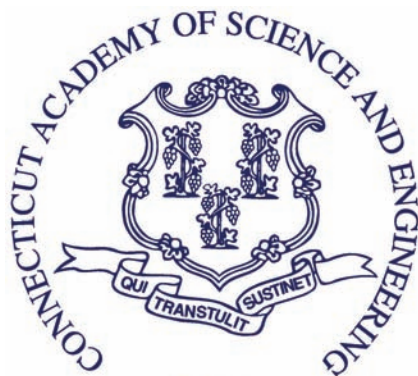


# CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING



1976

ANNUAL REPORT  
2004-2005

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## CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING

*The Connecticut Academy is a non-profit institution patterned after the National Academy of Sciences to identify and study issues and technological advancements that are or should be of concern to the state of Connecticut. It was founded in 1976 by a Special Act of the Connecticut General Assembly.*

### VISION

*The Connecticut Academy will foster an environment in Connecticut where scientific and technological creativity can thrive and contribute to Connecticut becoming a leading place in the country to live, work and produce for all its citizens, who will continue to enjoy economic well being and a high quality of life.*

### MISSION STATEMENT

*The Connecticut Academy will provide expert guidance on science and technology to the people and to the state of Connecticut, and promote the application of science and technology to human welfare and economic well being.*

### GOALS

- *To provide information and advice on science and technology to the government, industry and people of Connecticut.*
- *To initiate activities that foster science and engineering education of the highest quality, and promote interest in science and engineering on the part of the public, especially young people.*
- *To provide opportunities for both specialized and inter-disciplinary discourse among its own members, members of the broader technical community, and the community at large.*

**CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING**  
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I am again pleased to report that the Connecticut Academy of Science and Engineering has completed another successful year. As you will read in the report that follows, we continued to broaden our scope of impact and add to our fiscal strength—all during a period of governmental transition. We are most pleased with the growing strength of the Academy's numerous collaboratives focused on issues of importance to Connecticut.

In the Academy's mandated charter to advise the government relative to science and technology, we witnessed growth of our government agency client base and scope of efforts. In the past year, we undertook studies on behalf of the Connecticut Energy Advisory Board, the Connecticut Department of Economic and Community Development, the Connecticut Department of Public Health, and the Connecticut Department of Transportation. We are also most pleased that we were able to help reconstitute the annual awarding of the Connecticut Medals of Science and Technology. After a nine-year drought, the 2004 Medal of Technology was awarded to our former president, Dr. Anthony J. DeMaria for his breakthrough contributions to the field of optoelectronics. At the close of the fiscal year, we were involved in the process of identifying the winner of the Connecticut Medal of Science to be awarded in fiscal year 2006. The two medals will be awarded in alternate years for the foreseeable future.

I want to give special attention to those that are an integral part of the Academy's efforts to inform the public on matters of science and technology through contributions to the publication of the Academy's *Bulletin of Science and Engineering*. This quarterly publication consistently receives high praise from its readership for its breadth and quality of coverage. It is the product of many dedicated hands and heads, including the executive editors, George Foyt and Edward C. Monahan, our longtime excellent managing editor, Martha Sherman, a host of excellent writers and our executive director, Rick Strauss.

The Academy's programs to encourage and recognize youths relative to science and engineering continue to provide encouragement. I can only hope that you were able to witness this firsthand through attendance at this year's exciting, energetic and record-setting Annual Meeting of the Academy. The investigations and inventions presented by middle and high school youths and the student awards programs set a high water mark for Connecticut's youth. We consistently receive high compliments from members, patrons, VIPs, youths and parents in attendance for creating this high profile

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celebratory venue. We continue to work with state agencies, corporations and youth program groups to strengthen and expand our programs that bring technical professionals and underserved youths together to promote interest in science and technology.

Overall, the Academy can be pleased with and proud of its progress. Our financial house continues in relatively good order, our membership is full and active, and our members' contributions to our youth awards programs continue to grow. We are most thankful to the many individuals and organizations for helping us in our achievements. As always, we give special thanks to those we serve and those that help us serve – our members, patrons, clients and colleagues.

A handwritten signature in black ink, appearing to read "Mike Werle". The signature is written in a cursive, flowing style.

Michael J. Werle  
President  
July 1, 2005

The property, affairs and activities of the Academy are managed by a Council of 11 Members, which serves also as the Board of Directors of the Corporation. In addition, the chairs of the ten Technical Boards serve as *ex officio*, non-voting members of the Council. The Council meets quarterly. There are three Standing Committees of the Academy: Finance, Membership and Nominating.

The members of the Council and chairs of the Standing Committees for the 2005 fiscal year were as follows:

### **Council of the Academy**

#### **Officers:**

President – Michael J. Werle, TEaMS, Inc.  
 Vice-President/President Elect – Alan C. Eckbreth, Consultant & United Technologies Research Center (ret.)  
 Treasurer – Peter G. Cable, BBN Technologies  
 Secretary – Gale F. Hoffnagle, TRC Environmental Corporation, Inc.  
 Past President – John P. Cagnetta, Northeast Utilities (ret.)

#### **Councilors:**

Myron Genel, Yale University School of Medicine  
 James C. Hogan, Jr., Connecticut Department of Public Health  
 Peter B. Luh, University of Connecticut  
 Louis A. Magnarelli, The Connecticut Agricultural Experiment Station  
 Sandra K. Weller, University of Connecticut Health Center  
 Gary W. Yohe, Wesleyan University

#### **Chairmen of the Technical Boards:**

(See pages 4-5 for a listing of the chairs.)

#### **Council Advisors:**

Anthony J. DeMaria, Coherent\*DEOS LLC  
 J. E. Goldman, GB Energy Systems, Inc.  
 Harvey S. Sadow, Boehringer Ingelheim Corp. (ret.)

### **Chairmen of the Standing Committees**

#### **Finance:**

Peter G. Cable, BBN Technologies

#### **Membership:**

James C. Hogan, Jr., Connecticut Department of Public Health

#### **Nominating:**

Myron Genel, Yale University School of Medicine

## TECHNICAL BOARDS

The Members of the Academy are divided into ten Technical Boards (TBs) that represent both their technical and public policy interests.

The TB responsibilities in their designated policy areas include: serving as a forum for examining science-based issues; providing the resources for assembling and overseeing *ad hoc* committees to respond to inquiries placed with the Academy; and generating guidance in instances where science and technology are expected to offer new opportunities or challenges for the development of sound state policy. In each of the above, the TBs may encourage the participation of expert non-members.

The Chairs and mission statements of the TBs for the 2005 fiscal year were:

### **AGRICULTURE, FOOD AND NUTRITION:**

Louis A. Magnarelli, The Connecticut Agricultural Experiment Station  
The production, distribution, safety, and nutrition of food, including development of biotechnology to improve the quality of food and the environment.

### **COMMUNICATION AND INFORMATION SYSTEMS:**

Richard C. Barker, Yale University

All means of communicating voice, data, and other combinations of business and personal information, including the development of new hardware and software technologies, with special attention to complementarity and interchangeability with transportation systems.

### **ECONOMIC DEVELOPMENT:**

Earl R. Thompson, United Technologies Research Center (ret.)

Economic opportunities afforded by Connecticut's technological base and its human and natural resources, with a special role in assessing the potential economic impact of new technologies.

### **ENERGY PRODUCTION, USE AND CONSERVATION:**

Lee S. Langston, University of Connecticut

The production, use, conservation and distribution of energy with special attention to meeting future demand and environmental quality standards.

### **ENVIRONMENT:**

William M. Carey, Boston University

The physics, chemistry, geology, biology, ecology and engineering of the environment as these relate to issues of economic development, energy use, transportation, public health and the quality and utilization of Connecticut's atmosphere, land, water and sea natural resources.

