

# Curriculum Vitae

**Ronald J. Parise, Ph.D., P.E.**

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## PROFESSIONAL INTERESTS

Research and development in the thermal sciences and energy systems including energy conservation; developing clean, renewable, inexpensive, alternate energy sources; and fundamental research in thermo-fluid systems. This is fully committed to the MISSION of PARISE RESEARCH TECHNOLOGIES, providing to the industrial, manufacturing and research communities the highest quality technical assistance, fundamental research, engineering development, and problem solving. This includes creative and innovative design ideas in manufacturing techniques and product development, with the stated goal of reducing energy consumption and increasing system operating efficiency, while improving the environment when appropriate.

## EDUCATION

GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, Georgia

Ph.D. in Mechanical Engineering. Field of expertise: thermal sciences; minors: mathematics and computer engineering, 1989.

UNIVERSITY OF PENNSYLVANIA, Philadelphia, Pennsylvania

Master of Science in Mechanical Engineering and Applied Mechanics, 1980.

GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, Georgia

Bachelor of Mechanical Engineering, 1972.

## PROFESSIONAL LICENSE

Registered Professional Engineer since 1977.

## TEACHING EXPERIENCE

WESTERN NEW ENGLAND COLLEGE, Springfield, Massachusetts

1990 to 1991      ADJUNCT PROFESSOR: Taught undergraduate classical thermodynamics and heat transfer, including course lectures, quizzes, homework assignments, special projects and final exams.

GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, Georgia

1984 to 1986      INSTRUCTOR: Taught undergraduate classical thermodynamics, heat transfer, and fluid dynamics, including daily lectures, quizzes, homework assignments and final exams.

UNIVERSITY OF PENNSYLVANIA, Philadelphia, Pennsylvania

1979 to 1980      TEACHING ASSISTANT: Taught physics laboratory, which required a one-hour lecture on the theory behind the laboratory exercises, plus overseeing the actual laboratory experiments. Assisted professor with undergraduate courses in fluid mechanics and turbomachinery, which included problem sessions, grading homeworks and examinations, and delivering the course lecture when the professor was unavailable.

## FUNDED RESEARCH

Black, W.Z. and Parise, R.J., *Heat Transfer During Manufacture of Fiber Optic Materials*, research supported by GTE Laboratories, Waltham, Massachusetts, 1985-86. \$32,107

Black, W.Z., Parise, R.J. and Marcille, D., *Heat Transfer During Manufacture of Fiber Optic Materials*, research supported by GTE Laboratories, Waltham, Massachusetts, 1984-85. \$67,583

Black, W.Z. and Parise, R.J., *Heat Transfer Problems in the Manufacture of Fiber Optic Materials*, research supported by GTE Laboratories, Waltham, Massachusetts, 1983-84. \$25,000

## PUBLICATIONS AND REPORTS

Parise, R.J., "Exact Solution to the Equation of Radiative Transfer in the Radial Direction for Cylindrical and Annular Media with Energy Input at the Boundaries," to be submitted October 2005.

Parise, R.J. and Jones, G.F., 2004, "Range Security Sensors Powered Locally with the Nighttime Solar Cell™", *Proceedings*, Conference on Sustainable Range Management, January 5-8, 2004, New Orleans, LA, Sponsored by Battelle.

Parise, R.J. and Jones, G.F., 2003, "Cold Junction Plate Optimization for the Nighttime Solar Cell™", *Proc. IECEC03*, Portsmouth, VA, August 17-21, 2003, sponsored by AIAA, Paper No. AIAA-2003-6113.

Parise, R.J., 2002, "Offset Global Warming with the Earth Cooler™", *Proc. IECEC02*, Washington, DC, Paper No. IECEC 2002-20097.

Parise, R.J. and Jones, G.F., 2001, "Nighttime and Daytime Electrical Energy Production from the Nighttime Solar Cell™", *Proc. IECEC01*, Savannah, GA, July 24-27, 2001.

Parise, R.J., 2001, "Wireless Power Transmission: the Future to All-Electric Transportation", *Proc. IECEC01*, Savannah, GA, July 29 - August 2, 2001.

