

The GTRI Connector

Thank You...

... to everyone who has returned a **GTRI Internal Communication Survey** to the Research Communications Office! We appreciate your help. Those who have not returned a survey will receive a follow-up letter and an additional copy of the survey soon.

If you need another copy of the survey, you may contact Lea McLees at (404) 894-4259 (phone), (404) 894-6983 (fax) or lea.mclees@gtri.gatech.edu (e-mail).

Look for a report on the survey findings in an upcoming issue of *The Connector*.

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Conference Notes

Learning From the Birds and the Bees to Design "Micro Air Vehicles"

By John Toon, RCO

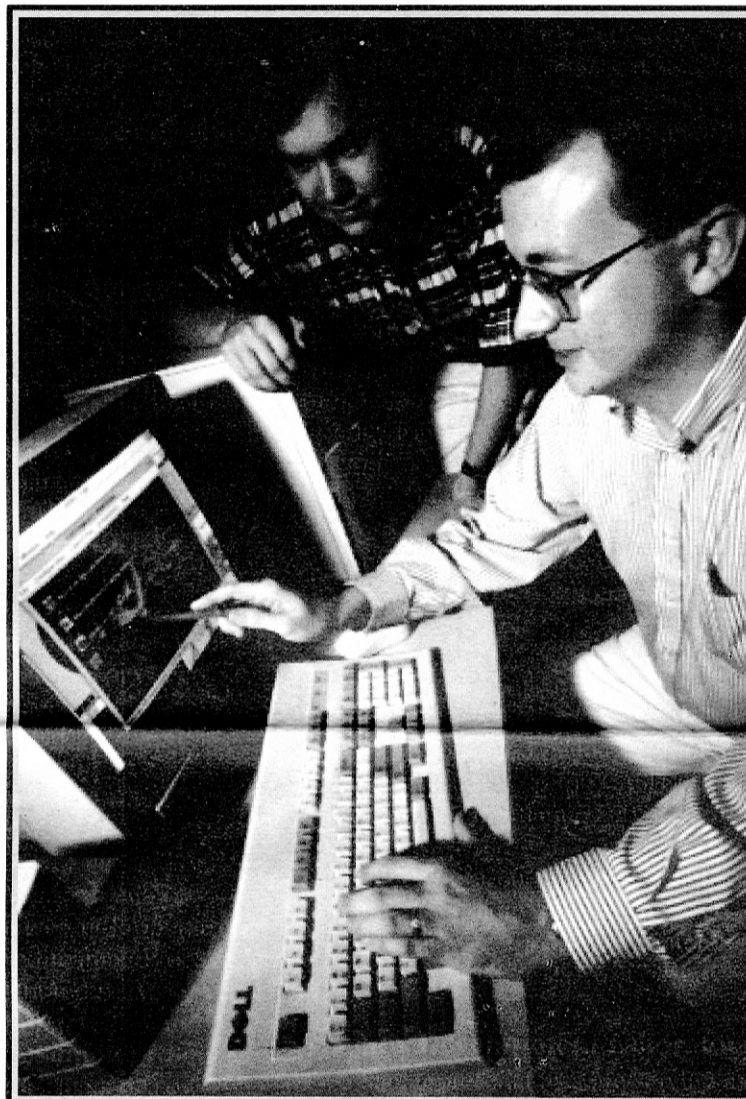
Imagine an aircraft small enough to fit in the palm of your hand, yet able to fly into damaged buildings to search for survivors or onto battlefields to detect toxic chemicals.

"Micro Air Vehicles" capable of these and other tasks are the goals for a new program sponsored by the Defense Advanced Research Projects Agency (DARPA). The technical challenges of building such air vehicles was the focus of a two-day conference at Georgia Tech, Feb. 19-20, 1997.

The agenda for the "First International Conference on Emerging Technologies for Micro Air Vehicles" included 17 technical presentations from more than a dozen organizations studying the rapidly expanding area, as well as presentations from DARPA and Defense Airborne Reconnaissance Office (DARO) officials.