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**HEALTH CARE AND MEDICAL TECHNOLOGY:**

Gualberto Ruano, GENOMAS, Inc.

The delivery, quality and cost of medical care and related problems, including preventative health care and the development of biotechnology for improving human health.

**HUMAN RESOURCES:**

Alan C. Eckbreth, Consultant & United Technologies Research Center (ret.)

The effective utilization of people in ways that will contribute to human development and economic growth, including applications of technology to improve both basic and advanced skills to make people more employable, and with attention to the impact of urban growth and development.

**PUBLIC HEALTH:**

Jan A. J. Stolwijk, Yale University School of Medicine

The impacts on the public health of communicable diseases and of materials and energy of man-made and natural origin in the environment.

**TECHNOLOGY:**

Frederick J. Leonberger JDS Uniphase Corporation (ret.)

The development and utilization of knowledge for the purpose of providing material goods and services, including the utilization of research results to design and manufacture of materials and products, with particular attention to developing effective means for transferring technology from the academic to the industrial community and within the industrial community, and for the improvement of manufacturing technology.

**TRANSPORTATION SYSTEMS:**

David E. Crow, Pratt & Whitney (ret.)

The movement of people and material within and across Connecticut, including vehicles and infrastructure, with special attention to complementarity and interchangeability with communication systems.

## NEW MEMBERS

The membership of the Academy is limited by its State Charter to 200 persons. The Bylaws of the Academy provide that members must live or work in Connecticut and are to be elected by the current members on the basis of their accomplishments in science, engineering and/or technology. In particular, scientists and engineers may be considered for membership on the basis of fulfillment of either or both of the following criteria:

- Scientific distinction achieved through significant original contribution in theory or application;
- Unusual accomplishments in the pioneering of new and developing fields of applied science and technology.

In addition, members of the national academies are automatically considered for membership by resolution of Council.

At the close of the 2005 fiscal year the Academy had a total of 200 members, including this year's 16 newly elected Academy members, as follows:

**Alpern, Robert J.**

Dean and Ensign Professor of Medicine, Yale University School of Medicine

**Birge, Robert R.**

Harold S. Schwenk, Sr. Distinguished Chair, Departments of Chemistry & Molecular Cell Biology, University of Connecticut

**Chernoff, Barry**

Robert Schumann Professor of Environmental Studies, Wesleyan University

**Hansen, Marc F.**

Professor of Medicine and Genetics & Developmental Biology, University of Connecticut School of Medicine

**Infante, Anthony A.**

Professor of Molecular Biology and Biochemistry, Wesleyan University

**Koster, William H.**

President and CEO, Neurogen Corporation

**Lewis, Ralph S.**

Professor in Residence, Marine Sciences, University of Connecticut-Avery Point; and State of Connecticut Geologist (ret.)





*Newly elected members of the Academy pose for a picture at the Annual Meeting on May 26, 2005.  
(Photo courtesy: Al Malpa)*

**Long, Marshall B.**

Professor and Chair of Mechanical Engineering; and Professor of Applied Physics, Yale University

**Magnusson, Robert**

Professor and Head, Department of Electrical and Computer Engineering, University of Connecticut

**Or, Dani**

Northeast Utilities Foundation Chair Professor in Environmental Engineering; and Director Environmental Engineering Graduate Program, University of Connecticut

**Preli, Francis R.**

Vice President of Engineering, UTC Power

**Prober, Daniel E.**

Professor and Chairman of Applied Physics, Department of Applied Physics, Yale University

**Rajasekaren, Sanguthevar**

United Technologies Corporation Chair Professor of Computer Science and Engineering; and Director, GE E-Engineering Clinic, University of Connecticut

**Reifsnider, Kenneth L.**

Pratt & Whitney Professor of Design and Reliability; and Director, Connecticut Global Fuel Cell Center, University of Connecticut  
National Academy of Engineering – elected member

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**Rosner, Daniel E.**

Professor of Chemical Engineering, Yale University

**Rothberg, Jonathan M.**

CEO, President and Chairman of the Board, CuraGen Corporation  
National Academy of Engineering – elected member

One of the principal purposes of the Academy is to provide science and technology information and advice on public policy issues, upon request of a government agency or private organization. Information regarding inquiries received, continued, or completed during the fiscal year is listed below:

***Long Island Sound Symposium: A Study of Benthic Habitats:*** This project included a two-day symposium and study report that provided guidance for understanding, analyzing and evaluating data about Long Island Sound, and to enhance the capability of the Connecticut Energy Advisory Board and state agencies in planning, managing and evaluating proposed energy-related uses of Long Island Sound and its benthic habitats. Project Period: April – November 2004. *Final Report issued.*  
**Source:** Connecticut Energy Advisory Board

***An Evaluation of Asbestos Exposures in Occupied Spaces:*** This report provided guidance on issues regarding asbestos contamination in schools. The primary goal of this study was to develop interim suggested guidelines that should be followed concerning asbestos contamination in schools, including the use of asbestos in dust data. Study Period: August 2004 – February 2005. *Final report issued.*  
**Source:** Connecticut Department of Public Health

***Assessment of a Connecticut Technology Seed Capital Fund/Program:*** The purpose of this study is to provide guidance and advice relative to the potential for enhancing the state's economic base through initiation of and/or participation in a seed capital fund to promote the growth of Connecticut-based emerging technology companies. Preliminary project planning completed; Final Report will be completed in FY06. Study Start Date: June 2005.  
**Source:** Connecticut Department of Economic and Community Development

***Information Technology Systems for Use in Incident Management and Work Zones:*** The goal of this study is to identify information technology systems that could be utilized to improve operations to facilitate the efficient movement of traffic through and around work zones and incident areas for the purpose of enhancing the safety of motorists and roadway workers, the mobility of the traveling public, and fuel conservation. *Preliminary draft report completed; Final Report will be completed in FY06.* Study Start Date: November 2004  
**Source:** Connecticut Department of Transportation

***Alternatives to Sand/Salt Mixtures for Winter Highway Operations:*** The objective of this project is to present several case studies from other states and agencies to determine what alternatives Connecticut could employ to improve its overall winter highway operations given the conditions

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that exist. The intention is not just to consider alternative chemicals and technologies, but to consider the overall winter maintenance system including equipment, personnel, the decision making process and data collection tools. *Preliminary project planning completed; Final Report will be completed in FY06.* Study Start Date: May 2005  
**Source:** Connecticut Department of Transportation

***Preparing for the Hydrogen Economy:*** The objective of this study is to identify the current state of knowledge regarding transitioning to and planning for a hydrogen-based transportation fueling system within the US or other countries to identify options most appropriate for consideration in Connecticut. The study will also identify issues/barriers relevant to developing a hydrogen-based transportation fueling system in Connecticut, taking into consideration safety, methods for delivery of hydrogen to fueling stations (such as shipping or on-site reforming from natural gas) and timelines for implementation for both to fleet operations and the general public's use.. *Preliminary project planning completed; Final Report will be completed in FY06.* Study Start Date: June 2005  
**Source:** Connecticut Department of Transportation

Most inquiries are referred to the Technical Boards for a response, or to the Academy Executive Director. One, or more, of the ten Technical Boards is selected to assemble appropriate experts to conduct a study and prepare the response to the Inquirer. The Academy provides technical support, prepares reports, and otherwise conducts the pertinent business of the Academy in these efforts.

The Academy also receives requests from state agencies, private organizations, and private inquirers for sources of technical information and technical experts on a variety of topics. While not a referral service, the Academy will provide or suggest resource persons in this state or elsewhere as appropriate.

The Academy continues to be funded by a plan under which the State of Connecticut and the private sector share a substantial portion of the general support of the Academy.