Parise, R.J. and Jones, G.F., 2001, "Internal Thermal Management for Electrochemical Batteries", ASME Proceedings of NHTC'01, 35th National Heat Transfer Conference, June 10-12, 2001, Anaheim, CA, Paper No. NHTC2001-20244.

Parise, R.J., 2000, "All Electric Transportation for the Millennium - Mobile Vehicle Recharge," SAE 2000 World Congress, Detroit, Michigan, March 2000, SAE Paper No. 2000-01-1058.

Parise, R.J., 2000, "Future all-electric transportation communication and recharging via wireless power beam," PHOTONICS EAST, November 2000, Boston, MA, SPIE Paper No. 4214-22.

Parise, R.J. and Jones, G.F., 2000, "Energy from Deep Space - The Nighttime Solar Cell™" Electrical Energy Production, *Proc. IECEC00*, Las Vegas, Nevada, Paper No. AIAA-2000-2822.

Parise, R.J., Jones, G.F. and Strayer, B., 1999, "Prototype Nighttime Solar Cell™, Electrical Energy Production from the Night Sky", *Proc. IECEC99*, Vancouver, British Columbia, Canada, Paper No. 1999-01-2566.

Parise, Ronald J., 1998, "Nighttime Solar Cell™", *Proc. IECEC98*, Colorado Springs, CO, 1998, Paper No. IECEC-98-134.

Parise, Ronald J., 1998, "CATALYTIC CONVERTER with Thermoelectric Generator", *Proc. IECEC98*, Colorado Springs, CO, 1998, Paper No. IECEC-98-133.

Parise, R.J., 1998, "Vehicle Remote Charge - All Electric Transportation System," *Proc. IECEC98*, Colorado Springs, CO, Paper No. IECEC-98-135.

## PUBLICATIONS AND REPORTS (Continued)

Parise, R.J., 1998, "Quick Charge Battery", *Proc. IECEC98*, Colorado Springs, CO, 1998, Paper No. IECEC-98-I-136.

Parise, R.J., 1997, "Advanced Catalytic Converter," TECHNOLOGY 2007, Environmental Technologies I, September 22-24, 1997, Boston, MA, Sponsored by NASA and NASA Tech Briefs.

Parise, R.J., 1997, "Optical Fiber Manufacture," TECHNOLOGY 2007, Advanced Manufacturing and Materials IV, September 22-24, 1997, Boston, MA, Sponsored by NASA and NASA Tech Briefs; Host: Center for Technology Commercialization.

Parise, R.J., 1997, "Vehicle Remote Charge," TECHNOLOGY 2007, Poster Session P18, September 22-24, 1997, Boston, MA, Sponsored by NASA and NASA Tech Briefs; Host: Center for Technology Commercialization.

Parise, R.J., 1997, "Quick Charge Battery," TECHNOLOGY 2007, Poster Session P18, September 22-24, 1997, Boston, MA, Sponsored by NASA and NASA Tech Briefs; Host: Center for Technology Commercialization.

Parise, R.J., 1997, "Nighttime Solar Cell<sup>TM</sup> Energy," TECHNOLOGY 2007, Poster Session P19, September 22-24, 1997, Boston, MA, Sponsored by NASA and NASA Tech Briefs; Host: Center for Technology Commercialization.

Parise, Ronald J., *A Heat Transfer and Fluid Flow Model for the Drawing of Optical Fibers*. Ph.D. Thesis, Georgia Institute of Technology, Atlanta, GA, January 1989.

Black, W.Z. and Parise, R.J., Quarterly Progress Report, *Heat Transfer During Manufacture of Fiber Optic Materials*, August 1984-October 1984; November 1984-January 1985; January 1985-March 1985; April 1985-June 1985; August 1985-October 1985. Reports submitted to GTE Laboratories, Waltham, Massachusetts.

Parise, Ronald J., *A Thermal Model for the Drawing of Optical Fibers*, Research Report, GTE Laboratories, Waltham, Massachusetts, 1984.

## ISSUED PATENTS

The following eleven patents have been issued by the US Patent and Trademark office to the sole inventor:

### 1. QUICK CHARGE BATTERY WITH THERMAL MANAGEMENT:

Patent numbers: 5,871,859; 6,057,050; and 6,653,002.