"When you approach technical people with this idea, their first response is that you cannot build an aircraft this small and make it useful," said Sam Blankenship (ELSYS), conference co-chair and coordinator of the "MicroFlyer" program at Georgia Tech. "But many people, including us, think you can do this."

Designers of micro air vehicles face for-



INSIDE:

The lab overview series continues, featuring SEAL on page 4 and ELSYS on page 6. Here, Will Nelson (left) and Brian Keeton (right) of ELSYS try out the test engineer's workstation, which supports automated data analysis and provides an extensive reference library. (Photo by Gary Meek)

midable challenges and a host of unknowns. No flying vehicles of this size exist — so designers must look to birds and insects for information about flight principles on a scale this small. Researchers believe aerodynamic principles governing aircraft with six-inch wings may be significantly dif-

ferent from those guiding aircraft design since the Wright Brothers' 1903 airplane.

"There may be something about very small sizes that changes the aerodynamics," Blankenship explained. "The Wright Flyer made smaller and smaller and smaller

Continued on page 3

Observed & Noted

If your little ones need a summer camp, SAC may be able to help. To learn more about Camp Wreck-A-SAC, turn to page 3.

GTRI employees testing the P-Card give it an A-Plus. Find out why on page 3.

We continue our Lab Overview Series with two articles in this issue.

Read about SEAL on page 4 and ELSYS on page 6.

What kinds of GTRI printed and Web materials are available? Turn to page 5 for a list.

One EOEML division has begun a series of programs called Lunch 'N Learn. To find out what the group has learned, turn to page 5.

This month you will be introduced to four new employees. Meet Lynn Fountain, Samuel Li, Phil Hurwitz and Ann Jaudon on page 7.

February is overflowing with professional, personnel and personal news. The write-ups begin on page 8.

The GTRI Connector is on line at <<<http://www.gtri.gatech.edu/connector/ctwelcom.htm>>>.

**News
&
Notes**

**Meet the
Facilities
Services Team**

This month we will finish meeting the members of the Facilities Services Team (FST), managed by Brenda Hill. FST performs routine maintenance in all GTRI buildings. The group also is responsible for construction, moving, painting, tracking surplus equipment and maintaining GTRI vehicles. This group's work ensures that day-to-day operations in GTRI run smoothly.

David Johnson is a Maintenance/Construction Worker I for FST. David does major construction and renovation, electrical and maintenance work in all the GTRI buildings on campus. David, who has worked for GTRI for more than four years, started out as a painter and moved to maintenance/construction three years later. Before coming to GTRI, David worked in construction and as a painter.

David has a couple of family connections to GTRI. His wife, Kelly, works in Supply Services and his brother, Charles, also works in facilities. He and Kelly make their home in Mableton with their cat, Sammy. David is a Harley-Davidson fanatic. According to his brother, he rebuilt his first Harley at age 13. David rides a 1976 Shovelhead and is at work restoring a



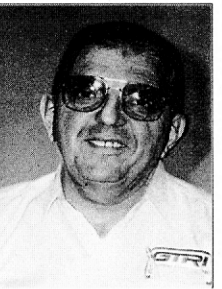
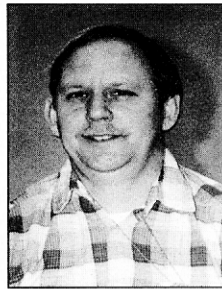
David Johnson

1947 Harley. In 1990, he attended Sturgis's 50th anniversary celebration in Sturgis, S.D. He toured the West on his Harley, traveling more than 5,000 miles in 15 days.

Doc Hill, a Maintenance/Construction Worker II, has been with FST for 15 years. His duties include interior remodeling, constructing walls and ceilings, tiling floors, doing plumbing, installing lights and general maintenance at the Cobb County Research Facility (CCRF). Doc spent five years in home construction in Tampa, Fla., before coming to work for GTRI.

Doc and his wife, Carol, live in Kennesaw with their two sons — Wesley, 10, and Ryan, 8. Rather than the typical dog or cat, the boys have opted for some unique pets; they have cared for a pair of hermit crabs for over a year. An active member in his church, Doc went to Nicaragua last summer on a mission trip. "It was a very moving experience," he says.

