Atlanta, Georgia, November 15-17, 1971. Member of Progress Committee.

The Princeton University Conference, "Partially Ionized Plasmas", Princeton University, June 10-12, 1976. Member of Program Committee.

American Nuclear Society, 1977 Annual Meeting, June 12-16, 1977, New York. Session Organizer, Special Session: Fission Fragment Excited Gases and Nuclear-Pumped Lasers.

First International Symposium on Fission Induced Plasmas and Nuclear-Pumped Lasers. Orsay, France, May 23-25, 1978. Scientific Committee.

AIAA, Technical Committee on Plasmadynamics and Lasers, 1982.

### **SESSION CHAIRMANSHIPS IN NATIONAL AND INTERNATIONAL MEETINGS**

International Symposium on Magneto-hydrodynamic Electrical Power Generation. Paris, France, July 6-11, 1964. Raporteur Session III "Conversion Processes".

American Nuclear Society Winter Meeting. Miami Beach, Florida, October 17-21, 1971. Session Chairman "Advanced Propulsion Technology".

Second Symposium on Uranium Plasmas: Research and Technology. Atlanta, Georgia, November 15-17, 1971. Session Chairman "Nuclear Power and Lasers".

Princeton University Conference, June 10-16, 1976. Session Chairman "Fission Generated Plasmas and Gaseous Fuel Reactor Research".

### **BOOKS**

Uranium Plasmas, NASA SP-236, Library of Congress Catalog Card Number 70-608314. Available through U.S. Government Printing Office, Washington, D.C. (with K. Thom), 1971.

Nuclear-Pumped Lasers (with F. Hohl), Advances In Nuclear Science and Technology, Plenum Publishing Corporation, 16, Spring 1984.

### **CHAPTERS IN BOOKS**

"Coal Burning Technology", in Coal Burning Issues. Edited by A.E.S. Green, University of Florida Press, Gainesville, Florida, 1980.

"Fundamentals of Nuclear Radiation Science", in Calibration Handbook: Ionizing Radiation Measuring Instruments (with J. D. Cox). Edited by G. Lalos, Naval Surface Weapons Center, White Oak, Maryland, July 1983.

### **JOURNAL ARTICLES IN REVIEWED JOURNALS**

Subjects: Lasers, Optics, Plasma Physics, Spectroscopy, Nuclear Technology, and Energy Conversion. All together they total more than 60.

### **PAPERS IN INTERNATIONAL AND NATIONAL MEETINGS**

Subjects: Lasers, Optics, Plasma Physics, Spectroscopy, Nuclear Technology, and Energy Conversion. All together they total more than 100.

### **PERIODICALS AND ARTICLES IN BOOKS**

"Dependence of the Electrical Conductivity on Temperature of Amorphous Evaporated Ge-Films," (with H. Richter), Zeits. angew. Physik (Springer-Verlag), 11, 227 (1959).

"A Mechanical Spectrograph Shutter Allowing Exposure Times of 1 sec.," (with M. Mailaender), Zeits. angew. Physik, 12, 521 (1960).

"An Amplifying and Recording Receiver for Short-time Spectroscopy," (with F. Maisenhaelder and M. King), Zeits. angew. Physik, 13, 211 (1961).

"Ionization Phenomena in Gases," edited by H. Maeker, North-Holland Publishing Company, Amsterdam, 1962, Vol. II, pp. 1945-1958 ("Methods of Short Time Spectroscopy").

"Engineering Aspects of Magnetohydrodynamics," edited by N.W. Mather and G. W. Sutton, Gordon and Breach Science Publishers, New York-London, 1962, pp. 153-166, ("The Image Converter as a Tool for Short Time Spectroscopy").

"Spectroscopic Investigations of a Capillary Cesium Energy Converter," (with J. D. Dunlop), Applied Physics Letters, 3, 73, (1963).

"Thermal and Reactive Nonequilibrium of Magnetoactive Plasma Flows," (with H. E. Wilhelm), Zeits. f. Physik, 195, 300-314 (1966).

"Electricity from MHD," International Atomic Energy Agency, Vienna, Austria (1966), pp. 551-556, (Experimental Investigations of Closed Loop MHD Power Generation," with H. E. Wilhelm).

"Photoelectronic Detection of Extremely Weak Lines," (With S. Metz), p. 169 in "XIII Colloquium Spectroscopicum International in Ottawa," published by Adam Hilger, Ltd., London (1968).

"Evaluation of Motion-degraded Images," NASA SP-193, U.S. Government Printing Office, Washington, D.C., 1969, pp. 113-118, "Photoelectronic Restoring System for Images Degraded by Atmospheric Turbulence," (with W. H. Bloss and G. H. Lohnert).

"Radiation from a Uranium Plasma," (with C. D. Kylstra, A. G. Randol III and M. J. Ohanian) Trans. Amer. Nucl. Soc., 12, 3 (1969).

"Computerized Spectrum Analysis," (with C. D. Kylstra) Applied Spectroscopy, 24, 115-130 (1970).

"Measurement of Temperature and Partial Pressure of a Uranium Plasma," (with A. G. Randol III and G. R. Shipman), Applied Spectroscopy, 24, 253-258 (1970).

"Photoelectric Detection of Extremely Weak Spectrum Lines," American Laboratory, 8-18, (December 1969).

"Line Prediction of Highly Ionized Atoms," (with H. D. Campbell), Applied Spectroscopy, 23, 671 (1969).

"Temperature Measurement on a Uranium Plasma," (with G. R. Shipman and J.M. Mack, Jr.), Applied Spectroscopy, 23, 671, (1969).

"Measurement of the Emission Coefficient of a Uranium Plasma," (with A. G. Randol III, C. D. Kylstra, and M. J. Ohanian) Trans. Amer. Nucl. Soc., 12, 413 (1969).