These patents provide for the internal cooling of batteries and fuel cells. This increases longevity and improves performance, efficiency of operation and safety of use and operation.

### 2. APPARATUS FOR MAKING A MULTI-PORION MIXING ELEMENT:

Patent number: 5,891,487.

This manufacturing hardware is used to produce multi-diameter polymer extrusions with or without concentric rotations of varying angles. The hardware was designed in the development of mixing elements used for better blending of epoxies and other dual component or multi-component resins.

### 3. METHOD OF MAKING A MULTI-PORION MIXING ELEMENT:

Patent number: 6,365,080.

This manufacturing technique is used to produce multi-diameter polymer extrusions with or without concentric rotations of varying angles. The method was developed for making mixing elements used for better blending of epoxies and other dual-component or multi-component resins utilized in domestic, commercial, industrial and medical applications.

## ISSUED PATENTS (Continued)

### 4. NIGHTTIME SOLAR CELL™:

Patent numbers: 5,936,193 and 6,162,985.

These patents provide a new source of clean, silent, safe, renewable energy day and night. The Nighttime Solar Cell™ operates as passively as a photovoltaic cell, but produces electric power at night as well.

### 5. THERMOELECTRIC CATALYTIC POWER GENERATOR WITH PREHEAT:

Patent number: 5,968,456.

This patent will increase automobile mileage, resulting in less fuel consumption and less pollution.

### 6. REMOTE CHARGING SYSTEM FOR A VEHICLE:

Patent numbers: 5,982,139; 6,114,834; and 6,792,259.

These patents will result in a whole new concept for public and private transportation that is pollution-free, has the same mobility and power of today's cars and trucks, and relies only on a renewable energy source. The patents also provide a wireless power source for all electronic devices and electric power consuming equipment and hardware for use in medical, industrial and domestic applications.

## TRADEMARKS

The following trademarks have been submitted to and allowed by the US Patent and Trademark Office:

### **Nighttime Solar Cell™**

This trademark has been allowed for the patented device that produces electric power at night.

### **Earth Cooler™**

This trademark has been allowed for a patent pending device that combats the effects of global warming.

## WORK EXPERIENCE

### PARISE RESEARCH TECHNOLOGIES, Suffield, Connecticut

1994 to Present      **PRESIDENT and OWNER:** Independent researcher studying thermodynamic systems and developing ways to conserve energy through First and Second Law Analyses. Has invented several energy conservation devices, developed an alternate source of usable energy, and received eleven patents toward this effort through 2005. Leading an ongoing research program to develop thermal models that better describe the utilization of these devices and provide a more thorough understanding of the physics that drives these systems. This research program includes the development of alternate energy sources utilizing direct energy conversion devices.

### EAST GRANBY MACHINE CO., INC., East Granby, Connecticut

1989 to 1994      **VICE PRESIDENT AND GENERAL MANAGER:** Responsible for overall company operations including research, product development, manufacturing, maintenance, engineering, and quality assurance. Implemented TQM (Total Quality Management) and SPC (Statistical Process Control) programs to improve manufacturing quality and efficiency. Reduced manufacturing costs 21%. Established manufacturing procedures in the Quality Assurance Manual to conform with ISO 9000 standards. Worked directly with customers in product development, improving performance and reducing manufacturing costs.

Projects included:

- Redesigned customer heat shield, improving heat transfer capability 15% and reducing manufacturing cost 40%;

WORK EXPERIENCE: East Granby Machine (Continued)

- Developed high wear-resistant friction roller, increasing customer production 100%;
- Redesigned customer high temperature production mold, decreasing product cure time 10% and increasing mold life significantly.

INDEPENDENT RESEARCH: Obtained the exact solution of the equation of radiative transfer for axial heat flow in a one-dimensional, non-scattering, isothermal, cylindrical medium. This solution will now be verified by calculating the net radiative heat flux in an isothermal medium and comparing with solutions in the literature.

GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, Georgia

1982 to 1989 RESEARCH ASSISTANT: Carried out fundamental, independent research, both analytical and numerical, in the thermal sciences. Developed models for solving the energy and momentum equations for solid and fluid materials.