The following major sources of funding were recognized in fiscal year 2005 for a variety of studies and technical assistance (see Public Policy Inquiries):

- \$136,022 from the Connecticut Energy Advisory Board through the Office of Policy and Management for the completion of the *Long Island Sound Symposium: A Study of Benthic Habitats*. The total project fee for the symposium and related study report that was started in fiscal year 2004 and completed in fiscal year 2005 was \$150,000.
- \$34,285 from the Connecticut Economic Resource Center (CERC) for project management services for activities related to a progressive manufacturing initiative in connection with a financial assistance award from the US Economic Development Administration, and other technical assistance.
- \$34,285 from the Connecticut Department of Economic Development (DECD) for services related to providing a proactive role in enhancing the State's competitive advantage in science and technology and to begin work on the *Assessment of a Connecticut Technology Seed Capital Fund/Program Study*, which will be completed in fiscal year 2006.
- \$20,575 from the Connecticut Department of Public Health for *An Evaluation of Asbestos Exposures in Occupied Spaces*.
- \$35,750 from the Connecticut Department of Transportation for *A Study of Information Technology Systems for Use in Incident Management and Work Zones*; funding to begin work on the following studies: *Alternatives to Sand/Salt Mixtures for Winter Highway Operations* and *Preparing for the Hydrogen Economy*, which will be completed in fiscal year 2006; and participation in other activities.
- \$58,050 through the Middlesex County Chamber of Commerce to support extra-curricular activities in designated school districts for the Connecticut Career Choices program of the Governor's Office for Workforce Competitiveness.
- \$10,000 from Gerber Scientific, Inc. to manage and oversee awarding of the H. Joseph Gerber Medal of Excellence as part of the Academy's Student Awards Program.

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- \$5,000 from the Connecticut Center for Science and Exploration to oversee a hand-on science pilot program for elementary school students in the Hartford Public School System.
  - \$6,054 from the Westinghouse Electric Company for support services for the planning and implementation of the Westinghouse Science Honors program for middle school students in South Windsor and Windsor, Connecticut.

In addition to support from the State of Connecticut (see the section on Contracts and Grants), the Academy seeks support and financial contributions from leading industrial and commercial institutions headquartered or having major operations in Connecticut. The total received in fiscal year 2005 was \$12,000, for which the Academy is most appreciative.

The following Patrons of the Academy are recognized below for their support and financial contributions in fiscal year 2005. The Academy's Patrons receive all general literature and major reports of the Academy and are invited to its Annual Meeting.

**Leading Patron**

The Connecticut Light and Power Company  
Pfizer, Inc.  
The Stanley Works

**Annual Meeting Sponsors**

By KIDS for KIDS (BKFK)  
Connecticut Economic Resource Center  
Gerber Scientific, Inc.  
University of Connecticut, School of Engineering  
Yale University

In response to the provision of the Academy charter to “...encourage both specialized and interdisciplinary discourse among its members and with other members of the technical community by means of ...publications...” the Academy undertakes the following activities:

### *The Bulletin*

This quarterly publication of the Academy promotes the exchange of technical and research information among the various technical communities in Connecticut. The *Bulletin* generally includes a feature article, news from the National Academies, and information regarding science and technology developments of interest in the state of Connecticut.

Additionally an Executive Newsletter, a one-page summary of the *Bulletin*, is published quarterly. This newsletter provides busy industry, academic and government leaders with highlights of the most important issues presented in the *Bulletin*.

The *Bulletin's* editorial staff includes Martha Sherman, Managing Editor, and Executive Editors: Academy Members Dr. George Foyt, United Technologies Research Center (ret.) and Dr. Edward C. Monahan, University of Connecticut at Avery Point.

Copies of the *Bulletin* are sent to Academy members, other academic and industrial scientists, state legislators, commissioners of the state's executive departments, patrons of the Academy, as well as a variety of interested people.

### *Academy Web Site*

The Academy's web site can be found at: [www.ctcase.org](http://www.ctcase.org). Information available on the web site includes:

- Home Page
- Technical Boards
- Science Fairs and Expositions
- Connecticut Medals of Science and Technology
- H. Joseph Gerber Medal of Excellence
- *The Bulletin*
- Executive Newsletter (an executive summary of the *Bulletin*)
- Other publications and reports
- Patrons
- Related sites



## CONNECTICUT MEDALS OF SCIENCE AND TECHNOLOGY

The Connecticut Medals of Science and Technology are awarded in alternate years by the State of Connecticut through the Board of Governors of Higher Education. The Connecticut Medals are modeled after the National Medals of Science and Technology, which are awarded annually by the president of the United States.

The Connecticut Medal of Science is awarded in recognition of extraordinary achievements in scientific fields crucial to Connecticut's economic competitiveness. The Connecticut Medal of Technology is awarded in recognition of extraordinary achievements by an individual in fields of technology that are demonstrated to have made a difference in Connecticut's industrial competitiveness.

Previous recipients of the Connecticut Medal of Science include Frederick M. Richards, Sterling Professor Emeritus of Molecular Biophysics and Biochemistry, Yale University, 1995, and Ronald R. Coifman, Professor of Mathematics, Yale University, 1996.

Previous recipients of the Connecticut Medal of Technology include H. Joseph Gerber, founder of Gerber Scientific, Inc., 1995, and Charles H. Kaman, founder and CEO of Kaman Corporation, 1996.

### 2004 Medal of Technology

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**Anthony J. DeMaria, PhD**

*Chief Scientist, Coherent-DEOS LLC*

*Professor-In-Residence, Electrical & Computer*

*Engineering Department, University of Connecticut*

Anthony J. DeMaria, considered a pioneer in the fields of photonic and laser research and development, was presented with the state's highest technology honor – the 2004 Connecticut Medal of Technology – during ceremonies at the Alliance for Connecticut Technology's Innovation Day and

Award Dinner on November 10, 2004. In a video address to the more than 700 guests gathered for the award dinner at the Mohegan Sun Convention Center in Uncasville, Governor M. Jodi Rell announced the award, which was then presented to Dr. DeMaria by Harry H. Penner, Jr., chairman of the Board of Governors for Higher Education of the Connecticut Department of Higher Education, which sponsors the medal.

Dr. DeMaria was chosen for the prestigious award in recognition of his seminal work in the fields of lasers and photonics, notably picosecond

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laser pulse physics, and his extraordinary contributions in the areas of technology, education and business to the state's technological and economic competitiveness. He has published two books, scores of journal articles and has received 45 patents. For over 20 years he has also taught at the University of Hartford, the Hartford Graduate Center, the University of California in Los Angeles, the California Institute of Technology, and the University of Connecticut. He is a member of the prestigious National Academy of Engineering, the National Academy of Sciences and the Connecticut Academy of Science and Engineering, where he served as its president for six years (1994-2000).

## 2005 Connecticut Medal of Science

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**William C. Stwalley, PhD**

*Board of Trustees Distinguished Professor and  
Head, Physics Department  
University of Connecticut*

Professor William C. Stwalley, whose pioneering research has helped pave the way for some of the most exciting developments in physics today, was awarded the state's highest honor for scientists and engineers – the 2005 Connecticut Medal of Science – by Governor M. Jodi Rell during ceremonies at the Alliance for Connecticut Technology's Innovation Day and Award Dinner on September 28, 2005 at the Connecticut Convention Center. Professor Stwalley has played a seminal role in the creation of a new subfield of physics that bridges atomic and molecular physics, condensed matter physics, and the evolving field of nanoscience. In addition, he has pioneered the development of precise laser spectroscopic techniques for accurately determining the forces of interaction between two atoms.

The University of Connecticut's (UConn) ultracold-research group, which Professor Stwalley leads, has an established international reputation for excellence. The study of ultracold matter is one of the frontiers of physics today; its potential impacts range from fundamental science to important new applications such as quantum computing and improved clocks, interferometers and gyroscopes.