"Experimental Determination of the Boiling Point of Uranium," (with A. G. Randol III and C. D. Kylstra,) Trans. Amer. Nucl. Soc., 12, 541 (1969).

"Measurement of Electrode Erosion During High-voltage Vacuum Breakdown," (with G. H. Lohnert and W. F. Fagen), IEEE Proceedings, 1M-1961-74 (1970).

"Generation of a Low-energy Positron Beam," (with G. H. Lohnert and W. M. Schikorr), Trans. Amer. Nucl. Soc., 13 79 (1970).

"Plasma Diagnostic Techniques Using a Beam of Slow Positrons," (with G. H. Lohnert and W. M. Schikorr), Bull. of the Amer. Phys. Soc., Ser. II, 15, No. 10 (October 1970).

"Generation of a Low Energy Positron Beam," (with G. H. Lohnert), Nuclear Technology, 10, 315-321 (1971).

"Development of a New Plasma Diagnostic Technique Using Slow Positrons," (with G. H. Lohnert), Journal of Applied Physics, 42, 4799-4807 (1971).

"Boiling Point of Uranium," (with A. G. Randol III and C. D. Kylstra) pp. 181-185, Research on Uranium Plasmas, NASA SP-236, U.S. Government Printing Office, Washington, D.C., (1971).

"Spectroscopic Study of a Uranium Arc Plasma," (with H. D. Campbell, C. D. Kylstra, and A. G. Randol III), pp. 187-195, Research on Uranium Plasmas, NASA SP-236, U.S. Government Printing Office, (1971).

"Generation of a Fissioning Plasma," (with C. D. Kylstra pp. 205-209, Research on Uranium Plasmas, NASA SP-236, U.S. Government Printing Office, (1971).

"Enhancement of Laser Output by Nuclear Reactions," pp. 397-400, Research on Uranium Plasmas, NASA SP-236, U.S. Government Printing Office, (1971).

"Nuclear Pumped Gas Lasers," (with K. Thom), AIAA Journal, 10, 400-406 (1972).

"Excitation and Ionization of a CO<sub>2</sub> Laser by Nuclear Reaction Products," (1972).

"Plasma Properties of a D.C. Uranium Arc," (with J. M. Mack, Jr., J. L. Usher, and H. D. Campbell) Bull. of the Amer. Phys. Soc., Ser.H, 17, 383 (1972).

"Plasma Diagnostics Using Slow Positrons," (with W. M. Schikoff and G. H. Lohnert) Bull. of the Amer. Phys. Soc., Ser.H, 17, 389 (1972).

"Uranium Plasma Emission Coefficient in the Visible and Near U.V.," (with J. M. Mack Jr., J. L. Usher and H. D. Campbell) 2nd Symposium on Uranium Plasmas: Research and Applications, published by AIAA, New York, p. 105 (1971).

"CO<sub>2</sub> Laser Experiments Using Nuclear Reactions as the Ionization Source," (with H. S. Rhoads and F. Allario, 2nd Symposium on Uranium Plasmas: Research and Applications, published by AIAA, New York, p.53 (1971).

"Generation of a Uranium Plasma at Near Gaseous Core Reactor Conditions," (with J. F. Davis, III and B. G. Schnitzler), 2nd Symposium on Uranium Plasmas: Research and Applications, published by AIAA, New York, p. 110 (1971).

"Ballistic Piston Fissioning Plasma Experiment," (with B. E. Miller, K. Thom and G. T. Lalos), 2nd Symposium on Uranium Plasmas: Research and Applications, published by AIAA, New York, p.78 (1971).

"Nuclear Enhancement of CO<sub>2</sub> Laser Output," (with H. S. Rhoads), Trans. Amer. Nucl. Soc., 14,429 (1971).

"Low-energy Positron Spectrometry," (with W. M. Schikorr and G. H. Lohnert), Trans. Amer. Nucl. Soc., 14, 501 (1971).

"Nuclear Pumped Lasers" (with K. Thom), *The Indian and Eastern Engineer*, 114, 155-162 (1972). "On the Emission Coefficient of Uranium Plasmas," (with H. D. Campbell and J. M. Mack, Jr.), *Nuclear Technology*, 20, 15-26 (1973).

"Electron Energy Distribution Function of Fission Fragment Excited Gases," (with R. A. Walters), *Trans. Amer. Nucl. Soc.*, 17, 1 (1973).

"Pressure Dependence of Helium Line Intensities Excited by Fission Fragments," (with R. R. Paternoster and R. A. Walters), *Trans. Amer. Nucl. Soc.*, 17, 2 (1973).

"Population Inversions in Fission Fragment Excited Helium," (with G. R. Shipman and R. A. Walters), *Trans. Amer. Nucl. Soc.*, 17, 3 (1973).

"Enhancement of CO<sub>2</sub>-Laser Output by Nuclear Radiation," (with J. F. Davis, III and G. R. Shipman), *Trans. Amer. Nucl. Soc.*, 17, 4 (1973).

"Emission Coefficient Investigation of Uranium Plasmas," (with J. M. Mack, Jr. and H. D. Campbell), *Trans. Amer. Nucl. Soc.*, 17, 7 (1973).

"Measurement of the Ratio of Specific Heats of UF<sub>6</sub>," (with D. E. Steffitt and G. T. Lalos), *Trans. Amer. Nucl. Soc.*, 17, 191 (1973).

"Nuclear Waste Disposal Utilizing a Gaseous-core Reactor," (with R. R. Paternoster, M. J. Ohanian and K. Thom), *Trans. Amer. Nucl. Soc.*, 19, 203, (1974).

"Nuclear Pumped Gas Lasers," *Laser Interaction and Related Phenomena*; 3A, pp. 85-107, edited by H. J. Schwartz and H. Hora, Plenum Press, New York and London, (1974).

"Specific Heat Ratios of UF<sub>6</sub> Measured with a Ballistic Piston Compressor," (with D. E. Sterritt and G. T. Lalos), *Nuclear Technology*, 25, 150-164, (1974).