Performed high temperature heat transfer analysis, including solutions of the radiative transfer equation for absorbing, emitting media. Obtained the exact solution of the equation of radiative transfer for one-dimensional, non-scattering, isothermal media. Obtained the general solution of the equation of radiative transfer for both one-dimensional and two-dimensional, non-scattering, non-isothermal media.

Problems included the spinning of polymers at medium temperatures; heat transfer in high temperature, semi-transparent, participating media; and the drawing of fused silica optical waveguides at high temperatures.

Conducted experiments to determine the thermal conductivity of insulating materials in conformance with ASTM C-177-71 on equipment developed in the Georgia Tech Heat Transfer Laboratory.

1985 to 1987 RESIDENT MANAGER: Liaison between residents and Family Housing administration. Responsibilities included resident check-ins and check-outs; new resident orientation, especially acclimating international students to local customs and the geographical area; monitoring building maintenance and implementation of safety and health programs; encouraging an atmosphere conducive to academic and family pursuits; coordinating children's programs and social activities for Family Housing residents.

SYNTEX RUBBER CO., Bridgeport, Connecticut

1979 to 1981 CHIEF ENGINEER/CONSULTANT: Responsible for the design, implementation and performance of all engineering projects in the plant.

Projects included:

- 2200 psi high efficiency hydraulic pump installation; 13% energy savings
- automatic warning system for under cure of transfer molding process; 18% scrap reduction
- design and development of an HV AC heat recovery and environmental control system; \$7,000 annual savings

STAUFFER CHEMICAL CO., SPECIALTY CHEMICAL DIVISION, Gallipolis Ferry, West Virginia

1976 to 1978 ENGINEERING SUPERINTENDENT: Responsible for originating, planning, organizing, and ensuring performance of plant mechanical, civil, instrumentation and electrical engineering services for capital projects. Supervision of five project engineers plus drafting supervisor with eight draftpersons. Annual capital project budget \$10MM

**WORK EXPERIENCE: Stauffer Chemical Company (Continued)**

Projects included:

- 1MM gallon fuel oil storage facility
- 80M gallon LP gas storage facility
- 100M #/hr steam generator plant
- \$2.4MM HCL recovery plant

1974 to  
1976

**DESIGN/PROJECT ENGINEER:** Responsible for process and utility plant design, lay-out, estimating, equipment specifications, construction, and start-up. Formulation of appropriation request to top management for funding of capital projects. Provided engineering support to plant maintenance group in trouble-shooting.

Projects included:

- 1MM gpd water softening plant
- 40 ton bulk salt storage/brine system
- 1500 gpm standby fire pump installation with underground mains
- conversion of 4 hot vapor systems (Dowtherm A) to multifuel capability
- design of 4 control loops in tricresylphosphate plant

1974 to  
1978

**PLANT ENERGY CONSERVATION COORDINATOR:** Responsible for plant meeting corporate energy conservation goals and filing government (FEA) reports. This required initiation, design, and installation of plant energy conservation projects which resulted in a 16% reduction of energy usage at the plant.

Projects included:

- instrumentation monitoring energy usage in plant zones
- revised production scheduling for better equipment utilization
- automatic trim of air/fuel ratio controller on the plant boiler
- preventive maintenance program for steam traps, steam leaks, damaged and missing insulation
- plant lighting survey and update
- rewriting equipment specification standards to include energy conservation

**SYNTEX RUBBER CO., Bridgeport, Connecticut**

1973 to  
1974

**DESIGN/PROJECT ENGINEER:** Designed transfer production molds; provided engineering support for maintenance; designed and installed new in-plant equipment.

Projects included:

- automated curing and degassing operation of transfer molding process; 20% production increase
- developed water conservation program, eliminating once-through use of water; \$4,300 annual savings
- developed die and punch press operation of standard parts to meet individual customer specifications; 14% production increase

**COMMUNITY SERVICE**

1992 to  
1993

**CO-CHAIR:** Town of Suffield Charter Revision Commission, Suffield, Connecticut.

1991 to  
1996

**VOLUNTEER:** Children's Sports Programs, Parks and Recreation Department, Suffield, Connecticut.