He is a Fellow of the American Physical Society and the Optical Society of America, and a member of the Connecticut Academy of Science and Engineering. Professor Stwalley has edited six books, published over 300 articles, holds six patents and was awarded the Chancellor's Research Excellence Award at UConn.

The Academy sponsors, supports, or participates in a number of special activities in response to the mandate of its Charter to: “...promote interest in science and engineering on the part of the public, especially young people”. This year the Academy recognized event winners that participated in the Connecticut Science Talent Search, Connecticut Science Fair, Connecticut Junior Science and Humanities Symposium, and the Connecticut Invention Convention at the Academy’s Annual Meeting and Awards Dinner on May 26, 2005. Funding for all student and school awards is provided from contributions to the Academy’s Student Awards Fund by the Members of the Academy and by Gerber Scientific, Inc for its sponsorship of the H. Joseph Gerber Medal of Excellence.

***The H. Joseph Gerber Medal of Excellence – An Award of the Connecticut Academy of Science and Engineering Sponsored by Gerber Scientific, Inc.***

This award is in recognition of H. Joseph Gerber’s (1924-1996) technical



leadership in inventing, developing and commercializing manufacturing automation systems for a wide variety of industries worldwide. An elected member of the National Academy of Engineering and the Connecticut Academy of Science and Engineering, Mr. Gerber received the National Medal of Technology in 1994 followed by the Connecticut Medal of Technology in 1995.

Joe Gerber’s contributions to the technological capabilities of manufacturing were the result of a life grounded in genius, and shaped by vision and determination. As an inventor and as founder, Chief Executive Officer, Chairman of the Board and President of Gerber Scientific, Inc., Mr. Gerber was a leader for nearly half a century in inventing and producing factory automation equipment designed to solve global manufacturing problems. Mr. Gerber shaped his companies and the industries they served with a vision – of increasing human potential through technology; of eliminating tedious, time-consuming manual tasks through automation that increases productivity; and of creating technology that directly and immediately revolutionized manufacturing for companies both large and small. Today, Joe Gerber’s genius continues to dominate in the manufacture of apparel and flexible materials, signs and commercial graphics, and lenses for eyeglasses.

Mr. Gerber made the following comments upon his receipt of the National Medal of Technology in 1994: “This award is more than a symbol of personal

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achievement as it is the highlight of a long and productive career for me. It is an affirmation that manufacturing automation has enhanced every aspect of human life and profoundly impacted the standard of living of every person and nation in the world. I am only one of the many who have contributed to our nation's rich technological heritage and one of the fortunate few to be recognized for his achievements."



*From left: Academy president Michael Werle, Gerber medal winners Stephen H. Ingraham, Raj G. Ranade, and Shane E. Mulligan, and at far right, Kevin Williams, Vice President of Engineering, Gerber Technology, Inc.. (Photo courtesy: Al Malpa)*

The 2005 H. Joseph Gerber Medal of Excellence was awarded to the winners of the Connecticut Science Talent Search and the Connecticut Science Fair's Life Sciences and Physical Sciences Senior Divisions. Each of the winners received a solid silver medal and a \$1,000 honorarium.

**Stephen H. Ingraham**, New Fairfield High School, New Fairfield, CT  
Connecticut Science Talent Search – 1st Place  
Project Title: *Superluminal Electromagnetic Wave Propagation in the Near-Field*

**Shane E. Mulligan**, Staples High School, Westport, CT  
Connecticut Science Fair – 1st Place, Life Sciences – Senior Division  
Project Title: *The Construction of a Self-Assembling NDA Nano-hexagon Capable of Protein Storage and Release*

**Raj G. Ranade**, East Lyme High School, East Lyme, CT  
Connecticut Science Fair – 1st Place, Physical Sciences – Senior Division  
Project Title: *A Computer Simulation Model for Identification of Optimal Process Parameters for a Non-Adiabatic Plug Flow Reactor*

### ***Intel Science Talent Search and the Connecticut Science Talent Search***

The national Intel Science Talent Search, administered by Science Service, is sponsored by the world's largest chipmaker, Intel Corporation. Formerly known as the Westinghouse Science Talent Search, the national contest is America's oldest and most highly regarded science competition for high school seniors. Intended to stimulate student interest in science, math

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and technology, it has recognized some 3,000 finalists with \$5 million in scholarships during the past seven decades. Alumni include 5 Nobel Laureates, 4 National Medal of Science & Technology winners, and 35 members of the prestigious National Academies of Sciences and Engineering. High school students from around the United States participate in this prestigious annual science project competition. Additionally, the projects of the state's finalists and semifinalists are subsequently judged for state honors in the Connecticut Science Talent Search.

This year a total of 1,600 students representing 47 states, the District of Columbia, Puerto Rico and two overseas schools entered the national competition, including 18 students from Connecticut. A total of 40 students won honors as finalists and 300 students were selected as semi-finalist winners. Three students from Connecticut were awarded semi-finalist honors. Each of Connecticut's three national winners and their respective schools received awards of \$1,000.

The 2005 Connecticut Science Talent Search first place winner was **Stephen H. Ingraham**. He was also a winner of the H. Joseph Gerber Medal of Excellence. (*Please see the H. Joseph Medal of Excellence for a listing of the winners of this award.*)

Second place honors in the Connecticut competition, which included a \$500 award from the Academy, went to national semi-finalist Elizabeth G. Mandeville, New Milford High School, New Milford, CT for her project "*A Paleolimnological Analysis of the Creation and Development of Candlewood Lake.*"

In addition, these winners also received a Certificate of Recognition from the Academy and an Official Statement of recognition from Governor M. Jodi Rell.

The additional Connecticut student receiving semi-finalist honors in the 2005 National Intel Science Talent Search was **Shane E. Mulligan**, Staples High School, Westport, CT for his project "*The Construction of a Self-Assembling DNA Nanohexagon Capable of protein Storage and Release*".

### ***Connecticut Science Fair***

The 2005 Connecticut Science Fair was held March 15-19 at Quinnipiac College in Hamden.

To promote interest in science and engineering, and to recognize those high school students whose science projects are judged to be the best of the senior division in each of the two major categories, Life Sciences and Physical Sciences, the Academy provides special awards each year to the top two winners of the Connecticut Science Fair.

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The winners received the H. Joseph Gerber Medal of Excellence, including a solid silver medal and a \$1,000 honorarium. In addition, they received a Certificate of Recognition from the Academy and an Official Statement of recognition from Governor M. Jodi Rell. (*Please see the H. Joseph Medal of Excellence for a listing of the winners of this award.*)

### ***Connecticut Junior Science and Humanities Symposium***

The Connecticut Junior Science and Humanities Symposium is sponsored by the University of Connecticut and is part of the national US Army Junior Science and Humanities Symposia Program. The Academy joined with other corporations and institutions in support of this event.

The symposium was held March 7-8, 2005 at the University of Connecticut. The symposium has been effective in enhancing student motivation, stimulating original research and promoting the setting for exciting scientific meetings. It is intended to recognize students who have demonstrated intellectual achievement and promise. This event provides a forum for selected high school students to present a variety of technical papers and posters, meet in small discussion groups with leading scientists from Connecticut industries, and utilize special facilities at the university to explore technical and ethical challenges of current science. The Academy recognizes the top five oral presenters and their respective schools. The winners are as follows:

**Nina Lintermans**, Staples High School, Westport, CT

Topic: *"Global Warming: Analysis and Modeling of Bird Migratory Patterns as a Predictive Tool"*

**Elizabeth G. Mandeville**, New Milford High School, New Milford, CT

Topic: *"Phycological Communities in a Seasonally Frozen Lake as a Planetary Analogue"*

**Anu Nellisery**, Simsbury High School, Simsbury, CT

Topic: *"A Glycine to Aspartic Acid Mutation in the Major Capsid Protein, VP5, Interferes with the Assembly of HSV-1 Capsids"*

**Thomas Erickson**, E.O. Smith High School, Storrs, CT

Topic: *"Simple Artificial Intelligence to Accomplish Complex Tasks"*

**Silvia Puma**, Darien High School, Darien, CT

Topic: *"Role of Erbb2 receptor Tyrosine Kinase in M.leprae-Induced Schwann Cell Signaling and Fate"*

These students and their schools were recognized by the Academy at the JSHS awards ceremony. The students received Certificates of Recognition, and books containing bookplates with the seal of the Academy were presented to both the students and their school libraries in the name of the Academy. Each high school was also recognized with a Letter of Commendation and a \$300 donation to its science department to further science and mathematics education from the Academy. Additionally,



*Young scientists are honored at the Academy's Annual Dinner. (Photo courtesy: Al Malpa)*

Governor M. Jodi Rell issued an Official Statement to each high school in recognition of this outstanding achievement.