"Fission Fragment Excitation of Atmospheric Pressure Argon and Argon-Nitrogen Mixtures," (with R. N. Davie and J. F. Davis, III), *Trans. Amer. Nucl. Soc.*, 22, 149 (1975). "Direct Nuclear Pumping of a Helium Xenon Laser," (with H. H. Helmick and J. L. Fuller), *Appl. Phys. Lett.*, 26, 6, 327 (March 1975).

"Fissioning Uranium Plasmas and Nuclear Pumped Lasers," (with K. Thom), *Nuclear Technology*, 27, 34-50 (1975).

"The Nuclear Laser Story," *New Scientist*, 67, No.956, 13-15 (July 1975).

"Observations on the Luminescence of Sapphire-Al<sub>2</sub>O<sub>3</sub> (Synthetic Sapphire) in a Reactor Environment," (with R. N. Davie and J. F. Davis, III) *Nuclear Technology*, 31, 276-278 (1976).

"Physics and Potentials of Fissioning Plasmas for Space Power and Propulsion," (with K. Thom and F. C. Schwenk), *Astronautica Acta*, 3, 505-516 (1976).

"Optical Radiation of Fission Fragment Excited UF<sub>6</sub> and Ar-N-UF<sub>6</sub> Mixtures," (with R. N. Davie, G. Albrecht, E. E. Carroll, Jr.), *Trans. Amer. Nucl. Soc.*, 23, 518 (1976).

"Population Inversions Observed in Fission Fragment Excited Xenon," (with R. N. Davie and J. F. Davis, III), *Trans. Amer. Nucl. Soc.*, 23, 518 (1976).

"Gaseous Fuel Reactor Research," (with K. 'Mom) *IEEE Transactions*, P.S.-5, No.4, 259-272 (1977). "Measurement Methods for Fission Fragment-generated Plasmas," *Trans. Amer. Nucl. Soc.*, 26, 530-531 (1977).

"Effects of UF on N and Argon-excited State Lifetimes," (with T. C. Maguire and E. E. Carroll, Jr.), *Trans. Amer. Nucl. Soc.*, 27, 927 (1977).

"Results of an Experiment Demonstration a Nuclear-Pumped CW-Laser," (with B. D. Carter and M. J. Rowe), *Trans. Amer. Nucl. Soc.*, 27, 938 (1977).

"Parwnetric Study of Reactor Configurations Exhibiting Minimal Transuranic Production," (with B. G. Schnitzler), *Trans. Amer. Nucl. Soc.*, 27, 929 (1977).

"Gaseous-fuel Nuclear Reactor Research for Multi-megawatt Power in Space," (with K. Thom and H. H. Helmick) *Astronautica Acta*, 4. "Nuclear Pumped Lasers: A Progress Report," *Physics in Technology*, London, England (March 1978).

"Coal Burning Technology," *Coal Burning Issues*. ed. A.E.S. Green, University of Florida Press, Gainesville, FL (1980).

"Nuclear-pumped CW Lasing of the 3He-Ne System," (with B.D. Carter and M.J. Rowe), *Applied Physic Letters*, 36, (January 15, 1980).

"Reply to "Comments on Nuclear-pumped CW Lasing of the 3He-Ne System," (with B. D. Carter and M. J. Rowe), *J. Appl. Phys.*, 52 (1 1), (November 1981).

"Neutron Emission from Cavitons in Deuterium," (with P. H. Handel), *Bull. Amer. Phys. Soc.*, 27, 496 (1982).

"Fusion Reactions in R. F. Plasma Cavitons," (with P. H. Handel), *Proc. of the 5th Topical Conference on R. F. Plasma Heating*, Madison, WI, Feb. 21-23, 1983, University of Wisconsin Press, pp 109-112.

"Mechanical Model of the Insect Eye," (with J. F. Long), *SPIE*, Vol.359, August 1982 "Pattern Recognition with Multiaperture Optics Systems," (with J. F. Long and M. F. Wehling), *SPIE*, Vol. 432, p.304 (1983).

"Fundamentals of Nuclear Radiation Sciences," (with John Cox), Chapter 1 in: *Calibration Handbook, Ionizing Radiation Measurement Instruments*, Edited by G. Lalos, Department of Defense, Joint Coordination Group for Metrology and Calibration, Government Printing Office,

1983. "Neutron Emission by Plasma Cavities," (with P. H. Handel), Fusion Technology, 7, pp. 320-324, (1985).

"Nature of Resonances Leading to High-Pressure Cavities," (with P. H. Handel), Fusion Technology, 7, pp. 320-324, (1985).

"Pattern Recognition Relevant to Multiaperture Optics," (with K. L. Meyers), SPIE, Vol. 697, pp. 316-326, 1986.

"Clinical Results of the Multifocal Lens," (with R. H. Keates and J. L. Pearce), Journal of Cataract and Refractive Surgery, Vol. 13, 1987.

"Absorption of 308nm excimer laser radiation by BBS, sodium hyaluronate and human cadaver eyes," (with R. H. Keates, Q. Ren, J. Sohl and J. J. Viscardi. Arch Ophthalmol 108 (11):1611-1613, 1990.

## **ARTICLES IN EUROPEAN SCIENTIFIC NOTES**

ESN is published by ONR, England. The articles are referred by two reviewers.