### ***Connecticut Invention Convention***

The Connecticut Invention Convention is a program that seeks to provide students in grades K-8 with a meaningful opportunity to develop and encourage creative thinking and invention. The Invention Convention program is designed to integrate all aspects of a student's educational experience in an effort to solve real-life problems by understanding and using creative skills. The convention provides an opportunity for student inventors to participate in a friendly competition and to share their ideas with each other as well as adult inventors, engineers, patent attorneys and other professionals.

For 2005, the Academy recognized the 15 middle school student winners of the Invention Convention with Certificates of Recognition and monetary awards (\$50 US Savings Bonds).

### ***CPTV Family Science Expo***

The 14th Annual CPTV Family Science Expo was held April 7-10, 2005 at the Connecticut Expo Center in Hartford. This innovative program, for children in kindergarten through eighth grade, encourages the understanding of science applications in our everyday lives and how science affects the future. The theme of this year's program was "Sense-sational Science: Extending the Senses Through Science". The Academy participates in the development of the CPTV Family Science Expo as a member of the event's Science Advisory Committee.

## ANNUAL MEETING

The thirtieth Annual Meeting and Dinner of the Academy was held May 26, 2005, at the Marriott Hotel in Rocky Hill, Connecticut. The event included a business meeting for members that provided a review of the activities and affairs of the Academy. Approximately 215 Academy members and guests had an opportunity to meet with student science competition award winners, who displayed their projects, during the event's reception. During dinner, the sixteen newly elected members of the Academy were recognized.

The keynote address, "Progress and Plans for the Connecticut Center for Science & Exploration" was delivered by Dr. Theodore S. Sergi, President and Chief Executive Officer of the Connecticut Center for Science and Exploration and former Commissioner, Department of Education, State of Connecticut. Dr. Sergi spoke about the mission of the *Center*, which includes inspiring a greater proportion of students to pursue science in their future education and careers, and to help raise participation and performance rates of Connecticut students in science.

*Theodore S. Sergi, president and chief executive officer of the Connecticut Center for Science and Exploration, addresses the Academy's 30th Annual Meeting and Dinner on May 26, 2005. (Photo courtesy: Al Malpa)*



The Annual Meeting concluded with the Academy's celebratory Student Science Competition Awards Ceremony. The students and schools recognized by the Academy are listed under the "Special Activities" section of this report. Approximately \$6,000 was awarded to this year's winning students and their schools.

The Academy recognizes and thanks the following companies and organizations for their generous donations in support of the Annual Meeting: By KIDS For KIDS (BKFK), Connecticut Economic Resource Center, Gerber Scientific, Inc.; University of Connecticut, School of Engineering; and Yale University



CONNECTICUT ACADEMY OF SCIENCE  
AND ENGINEERING, INCORPORATED

Financial Statements

YEAR ENDED JUNE 30, 2005  
(with comparative totals for 2004)

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CONNECTICUT ACADEMY OF SCIENCE  
AND ENGINEERING, INCORPORATED

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# INDEPENDENT AUDITOR'S REPORT

## BURNS, CLARK AND COMPANY, P.C.

CERTIFIED PUBLIC ACCOUNTANTS AND CONSULTANTS

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JOHN C. BURNS, CPA  
STUART K. CLARK, CPA

### Independent Auditor's Report

Council of the Academy  
Connecticut Academy of Science  
and Engineering, Incorporated  
Hartford, Connecticut

We have audited the accompanying statement of financial position of the Connecticut Academy of Science and Engineering, Incorporated (Academy) as of June 30, 2005 and the related statements of activities, cash flows, and functional expenses for the year then ended. These financial statements are the responsibility of the Academy's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Connecticut Academy of Science and Engineering, Incorporated as of June 30, 2005, and the changes in its net assets and its cash flows for the year then ended in conformity with accounting principles generally accepted in the United States of America.

Information at June 30, 2004 and for the year ended June 30, 2004, is presented for comparative purposes only and was extracted from the financial statements prepared by net asset class for that year, on which an unqualified opinion dated December 13, 2004, was expressed.

In accordance with Government Auditing Standards, we have also issued our report dated October 24, 2005, on our consideration of the Academy's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with Government Auditing Standards and should be considered in assessing the results of our audit.

*Burns, Clark & Company, P.C.*

Burns, Clark & Company, P.C.  
October 24, 2005

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# STATEMENT OF FINANCIAL POSITION

	<u>2005</u>	<u>2004</u>
ASSETS		
Cash, Including Interest-Bearing Deposits of \$219,770 in 2005 and \$111,945 in 2004 (Note 3)	\$223,203	\$113,060
Accounts Receivable - Contracts (Note 2)	23,800	42,139
Accounts Receivable - Other	150	1,000
Prepaid Expenses	35,491	1,016
Other Assets	704	2,089
Furniture and Equipment, Net of Accumulated Depreciation of \$26,612 in 2005 and \$25,379 in 2004 (Note 2)	<u>3,766</u>	<u>945</u>
 TOTAL ASSETS	 <u>\$287,114</u>	 <u>\$160,249</u>
LIABILITIES AND NET ASSETS		
LIABILITIES		
Accounts Payable and Accrued Expenses	10,752	\$32,840
Contract Revenue Received in Advance (Notes 2 and 4)	<u>85,714</u>	<u>1,544</u>
 TOTAL LIABILITIES	 <u>96,466</u>	 <u>34,384</u>
NET ASSETS (Notes 2 and 5)		
Unrestricted:		
Net Investment in Furniture and Equipment	3,766	945
Undesignated	<u>179,672</u>	<u>117,750</u>
 TOTAL UNRESTRICTED NET ASSETS	 183,438	 118,695
 Temporarily Restricted:	 <u>7,210</u>	 <u>7,170</u>
TOTAL NET ASSETS	<u>190,648</u>	<u>125,865</u>
 TOTAL LIABILITIES AND NET ASSETS	 <u>\$287,114</u>	 <u>\$ 160,249</u>

# STATEMENT OF ACTIVITIES

	2005			2004
	Unrestricted	Temporarily Restricted	Total	Total
<u>Revenues &amp; Other Support</u>				
Contracts (Note 4)	\$337,998	\$0	\$337,998	\$219,168
Contributions (Note 2)	19,100	6,630	25,730	30,621
Membership Dues	18,300	0	18,300	17,000
Interest Income	2,326	0	2,326	1,147
Report Fees and Miscellaneous Income	1,570	0	1,570	40
In-kind Contributions	17,835	0	17,835	10,875
Total	397,129	6,630	403,759	278,851
<u>Net Assets Released from Restrictions (Notes 2 and 5):</u>				
Satisfaction of Program Restrictions	6,590	(6,590)	0	0
Total Revenues and Other Support	403,719	40	403,759	278,851
<u>Expenses (Note 2):</u>				
<u>Program Services:</u>				
Science and Technology Collaborative	42,627	0	42,627	38,474
Publications	28,148	0	28,148	29,222
Technical Guidance and Information	134,239	0	134,239	92,984
Awards	5,670	0	5,670	12,355
Total Program Services	210,684	0	210,684	173,035
<u>Support Services:</u>				
Management and General	128,025	0	128,025	106,599
Fund Raising	267	0	267	264
Total Support Services	128,292	0	128,292	106,863
Total Expenses	338,976	0	338,976	279,898
Change in Net Assets	64,743	40	64,783	(1,047)
Net Assets at Beginning of Year	118,695	7,170	125,865	126,912
Net Assets at End of Year	\$183,438	\$ 7,210	\$190,648	\$125,865

# STATEMENT OF FUNCTIONAL EXPENSES

	2005				
	PROGRAM SERVICES				
	Science & Technology Collaborative	Publications	Technical Guidance & Information	Awards	Total Program Services
Professional Services	\$39,594	\$20,580	\$92,363	\$ 0	\$152,537
Professional Services - In Kind (Note 2)	0	0	17,835	0	17,835
Rent and Parking (Note 6)	818	794	794	0	2,406
Office Expenses	538	970	709	18	2,235
Marketing	177	177	177	0	531
Insurance	569	0	1,560	0	2,129
Transportation	0	0	0	0	0
Council Activities	0	0	0	0	0
Membership Activities	0	0	0	5,652	5,652
Awards and Prizes	0	5,492	4,875	0	10,367
Printing	0	0	15,494	0	15,494
Miscellaneous	<u>832</u>	<u>36</u>	<u>333</u>	<u>0</u>	<u>1,201</u>
Total Expenses before Depreciation	42,528	28,049	134,140	5,670	210,387
Depreciation (Note 2)	<u>99</u>	<u>99</u>	<u>99</u>	<u>0</u>	<u>297</u>
Total Expenses	<u>\$42,627</u>	<u>\$28,148</u>	<u>\$134,239</u>	<u>\$5,670</u>	<u>\$210,684</u>

## STATEMENT OF FUNCTIONAL EXPENSES

2005

### SUPPORT SERVICES

<u>Management &amp; General</u>	<u>Rund Raising</u>	<u>Total Support Services</u>	<u>2005 Total Program &amp; Support</u>	<u>2004 Total</u>
\$89,519	\$ 0	\$89,519	\$242,056	\$201,512
0	0	0	17,835	10,875
8,352	199	8,551	10,957	11,908
7,516	0	7,516	9,751	10,505
1,635	44	1,679	2,210	1,811
1,045	0	1,045	3,174	3,040
3,392	0	3,392	3,392	3,947
11,195	0	11,195	11,195	10,950
0	0	0	5,652	12,252
1,952	0	1,952	12,319	8,396
0	0	0	15,494	0
<u>2,507</u>	<u>0</u>	<u>2,507</u>	<u>3,708</u>	<u>3,014</u>
127,113	243	127,356	337,743	278,210
<u>912</u>	<u>24</u>	<u>936</u>	<u>1,233</u>	<u>1,688</u>
<u>\$128,025</u>	<u>\$267</u>	<u>\$128,292</u>	<u>\$338,976</u>	<u>\$279,898</u>

## STATEMENT OF CASH FLOWS

	<u>2005</u>	<u>2004</u>
Cash Flows from Operating Activities		
Change in Net Assets	\$64,783	\$(1,047)
Adjustments to Reconcile Change in Net Assets to Net Cash Provided by (Used) in Operating Activities:		
Depreciation	1,233	1,688
Change In:		
Accounts Receivable - Contracts	18,339	(39,377)
Accounts Receivable - Other	850	(1,000)
Prepaid Expenses and Other Assets	(33,090)	665
Accounts Payable and Accrued Expenses	(22,088)	21,185
Contract Revenue Received in Advance	<u>84,170</u>	<u>1,544</u>
 Total Adjustments	 <u>49,414</u>	 <u>(15,295)</u>
 Net Cash Provided by (Used in) Operating Activities	 <u>114,197</u>	 <u>(16,342)</u>
 Cash Flows from Investing Activities		
Additions to Furniture and Equipment	<u>(4,054)</u>	<u>0</u>
 Net Cash Provided by (Used in) Investing Activities	 <u>(4,054)</u>	 <u>0</u>
 Net Increase (Decrease) in Cash	 110,143	 (16,342)
 Cash - Beginning of Year	 <u>113,060</u>	 <u>129,402</u>
 Cash - End of Year	 <u>\$ 223,203</u>	 <u>\$ 113,060</u>



# NOTES TO FINANCIAL STATEMENTS

## CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

### NOTES TO FINANCIAL STATEMENTS JUNE 30, 2005 (with comparative totals for 2004)

#### NOTE 1 - NATURE OF OPERATIONS

The Connecticut Academy of Science and Engineering, Incorporated (Academy) was established to foster science and engineering, to promote the application of science and engineering to human health and welfare, and to study and report upon any subject within its competence when appropriate.

The Academy is a not-for-profit organization established under Special Act No. 76-53 of the State of Connecticut and incorporated under the Non-stock Corporation Act of the State of Connecticut. The Academy is exempt from federal income tax under Section 501(c) (3) of the Internal Revenue Code and is also exempt from state income tax.

#### NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

##### Net Asset Classes

The net asset classes of the Academy consist of the following:

##### Unrestricted Net Assets

Unrestricted net assets consist of net assets over which the governing board has control to use in carrying out the operations of the Academy in accordance with its charter and bylaws and are neither permanently restricted nor temporarily restricted by donor-imposed restrictions.

##### Temporarily Restricted Net Assets

Temporarily restricted net assets consist of net assets whose use is limited by donor-imposed restrictions, which either expire with the passage of time (time restriction) or can be fulfilled and removed by actions of the Academy pursuant to the restrictions (purpose restriction). The Academy reflects contributions as temporarily restricted support based on the purpose of the restrictions stipulated by the donor.

When donor-imposed restrictions expire, that is when a stipulated time restriction ends or the purpose of the restriction is accomplished, temporarily restricted net assets are reclassified to unrestricted net assets and reported in the accompanying statement of activities as net assets released from restrictions.

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CONNECTICUT ACADEMY OF SCIENCE  
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS  
JUNE 30, 2005  
(with comparative totals for 2004)

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Contributions

Contributions received or promises to give without donor-imposed restrictions are reflected as unrestricted support. Contributions received or promises to give with donor-imposed restrictions are reflected as either temporarily or permanently restricted support in the accompanying financial statements. Contributions or promises to give with donor-imposed conditions are not recognized as contributions or promises to give in the accompanying financial statements until the period when the conditions are met.

Contributed Goods and Services

Goods and services have been provided by various organizations and a number of unpaid volunteers have contributed their time. The members of the Academy and their peers have donated significant amounts of time to the Academy's program services. Contributions are recognized if the goods or services received create or enhance nonfinancial assets or require specialized skills, are provided by individuals possessing those skills, and would typically need to be purchased if not provided by donation. Contributed services that do not meet the above criteria are not recognized (Note 4).

For the years ended June 30, in-kind contributions and related in-kind expenses reflected in the accompanying financial statements consisted of the following:

	<u>2005</u>	<u>2004</u>
Contract Management Services	\$17,835	\$10,875

Furniture and Equipment

All acquisitions or donations of furniture and equipment are reflected at cost or their fair value at the date of gift. Depreciation is provided for over the estimated useful lives of the assets, which range from five to seven years, on a straight-line basis.

Accounts Receivable - Contracts and Contract Revenue Received in Advance

Accounts receivable - contracts consist of fees earned on contracts in progress, but not yet received. In the opinion of management, all accounts receivable at June 30, 2005 and 2004 are deemed collectible.

Contract revenue received in advance consists of contract fees received, but not yet earned.