- "A Sensitive But Simple NO Detector," ESN 29, 3, 107 (1975)
- "Fast Voltmeter for High Voltages," ESN 29, 4, 106 (1975)
- "A Low Cost Braille Reader," ESN 29, 4, 178 (1975)
- "Plasma Dynamic Lasers," ESN 29, 4, 198 (1975)
- "Measurement of Uranium and Plutonium Oxide Vapor Pressure," ESN 29, 5, 232 (1975)
- "Transport and Storage of Energy," ESN 29, 6, 264 (1975)
- "Asterix HI-A High Power Iodine Laser," ESN 29, 6, 280 (1975)
- "Something Wrong with Nuclear Energy--European Impressions," ESN 29,7, 308 (1975)
- "Schloss Laxenburg--A Palace for Scientists," ESN 29, 7, 314 (1975)
- "The 'Kugelhaufenreactor'--A Unique HTGR," ESN 29,8, 350 (1975)
- "JET--The Joint European Torus," ESN 29, 9, 388 (1975)
- "Laser 75'--Electro-optics International Fair," ESN 29, 9, 407 (1975)
- "Uranium Plasmas and Isotope Separation," ESN 29, 10, 423 (1975)
- "Fusion 75'--Lausanne," ESN 29 10, 424 (1975)
- "The Frascati Torus," ESN 29, 11, 454 (1975)
- "Thermonuclear Fusion and the Innocent Babies," ESN 29, 11, 456 (1975)
- "Gas Cooled Reactors in Europe," ESN 29, 12, 522 (1975)
- "Britain's SGHWR," ESN 29,12,524 (1975)
- "The 26th International Astronautical Congress--Lisbon," ESN 30, 1, 48 (1976)
- "Some Observations on European Attitudes Towards Nuclear Energy," ESN 30, 3, 109 (1976)
- "TEXTOR"-A New Fusion Machine at the KFA," ESN 30, 11, 522 (1976)
- "Nuclear Pumped Lasers," ESN 32, 7, 237 (1978)
-

## **INVITED PAPERS**

"Spectroscopic Diagnostics of a Uranium Plasma," Seventeenth Symposium on Spectroscopy, Gainesville, Florida, (Jan. 8-10, 1969).

"Radiation Transfer Study on a Uranium Plasma," Fifth Annual Southeastern Seminar on Thermal Sciences, Gainesville, Florida, (April 21-22, 1969).

"Review of Uranium Plasma Research," Meeting of the NASA Research and Technology Advisory Subcommittee on Electrophysics, NASA Lewis Research Center, Cleveland, Ohio, (April 13-14, 1970). "Nuclear Pumped Lasers," 10th Anniversary Meeting of the Society of Engineering Science, Raleigh, N.C., (Nov. 5-7, 1973).

"Fissioning Plasmas and Nuclear Pumped Lasers," 25th Anniversary Meeting of the American Nuclear Society, Philadelphia, PA, (1975).

"Direct Conversion of Nuclear Energy into Laser Light," 1973 IEEE International Conference on Plasma Science, Austin Texas, (May 24-26, 1976). School, Monterey, CA, (April 6-8, 1976).

Measurement Methods for Fission Fragment-generated Plasmas," American Nuclear Society, 1977 Annual Meeting, New York, NY, (June 12-16, 1977).

Measurement Techniques for Plasmas Excited by Nuclear Radiation," Workshop on Nuclear Radiation Induced Plasmas and Direct Nuclear Pumped Lasers, Miami University, Oxford, OH, (Aug. 1- 12, 1977).

Measurement Techniques for Nuclear Excited Plasmas," First International Symposium on Fission Induced Plasmas and Nuclear Pumped Lasers, Paris, France, (May 23-25, 1978).

Radiation Induced Plasma Diagnostics," Workshops on Nuclear Radiation Induced Plasmas and Direct Nuclear Pumped Lasers, Miami University, Oxford, OH, (Aug. 1- 12, 1977).

"Nuclear Pumped Lasers," Annual Meeting of the American Physical Society, APS Bull., 24 1, 30 (Jan. 1979).

"Nuclear Pumped Lasers Utilizing Radiant Transfer," (with J. D. Cox) in Laser Interaction and Related Plasma Phenomena, 6, Edited by H. Hora and G.H. Miley, Plenum Publishing Corp. (1984).

"Nuclear Pumping of Lasers - Revisited," Lasers '87, Lake Tahoe, (December 7-11, 1987).

"Neutron Induced Non-Thermal Ionization for Nuclear MHD Power Generation," Seventh Symposium on Space Nuclear Power Systems, Albuquerque, New Mexico, Jan. 7-10, 1990.

## **INTERNATIONAL CONFERENCES**

"Some Methods of Short-time Spectroscopy Applicable to Plasmas of High Density Proc. Fifth Inter. Conf. on Ionization Phenomena in Gases, Munich, Germany, (1961).

"A Spectroscopic Method Allowing Spatial Resolution," Proc. Sixth Inter. Conf. on Ionization Phenomena in Gases, Paris, France, (July 1963).

"Operation and Diagnostics of a Closed Loop MHD Power Generator," Inter. Symposium on MHD Electrical Power Generation, Paris, France, (1964).

"Nonequilibrium Processes in Reacting Plasma Flow Across a Magnetic Field," (with H.E. Wilhelm), Inter. Symposium on MHD Electrical Power Generation, Paris, France, (1964).

"Spectroscopic Measurements in Direct Energy Conversion Devices," (with H. D. Wilsted and W. Woemer), 26. AGARD Combustion and Energetic Panel Meeting, Pisa, Italy, (September, 1965).

"Experimental Investigation of Closed Loop MPD Power Generation," (with H.E. Wilhelm), International Symposium on MHD Electrical Power Generation, Salzburg, Austria (1966).

"Photoelectric Detection of Extremely Weak Lines," (with S. Metz), XII Colloquium Spectroscopicum Internationale, Ottawa, Canada (June 19-23, 1967).

"Formation of Plasmoids in an Electrodeless R.F. Discharge," (with W.F. Fagen and D. E. Shumaker), International Conference on Gas Discharges, London, UK, (September 15-18, 1970).

"Plasma Diagnostics of a Uranium Plasma," (with C.D. Kylstra and H. D. Campbell), International Conference on Gas Discharges, London, UK (September 15-18, 1970).