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CONNECTICUT ACADEMY OF SCIENCE  
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS  
JUNE 30, 2005  
(with comparative totals for 2004)

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Functional Expenses

The costs of providing the various programs and other activities have been summarized on a functional basis on the accompanying Statement of Activities. Accordingly, certain costs have been allocated among the programs and supporting services benefited.

The Academy's Program Services are as follows: "Science and Technology Collaborative" represents the development, operation and management of the Connecticut Initiative for Science and Technology; "Publications" represents the production and distribution of quarterly bulletins; "Technical Guidance and Information" represents the providing of information and advice on science and technology to government, industry and citizens of Connecticut; and "Awards" represents a student awards program to recognize achievements related to science and technology.

The Academy's Support Services are as follows: "Management and General" represents expenses incurred in support of the general operation and management of the Academy; and "Fund Raising" represents expenses related to fund raising activities in support of the Science and Technology Collaborative and the operation and general affairs of the Academy.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

NOTE 3 - CONCENTRATION OF CASH CREDIT RISK

The Academy maintains cash accounts at various local banks. Accounts at the banks are insured by the Federal Deposit Insurance Corporation (FDIC) up to \$100,000. At June 30, 2005 and 2004, cash balances at banks covered by FDIC insurance aggregate approximately \$223,203 and \$113,060, respectively and amounts not insured aggregated approximately \$1,028 and \$0, respectively.

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CONNECTICUT ACADEMY OF SCIENCE  
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS  
JUNE 30, 2005  
(with comparative totals for 2004)

NOTE 4 - CONTRACT ARRANGEMENTS AND SUBSEQUENT FUNDING RISKS

During the years ended June 30, 2005 and 2004 the Academy applied to the Connecticut General Assembly, other State Agencies and public companies for funding in the form of Personal Service Agreements. The Academy has obtained various contracts aggregating \$286,724 and \$301,000 during the years ended June 30, 2005 and 2004, respectively

Future similar operations beyond June 30, 2005 are dependent on continued funding from the State or other similar organizations.

Certain services are provided by the members of the Academy on a volunteer basis, but do not meet the criteria to be recognized in the accompanying financial statements (Note 2).

Contracts, accounts receivable - contracts and contract revenue as of and for the year ended June 30, 2005 consisted of the following:

<u>Agency</u>	<u>Total Contract Amount</u>	<u>Accounts Receivable - Contracts</u>	<u>Contract Revenue Year Ended June 30, 2005</u>
Connecticut Energy Advisory Board	\$ 150,000	\$ 0	\$136,022
Connecticut Economic Resource Center, Inc.	91,000	0	32,262
Connecticut Department of Economic and Community Development	160,000	0	34,285
Connecticut Department of Public Health	20,575	0	20,575
Connecticut Department of Transportation	95,000	10,750	35,750
Middlesex County Chamber of Commerce	60,000	13,050	58,050
Gerber Scientific Products, Inc.	30,000	0	10,000
Connecticut Center for Science and Exploration	5,000	0	5,000
Westinghouse Science Corporation	<u>6,054</u>	<u>0</u>	<u>6,054</u>
Totals	<u>\$ 617,629</u>	<u>\$ 23,800</u>	<u>\$ 337,998</u>

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CONNECTICUT ACADEMY OF SCIENCE  
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS  
JUNE 30, 2005  
(with comparative totals for 2004)

NOTE 5 - NET ASSETS

Net assets released from donor-restriction by incurring expenses satisfying the purposes of contributions restricted to various Academy programs or restricted as to time periods, amounted to \$6,590 and \$13,107 for the years ended June 30, 2005 and 2004, respectively.

At June 30, 2005 and 2004, net assets of \$7,210 and \$7,170, respectively, were temporarily restricted.

NOTE 6 - LEASE OBLIGATION

The Academy's lease for office space expired October 31, 2002. The Academy is currently operating on a month-to-month lease for its office space. The monthly rental is \$828 and includes one parking space. Rent expense amounted to \$9,932 for the years ended June 30, 2005 and 2004, respectively.

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# BURNS, CLARK AND COMPANY, P.C.

CERTIFIED PUBLIC ACCOUNTANTS AND CONSULTANTS

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JOHN C. BURNS, CPA  
STUART K. CLARK, CPA

Independent Auditor's Report  
on Internal Control over Financial Reporting  
and on Compliance and Other Matters Based  
on an Audit of Financial Statements Performed  
in Accordance With Government Auditing Standards

Council of the Academy  
Connecticut Academy of Science  
and Engineering, Incorporated  
Hartford, Connecticut

We have audited the financial statements of the Connecticut Academy of Science and Engineering, Incorporated (Academy), as of and for the year ended June 30, 2005, and have issued our report thereon dated October 24, 2005. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States.

## Internal Control Over Financial Reporting

In planning and performing our audit, we considered the Academy's internal control over financial reporting in order to determine our auditing procedures for the purpose of expressing our opinion on the financial statements and not to provide an opinion on the internal control over financial reporting. Our consideration of the internal control over financial reporting would not necessarily disclose all matters in the internal control that might be material weaknesses. A material weakness is a reportable condition in which the design or operation of one or more of the internal control components does not reduce to a relatively low level the risk that misstatements caused by error or fraud in amounts that would be material in relation to the financial statements being audited may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions. We noted no matters involving the internal control over financial reporting and its operation that we consider to be material weaknesses.

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## Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Academy's financial statements are free of material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance that are required to be reported under Government Auditing Standards.

This report is intended solely for the information and use of the Council of the Academy, management, the Governor's Office for Workforce Competitiveness, Connecticut Department of Economic and Community Development, Connecticut Department of Public Health, Connecticut Department of Transportation and the Connecticut Office of Policy and Management and is not intended to be and should not be used by anyone other than these specified parties.

*Burns, Clark & Company, P.C.*

Burns, Clark & Company, P.C.  
October 24, 2005

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# BURNS, CLARK AND COMPANY, P.C.

CERTIFIED PUBLIC ACCOUNTANTS AND CONSULTANTS

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JOHN C. BURNS, CPA  
STUART K. CLARK, CPA

## Independent Auditor's Report on Compliance with Requirements Applicable to Each Major Program, on Internal Control Over Compliance in Accordance with the State Single Audit Act and on the Schedule of Expenditures of State Financial Assistance

Council of the Academy  
Connecticut Academy of Science  
and Engineering, Incorporated  
Hartford, Connecticut

### Compliance

We have audited the compliance of the Connecticut Academy of Science and Engineering, Incorporated (Academy) with the types of compliance requirements described in the Office of Policy and Management Compliance Supplement that are applicable to each of its major state programs for the year ended June 30, 2005. The major state programs are identified in the summary of auditors' results section of the accompanying schedule of findings and questioned costs. Compliance with the requirements of laws, regulations, contracts and grants applicable to each of its major state programs is the responsibility of the Academy's management. Our responsibility is to express an opinion on compliance based on our audit.

We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States; and the State Single Audit Act (C.G.S. Section 4-230 to 4-236). Those standards and the State Single Audit Act require that we plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major state program occurred. An audit includes examining, on a test basis, evidence about the Academy's compliance with those requirements and performing such other procedures, as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion. Our audit does not provide a legal determination on the Academy's compliance with those requirements.

In our opinion, the Academy complied, in all material respects, with the requirements referred to above that are applicable to each of its major state programs for the year ended June 30, 2005.

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## Internal Control Over Compliance

The management of the Academy is responsible for establishing and maintaining effective internal control over compliance with requirements of laws, regulations, contracts and grants applicable to state programs. In planning and performing our audit, we considered the internal control over compliance with requirements that could have a direct and material effect on a major state program in order to determine our auditing procedures for the purpose of expressing our opinion on compliance and to test and report on internal control over compliance in accordance with State Single Audit Act.

Our consideration of the internal control over compliance would not necessarily disclose all matters in the internal control that might be material weaknesses. A material weakness is a condition in which the design or operation of one or more of the internal control components does not reduce to a relatively low level the risk that noncompliance with applicable requirements of laws, regulations, contracts and grants caused by error or fraud that would be material in relation to a major state program being audited may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions. We noted no matters involving the internal control over compliance and its operation that we consider to be material weaknesses.

## Schedule of Expenditures of State Financial Assistance

We have audited the basic financial statements of the Connecticut Academy of Science and Engineering, Incorporated as of and for the year ended June 30, 2005, and have issued our report thereon dated October 24, 2005. Our audit was performed for the purpose of forming an opinion on the basic financial statements taken as a whole. The accompanying schedule of expenditures of state financial assistance is presented for purposes of additional analysis as required by the State Single Audit Act and is not a required part of the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and, in our opinion, is fairly stated, in all material respects, in relation to the basic financial statements taken as a whole.

This report is intended solely for the information and use of the Council of the Academy, management, the Governor's Office for Workforce Competitiveness, Connecticut Department of Economic and Community Development, Connecticut Department of Public Health, Connecticut Department of Transportation and the Connecticut Office of Policy and Management and is not intended to be and should not be used by anyone other than these specified parties.

*Burns, Clark & Company, P.C.*

Burns, Clark & Company, P.C.  
October 24, 2005

# SCHEDULE OF EXPENDITURES

CONNECTICUT ACADEMY OF SCIENCE      SCHEDULE 1  
AND ENGINEERING, INCORPORATED

SCHEDULE OF  
EXPENDITURES OF STATE FINANCIAL ASSISTANCE  
YEAR ENDED JUNE 30, 2005

<u>State Grantor Pass - Through Grantor Program Title</u>	<u>State Grant Program Identification Number</u>	<u>Expenditures</u>
Governor's Office for Workforce Competitiveness: Connecticut Career Choices	None (Note A)	\$ 58,050
Connecticut Department of Economic And Community Development	None (Note A)	\$ 34,285
Connecticut Department of Public Health	None (Note A)	\$ 20,575
Connecticut Department of Transportation	None (Note A)	\$ 35,750
Connecticut Office of Policy and Management: Connecticut Energy Advisory Board	None (Note A)	<u>\$ 136,022</u>
Total State Financial Assistance		<u>\$ 284,682</u>

See independent auditors' report and notes to schedule of expenditures of state  
financial assistance.

# NOTES TO SCHEDULE OF EXPENDITURES

## CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

### NOTES TO SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE JUNE 30, 2005

#### NOTE A - GENERAL

State of Connecticut funding is provided from the Governor's Office for Workforce Competitiveness, Connecticut Department of Economic and Community Development, Connecticut Department of Public Health, Connecticut Department of Transportation and the Connecticut Energy Advisory Board acting through the Office of Policy and Management, operating budgets through Personal Service Agreements and letters of agreement, respectively. Accordingly, the funds are not attributed to a specific State Department and do not have State Grant Program Identification Numbers.

#### NOTE B - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accounting policies of the Academy conform to generally accepted accounting principles as applicable to not-for-profit agencies. The following is a summary of the more significant policies relating to the aforementioned programs:

##### Basis of Accounting

The financial statements contained in the Academy's annual audit report are prepared on the accrual basis of accounting. Expenditures are recorded when the obligations are incurred. Contract revenues and other revenues are recognized upon notification of unconditional contributions of donors or when services are performed.

##### Expenditures of State Financial Assistance

The Schedule of Expenditures of State Financial Assistance, contained in this report, is prepared based on regulations established by the State of Connecticut Office of Policy and Management. The aforementioned contract revenues are considered to be earned when the services are performed or reimbursed expenses are incurred. Accordingly, these contract receipts are reflected in the expenditures column of the Schedule of Expenditures of State Financial Assistance.

# SCHEDULE OF FINDINGS AND QUESTIONED COSTS

## CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

### SCHEDULE OF FINDINGS AND QUESTIONED COSTS YEAR ENDED JUNE 30, 2005

#### SECTION I - SUMMARY OF AUDIT RESULTS

##### *Financial Statements*

The type of auditor's report issued was unqualified.

Internal control over financial reporting:

- Material weakness(es) identified - none
- Reportable condition(s) identified that are not considered to be material weaknesses - none
- Noncompliance material to financial statements noted - none

##### *State Financial Assistance*

Internal control over major programs:

- Material weakness(es) identified - none
- Reportable condition(s) identified that are not considered to be material weaknesses - none

The type of auditor's report issued on compliance for major programs was unqualified.

Audit findings disclosed that are required to be reported in accordance with Section 4-236-24 of the Regulations to the State Single Audit Act - none

- The following schedule reflects the major program included in the audit:

<b>State Grantor and Program</b>	<b>State Grant Identification Number</b>	<b><u>Expenditures</u></b>
Connecticut Office of Policy and Management:	-	
Connecticut Advisory Board	None (Note A)	\$ 136,022
Governor's Office for Workforce Competitiveness:		
Connecticut Career Choices	None (Note A)	\$ 58,050

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CONNECTICUT ACADEMY OF SCIENCE  
AND ENGINEERING, INCORPORATED

SCHEDULE OF FINDINGS AND QUESTIONED COSTS  
YEAR ENDED JUNE 30, 2005

SECTION II - SUMMARY OF FINDINGS RELATED TO FINANCIAL  
STATEMENTS REQUIRED UNDER GENERALLY  
ACCEPTED GOVERNMENT AUDITING STANDARDS

- We issued reports, dated October 24, 2005, on internal control over financial reporting and on compliance and other matters based on an audit of financial statements performed in accordance with Government Auditing Standards.
- Our report on compliance indicated no reportable instances on noncompliance.
- Our report on internal control over financial reporting indicated no reportable conditions.

SECTION III - FINDINGS AND QUESTIONED COSTS FOR  
STATE FINANCIAL ASSISTANCE

- No findings or questioned costs are reported relating to the Academy's State financial assistance programs.

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# MAJOR STUDIES OF THE ACADEMY

2004

- A Study of Railcar Lavatories and Waste Management Systems

2003

- An Analysis of Energy Available from Agricultural Byproducts, Phase II: Assessing the Energy Production Processes
- Study Update: Bus Propulsion Technologies Available in Connecticut

2002

- A Study of Fuel Cell Systems
- Transportation Investment Evaluation Methods and Tools
- An Analysis of Energy Available from Agricultural Byproducts, Phase 1: Defining the Latent Energy Available

2001

- A Study of Bus Propulsion Technologies in Connecticut

2000

- Efficacy of the Connecticut Motor Vehicle Emissions Testing Program
- Indoor Air Quality in Connecticut Schools
- Study of Radiation Exposure from the Connecticut Yankee Nuclear Power Plant

1999

- Evaluation of MTBE as a Gasoline Additive
- Strategic Plan for CASE

1998

- Radon in Drinking Water

1997

- Agricultural Biotechnology
- Connecticut Critical Technologies

1996

- Evaluation of Critical Technology Centers
- Advanced Technology Center Evaluation
- Biotechnology in Connecticut

1994

- Science and Technology Policy: Lessons from Six Amer. States

1992

- A State Science and Technology Policy
- Electromagnetic Field Health Effects

1990

- Biotechnology (Research in Connecticut)
- Economic Impact of AIDS Health Care in Connecticut

1989

- Science and Engineering Doctoral Education in Connecticut

1988

- Indoor Pollution: Household Survey
- Vocational-Technical High School Curriculum Evaluation

1987

- Waste Conversion for State Construction
- High Technology Plan for Connecticut

1986

- Automobile Emissions Testing
- Health Standard (for EDBs)

1985

- Well Treatment (for EDBs)

**CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING**

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