"Absolute Intensity Measurements on a Uranium Arc in the Vacuum-ultraviolet Region," (with J.M. Mack, Jr. and H. D. Campbell), 25th Annual Gaseous Electronics Conference, London, Ontario, (October 17-20, 1972).

"Fission Fragment Produced Plasmas," (with R.A. Walters), 25th Annual Gaseous Electronics Conference, London, Ontario, (October 17-20, 1972).

"Spectroscopic Analysis of Plasmas Produced by Fission Fragments," (with R.A. Walters), International Conference on Nuclear Solutions to World Energy Problems, Washington, D.C., (Nov. 12-16, 1972).

"Fissioning Uranium Plasmas," (with K. Thom), Symposium on Applications of Nuclear Data in Science and Technology, International Atomic Energy Agency, Paris, France, (March 12-16, 1973).

"On the Feasibility of Nuclear Pumping of Gas Lasers," Laser Interactions and Related Plasma Phenomena, Third Workshop held at RPI, Troy, NY, (August 13-17, 1973).

"Physics and Potentials of Fissioning Plasmas for Space Power and Propulsion," (with K. Thom and F.Z. Schwenk), International Astronautical Federation, XXVth Congress, Amsterdam, (Sept. 30-Oct. 5, 1974).

"Experimental Measurement of the Thermodynamic Properties of Hot Highly Compressed Gases," (with G.T. Lalos and D.E. Sterritt), 4th International Conference on Chemical Thermodynamics, Montpellier, France (Aug. 26-30, 1975).

"Lasers from Fission (Gaseous Core Reactors and Nuclear Pumped Lasers for Space Power Generation and Transmission)," (with K. Thom and H.H. Helmick) Proceedings of the XXVI International Astronautical Congress, Lisbon, Spain 1975, Pergamon Press-Oxford and New York, (1976).

"Optical Radiation from a Fissioning Gas," (with G. Albrecht, E.E. Carroll, Jr. and R. N. Davie), 1976 IEEE International Conference on Plasma Science, (May 24-26, 1976).

"Development of an Experiment for the Generation of a Fissioning High Pressure Gas," (with D. E. Sterritt and G.T. Lalos), 1976 IEEE International Conference on Plasma Science, (May 24-26, 1976).

Gaseous-fuel Nuclear Reactor Research for Multimegawatt Power in Space," (with K. Thom and H.H. Helmick), XXVIII International Astronautical Congress, Prague CSR, (Sept. 25-Oct. 1, 1977).

"Spectroscopic Diagnostics of a Rocket Plume," (with W.J. Rothschild and J.W. Griffin), Sixth International Colloquium on Gas Dynamics of Explosions and Reactive Systems, Stockholm, Sweden, (Aug. 22-26, 1977).

Energy Storage by Flywheels, a New Flywheel Concept," (with E.H. Holtzclaw and J. Vance), Miami International Conference of Alternate Energy Sources, Miami Beach, Florida, (Dec. 5-7, 1977).

"The Gas Core Reactor Concept - An Alternative to Existing Reactor Concepts," (with B.G. Schnitzler), Miami International Conference on Alternative Energy Sources, Miami Beach, Florida, (Dec. 5-7, 1977).

CW-He-Ne Nuclear Pumped Lasers," (with B. D. Carter), First International Symposium on Fission Induced Plasmas and Nuclear Pumped Lasers, Orsay, France, (May 23-25, 1978).

"Electronic State Populations of (n,p) Excited He<sup>3</sup>," (with J.W. Griffin and L.D. Luker), 1978 IEEE International Conference on Plasma Science, Monterey, CA, (May 15-17, 1978).

"Nuclear Pumped Lasers," Second International Conference on Emerging Nuclear Energy Systems, Lausanne, Switzerland (April 8-11, 1980).

"Xe<sub>2</sub> Nuclear Pumped Flashlamp," (with R.W. Walters and J. D. Cox), 1980 IEEE International Conference on Plasma Science, (May 1980).

"Nuclear Pumped CO<sub>2</sub> Transfer Laser," (with M. J. Rowe and R.H. Liang), 1980 IEEE International Conference on Plasma Science, (May 1980).

"Nuclear Pumped CO<sub>2</sub>-laser," (with M.J. Rowe and R.H. Liang), 1981 IEEE International Conference on Plasma Science, Santa Fe, NM, (May 1981).

"Neutron and X-ray Emission from a High Frequency Discharge," (with M.J. Rowe and B. D. Carter), 1981 IEEE International Conference on Plasma Science, Santa Fe, NM, (May 1981).

"Lifetime, Collisional Formation and Quenching Parameter Measurements of XeF\* (B) by Direct Fission Fragment Excitation," (with L.E. Zapata and J. D. Cox), 1981 IEEE International Conference on Plasma Science, Santa Fe, NM, (May 1981).

"An Efficient Nuclear Excited Xenon Flashlamp," (with J. D. Cox and R.A. Walters), Conference Internationale 1982 de IEEE sur la Science des Plasmas, Ontario, Canada, (May 1982).

"Neutron Emission by Plasma Cavities," (with P.H. Handel), Conference Internationale 1982 de IEEE sur la Science des Plasmas, Ontario, Canada, (May 1982).

"Mechanical Model of the Insect Eye," (with J.F. Long), 26th International Technical Symposium and Instrument Display, San Diego, CA, (Aug., 1982).

"A Nuclear Pumped Liquid Neodymium Laser," (with J. D. Cox), Sixth International Workshop on Lasers Interaction and Related Phenomena, Monterey, CA, (Oct. 1982).

"Neutron Emission by Plasma Cavities," (with P.H. Handel), Proc. 1982 IEEE International Conf. on Plasma Science, Ottawa, May 17-19, 1982 (IEEE Catalog No. 82 CH 1770-7), p. 97.

"R.F. Plasma Resonance of Ions and Neutrals Leading to Cavitonic Fusion," (with P.H. Handel), Proc. 1984 IEEE International Conf on Plasma Science, St. Louis, MO, (May 14-16 (IEEE Publication No. 84Ch 1958-8, Library of Congress Catalog Card No. 81-644315), p. 61.

"Cavitonic Resonance Fusion," 1982 International Conf. on Plasma Physics, Lausanne, C.H. June 27-July 3, 1984.

"Pattern Recognition Relevant to Multiaperture Optics," (with K. Myers), SPIE, Vol. 697, pp. 316-326, 1986.

"Generation of X-rays and Neutrons by a Plasma Excited with a RF Discharge," (with P.H. Handel), 16th AINSE Plasma Physics Conf., (Feb. 9-11, 1987).

"A Camera Based on the Principles of the Insect Eye," (with Shih-Chao Lin), IEEE Southeast Conf., Tampa, Florida, (April 5-8, 1987).

"Simplified Pattern Recognition Based on Multiaperture Optics," (with Shih-Chao Lin), SPIE, 1987 Technical Symposium Southeast on Optics, Electro-Optics and Sensors, Orlando, Florida, (May 17-22, 1987).

"Improved Resolving Power for Non-Imaging Optical Element," (with E. E. Carroll, Jr. and Shih-Chao Lin), Annual Meeting of SPIE, San Diego, CA, (August 1987).

## **NATIONAL MEETINGS**

"The Image Converter as a Tool for Short-time Spectroscopy," Third Symposium on Engineering Aspects of Magnetohydrodynamics, Rochester, NY, (1962).

"A Spectroscopic Investigation of a Thermionic Converter," (with J. D. Dunlop), Thermionic Conversion Specialists Conference, Gatlinburg, TN (October 1963).

"Calculation and Measurement of the Radial Distribution Line Broadening in a Cesium Plasma," (with D.L. Tipton), Annual Meeting, Society for Applied Spectroscopy, San Diego, CA (Oct. 8, 1963).

"Plasma Diagnostics for Magnetohydrodynamic Power Generation," 1st Annual AIAA Meeting, Washington, D.C. (1964).

"Spectroscopic Investigations of Ionization Processes in a Cesium Thermionic Converter," (with J.D. Dunlop) 25th Annual Conference on Physical Electronics, Cambridge, MA (March 24-26, 1965).

"Results of a Closed Loop MHD Power Generation Experiment," AIAA Plasmadynamics Conference, Monterey, CA (1966).

"Computerized Line Identification," (with W.G. Wolfer), 18th Annual Mid-American Symposium on Spectroscopy, Chicago, IL (1967).

"Thermal Radiation of Thermionic Emitters," (with W.H. Bloss), Thermionic Conversion Specialist Conference, Palo Alto, CA (October 1967).

"Photoelectronic Restoring System for Images Degraded by Atmospheric Turbulence, Motion-degraded Images, NASA Electronic Research Center, Cambridge, MA (Dec. 2-5, 1968).

"Spectroscopic Measurements on a High Pressure Uranium Arc," (with G. R. Shipman and A. G. Randol III), 20th Annual Mid-American Symposium on Spectroscopy, Chicago, IL (May 12-15, 1969).

"Computerized Spectrum Analysis," (with C. D. Kylstra), 20th Annual Mid-American Symposium on Spectroscopy, Chicago, IL (May 12-15, 1969).

"Radiation from a Uranium Plasma," (with C. D. Kylstra, A. G. Randol III and M.J. Ohanian), American Nuclear Society 15th Annual Meeting, Seattle, WA (June 15-19, 1969).

"Temperature Measurements on a Uranium Plasma," (with G. R. Shipman and J. M. Mack, Jr.), 8th National Meeting, Society for Applied Spectrometry, Anaheim, CA (Oct. 6-10, 1969).

"Line Prediction of Highly Ionized Atoms," (with H. D. Campbell), 8th National Meeting, Society for Applied Spectroscopy, Anaheim, CA (Oct, 6-10, 1969).

"Experimental Determination of the Boiling Point of Uranium," (with A.G. Randol III and C.D. Kylstra), American Nuclear Society Winter Meeting, San Francisco, CA (Nov. 30-Dec. 5, 1969).

"Measurement of the Emission Coefficient of a Uranium Plasma," (with A.G. Randol III, C.D. Kylstra and M.J. Ohanian), American Nuclear Society Winter Meeting, San Francisco, CA (Nov.30-Dec.5, 1969).

"Uranium Plasma Research at the University of Florida," (with C.D. Kylstra and M.J. Ohanian), Sixth Intercenter and Contractors Conference on Plasma Physics, Langley Research Center, VA (Dec. 8-10, 1969).

"Properties of a Uranium Plasma," (with H. D. Campbell and C.D. Kylstra), 8th Aerospace Science Meeting, AIAA, NY (Jan. 9-27, 1970).

"Boiling Point of Uranium," (with A.G. Randol III and C.D. Kylstra), Symposium on Research on Uranium Plasmas and Their Technological Application, Gainesville, Florida, (Jan. 7-10, 1970). "Spectroscopic Study of a Uranium Arc Plasma," (with H. D. Campbell, C.D. Kylstra, and A.G. Randol III), Symposium on Research on Uranium Plasmas and Their Technological Application, Gainesville, Florida (Jan. 7-10, 1970).

"Enhancement of Laser Output by Nuclear Reactions," (with F. Allario, R.A. Lucht, and R. Hess), Symposium on Research on Uranium Plasmas and Their Technological Application, Gainesville, Florida (Jan. 7-10, 1970).

"Generation of a Fissioning Plasma," (with C.D. Kylstra), Symposium on Research on Uranium Plasmas and Their Technological Application, Gainesville, Florida (Jan. 7-10, 1970).

"Uranium Plasma Emission Coefficients," (with C.D. Kylstra and H. D. Campbell), AIAA 6th Propulsion Joint Specialist Conference, San Diego, CA (June 15-19, 1970).

"Generation of a Low-energy Positron Beam," (with G.H. Lohnert and W.M. Schikorr), American Nuclear Society 16th Annual Meeting, Los Angeles, CA (June 28 - July 2, 1970).

"Plasma Diagnostic Techniques Using a Beam of Slow Positrons," (with G.H.Lohnert and W.M Schikorr), 23rd Gaseous Electronics Conference, Hartford, CT (October 20-23, 1970).

"Nuclear Pumped Gas Lasers," (with K. Thom), AIAA 9th Aerospace Science Meeting, NY, (Jan. 25-27, 1971).

"A New Gas Scintillation Detector for Fast Reactors," (with J. A. Handschuh, R.A. Walters, and E. E. Carroll, Jr.), IEEE, Nuclear Science Symposium, Miami, FL (Dec. 6-8, 1972).

"Recent Experimental Results Concerning Nuclear Pumped Gas Lasers," (with R.A. Walters and R. R. Paternoster), SPIE 17th Annual Meeting and Display, San Diego, CA (Aug. 27-29, 1973).

"Application of Gas Core Reactors for Transmutation of Nuclear Waste," (with B.G. Schnitzler), Third Symposium on Uranium Plasmas, Princeton University, Princeton, NJ (June 10-12, 1976).

"Energy Flow in Argon and Argon-N<sub>2</sub> Mixtures Excited by Fission Fragments," (with J.F. Davis, III and R. N. Davie), Third Symposium on Uranium Plasmas, Princeton University, Princeton, NJ, (June 20-23, 1976). "Thermodynamic Properties and Nucleonics of High Pressure Subcritical UF<sub>6</sub>-He Gas Volume Irradiated by an External Source," (with D. E. Stenitt and G.T. Lalos), Third Symposium on Uranium Plasmas, Princeton University, Princeton, NJ (June 10-12, 1976).

"Nuclear Pumped Gas Lasers, Third Symposium on Uranium Plasmas, Princeton University, Princeton, NJ (June 10-12, 1976).

"A Spectroscopic Study of a Fissioning Gas," (with R. N. Davie, G. Albrecht, and E. E. Carroll, Jr.) Third Symposium on Uranium Plasmas, Princeton University, Princeton, NJ (June 10-12, 1976). "Nuclear Pumped He-Ne Laser," Optical Society of America, Fall Meeting, Florida Section, Coral Gables, FL (Nov. 4-5, 1977).

"Flexible Flywheel Concept," (with E.H. Holtzclaw and J. Vance), 1977 Flywheel Technology Symposium, San Francisco, CA (Oct. 5-7, 1977).

"Parametric Study of Reactor Configurations Exhibiting Minimal Transuranic Isotope Production," (with B.G. Schnitzler), American Nuclear Society 1977 Winter Meeting, San Francisco, CA (Nov. 27 - Dec. 2, 1977).

"Effects of UF<sub>6</sub> on N<sub>2</sub> and Argon Excited States Lifetimes," (with E. E. Carroll, Jr. and T.C. Maguire), American Nuclear Society 1977 Winter Meeting, San Francisco, CA (Nov. 27 - Dec. 2, 1977).

"Spectroscopic Temperature Measurements of an Afterburning Rocket Plume," (with W.J. Rothschild, B.G. Schnitzler, and J.W. Griffin), AIAA Annual Meeting, New Orleans, LA (Jan. 1979).

"Nuclear Pumped Laser Reactors," (with R.A. Walters, R. S. Borland, M.J. Rowe, B. D. Carter, C. Seeger, R. Hansen, J. D. Cox, J. Hagefstration, and N. A. Slater), American Nuclear Society Annual Meeting, Atlanta, GA (June 3-7, 1979).

"University of Florida Nuclear Pumped Laser Program," Nuclear Pumped Laser Workshop, NASA Langley Research Center, Hampton, VA (July 1979).

Walters and J.D. Cox), 1981 Annual Meeting of the Optical Society of America, Kissimmee, FL (October 1981).

"A Mechanical Model of the Insect Eye," (with E. E. Carroll, Jr., G.R. Dalton, and J.F. Long), Southeastcon 82, Fort Walton Beach, FL (April 5-7, 1982).

"Signal Processing in the Insect Eye," (with J.F. Butler, R.C. Wilkerson, and J.F. Long), Southeastcon 82, Fort Walton Beach, FL (April 5-7, 1982).

"Generation and Identification of Highly Excited Uranium Ions in a DC Arc," (with T.E. Roxey), Annual Meeting of the Optical Society of America, Tucson, AZ (1982).

"A Camera Based on the Principles of the Insect Eye," (with Shih-Chao Lin), Southeastcon 87, IEEE, (April 5-8, 1987).

## **REPORTS**

"Investigation of the Monocapillary Thermionic Emitter as a Dual Source of Ions and Electrons," (with D.L. Dresser and J.D. Dunlop), Fifth Quarterly Technical Progress Report, Allison Division, General Motors Corp., EDR 3390, February 15 - May 15, 1963.

"Measurement of Fluid Properties for Magnetoplasmdynamic Power Generators," (with H.E. Wilhelm and D.L. Tipton), First Quarterly Technical Summary Report, May 1 - July 31, 1963, Allison Division General Motors Corp., EDR 351 1.

Second Quarterly Summary Report, August 1 - October 31, 1963, EDR 3632.

Third Quarterly Summary Report, November 1, 1963 - January 31, 1964.

Fourth Quarterly Summary Report, February I - April 30, 1964. EDR 386 1.

N65-10876, Contract Nonr 4104(00) ARPA Order 420, Rpt. 4037 AD 608638, "Measurement of Fluid Properties for Magnetoplasmdynamic Power Generators," Sixth Quarterly Technical Summary Report, May I - July 31, 1964, General Motors Corporation, Indianapolis, IN.

N65-16899, Contract Nonr 4104(00) ARPA Order 420, Rpt. 4037 AD 608638, "Measurement of Fluid Properties for Magnetoplasmdynamic Power Generators," Sixth Quarterly Technical Summary Report, August I-October 31, 1964, General Motors Corporation, Indianapolis, IN.

N66-15436, Contract Nonr 4104(00) ARPA Order 420, EDR 4400 AD 623096, "Measurement of Fluid Properties for Magnetoplasmdynamic Power Generators," Ninth Quarterly Technical Summary Report, May I - August 31, 1965, (with H.E. Wilhelm), General Motors Corporation, Indianapolis, IN.

N66-3546 1, Contract Nonr 4104(00) ARPA Order 420, EDR 4637, AD 635459, "Research on Plasma Properties of Magnetoplasmdynamic Power Generators," Final Technical Report, May 1, 1963 - April 30, 1966, (with T.L. Rosebrock, Robert L. Koch, D.L. Tipton, R.W. Whitaker, et. al.), General Motors Corporation, Indianapolis, IN.

N66-16923, Contract NASA-922, NASA-CR 382, "A Spectroscopic Method of Temperature Measurement Which Does Not Require Transition Probabilities," (with N. W. Woemer and H.E. Wilhelm), General Motors Corporation, Indianapolis, IN.

N65-23211 Contract NASA-922, NASA-CR-62588, "Spectroscopic Investigations of Plasma Properties," Quarterly Summary Report No. 2, August 1 1 - November 10, 1964, (with F.G. Myers), General Motors Corporation, Indianapolis, IN.

N66-17896, Contract NASA-922, NASA-CR-397, "Photoelectric Detection of Weak Spectrum Lines," (with R.O. Whitaker), General Motors Corporation, Indianapolis, IN.

"Monogram for Saha's Equation," (with W.G. Wolfer), U.S. Government and Dev. Reports AD 647747 (1967).

"First Annual Report on Energy Conversion Plasma Research," Office of Naval Research (with W.F. Fagen, W.H. Bloss, and S. Metz) August 31, 1967.

"Second Annual Report on Plasma Diagnostics on Non-equilibrium Plasma," Office of Naval Research (with W.H. Bloss, W.F. Fagen and S. Metz), November 1968.

"Semi-annual Report on Investigation of Spectra in the Vacuum U.V. and Soft X-ray Region, NASA, March 1968.

First Semi-annual Report on Investigation of Material Release and Electric Current Emission from Electrodes, Particularly in High Vacuum, NASA, (with T. B. McCall, III), 1967.

Final Report on Electrode Material Release During High Voltage Breakdown, NASA (with T.B. McCall and G.H. Lohnert) January 1969.

Annual Report on Experimental Investigations of a Uranium Plasma Pertinent to a Self-sustaining Plasma Source, NASA, (with H. D. Campbell and C.D. Kylstra) May 1970.

Final Technical Report, Office of Naval Research, Part I, "Development of Plasma Diagnostic Techniques Applicable to Direct Energy Conversion," January 1970.

Final Technical Report, Office of Naval Research, Part II, "On Annihilation and Other Interactions of Positrons in a Plasma," (with W.G. Wolfer) January 1970.

Final Technical Report, Office of Naval Research, Part III, "Experimental Investigations on Positron Annihilation in a Plasma," (with G.H. Lohnert) January 1970.

Final Technical Report, Office of Naval Research, Part IV, "Design of Plasma Cavity Resonator," (with J.M. Roll and W.F. Fagen) January 1970.

Special Report, NASA Grant NGL 10-005-089, "The Emission Coefficient of Uranium Plasmas," (with H. D. Campbell and J.M. Mack, Jr.), January 1973.

Special Report, NASA Grant NGL 10-005-089, "Results of an Experimental Investigation on Direct Nuclear Pumping of Gas Lasers by Fission Fragments," January 1973.

Special Report, NASA Grant NGL 10-005-089, "Thermodynamic Properties of UF<sub>6</sub> Measured with a Ballistic Piston Compressor," March 1973.

"The Nuclear Reactor Systems of Europe," R-19-75 ONR Branch Office, Box 39, FPO NY 09510. Distribution limited to U.S. Government Agencies only.

"The German University System," R-18-75 ONR Branch Office, Box 39, FPO, NY 09510.

"JET-The Joint European Torus," r-20-75 ONR Branch Office, Box 39, FPO, NY 09510.

"Closed Cycle Gas Turbine Systems in Europe," (with S. Kno), R-3-77 ONR Branch Office, London, Box 39, FPO, NY 09510.

"UV Diagnostics of Charged Particles Excited Gases," (with R.A. Walters and J. D. Cox), Final Report, Army Contract DASG60-78-CO045, May 1979.

"Basic Research Relevant to CW-Nuclear Pumped Lasers," Final Report NASA, Grants NGL 10-005-089 and NSG 7299, June 1979.

"Generation and Identification of UHI Lines," (with B. D. Carter and T.E. Roxey), Annual Report, DOE Contract DE-A505-80ET33066. March 1980.

"Investigations Concerning Multiaperture Optics," Final Report on IPA Assignment to Eglin AFB, Air Force Office of Scientific Research, December 1983.

"Feasibility Study for Multiaperture Optical (MAO) Systems Based on the Apposition Principle, U.S. Army Research Office, DAAG29-85-K-0087, Final Report, December 1986.

Final Technical Report on "Multiaperture Optics," Air Force Office of Scientific Research, AFOSR-84-0304, Sept. 15, 1984 - January 14, 1986.

Final Report on "Multiaperture Optical System Research," Office of Naval Research, Contract No. N00014-85-C-0862, November 6, 1987.

Final Report on "Nuclear Driven MHD Power Generation," Department of the Air Force, Air Force Systems Command Aeronautical Systems Div., Wright-Patterson AFB, OH, Contract No. F33615-89-C-2968, March 1990.