When he's not working, Doc enjoys the outdoors, specifically fishing and deer hunting. His hobbies also include



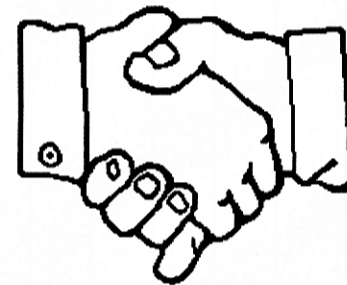
Brian Hanlon

golf, waterskiing and bowling.

Brian Hanlon is a Maintenance/Construction Worker II at CCRF. He does "a little bit of everything," from hanging sheetrock to plumbing. Brian, who has

been with GTRI for 12 years, is a native of Boston, Mass. He came to Atlanta from Florida where he worked in construction for 18 years.

Brian now lives in Dahlonga with his wife, Ursula. The two have been married for 32 years. They have three children, Brian Jr., Greg and Melissa; two granddaughters, Elizabeth and Ashley; and another grandchild on the way. A photography buff, Brian loves to take pictures in his free time. He also enjoys new age and modern jazz music and likes to follow and discuss politics.



SELECTED DECEMBER 1996 AWARDS

Title	PI/Laboratory	Sponsor	Funded Amount
Development of Programmatic Aerodynamic Devices for TWR Formula I Racing Cars	Englar, R. (AERO)	TWR Group Ltd.	\$ 229,331
Task A3: Atlanta Short Haul Transportation System	Stancil, C. (AERO)	SAIC	124,216
Integrated Tech. Information for the Air Logistics Ctr.	Mitta, D. (ELSYS)	Univ. of Dayton Res. Inst.	50,000
ALR-69 Test Program Set Software Exerciser	Fowler, C. (ELSYS)	Lockheed Sanders Inc.	150,000
Antenna Pattern Data Coll. & Vul. Assess.	Andrews, H. (ELSYS)	Fibertek Inc.	189,441
VOC's In Air	Bayer, C. (EOEML)	RJR Nabisco	48,479
Construction of Prototype Lightweight Mirrors	Robinson, W. (EOEML)	NASA	24,460
Adv. EO Model for Aerial Targeting II (AEM-AT II)	Owens, W. (EOEML)	Air Force	178,500
AIM-9X Digital Missile Model	Owens, W. (EOEML)	BDM Corp.	64,611
Swedish Fire Control Operator Console Architecture	Dowdy, P. (HRO)	Army	430,000
Federation Test & Mgmt. Integration Sup. & Study	Roberts, D. (ITTL)	Navy	222,441
Transceiver Susceptibility Analysis	Moss, R. (ITTL)	Army	281,000
MODCAP Lion Analysis	Wilson, B. (ITTL)	Army	149,565
Ground Mounted Seeker Test Plan Development	Roberts, R. (SDL)	Electronic Warfare Assoc.	56,624
AAA Upgrades	Muzio, A. (SDL)	Army	648,855
XM-15S Simulator	Camp, S. (SDL)	Army	393,986
Adv. Airborne Interceptor Simulator (AAIS)	Roberts, R. (SDL)	Northrop Grumman	600,000
IBIS Hammer Preliminary Planning & Exploitation	Adams, J. (SEAL)	Dynetics Inc.	70,002
MOBCAP Apex FCR #2 Evaluation	Adams, J. (SEAL)	Dynetics Inc.	50,030
Angle of Arrival Simulator (AOAS) Phase II	Clark, D. (SEAL)	Spectra Research	45,000
Add-on #4: MOBCAP Apex for #1 Evaluation	Adams, J. (SEAL)	Dynetics Inc.	63,526
ECCM Assessment Analysis	Morris, G. (SEAL)	Air Force	204,563
Radar Hardware Development	Belcher, M. (SEAL)	Army	225,000
Electromag. Effect. Mod. for Directive Antennas...	Estrada, J. (SEAL)	NE Consort for Engr. Education	35,000
Feasibility Studies of Nearest Residual Vector Quantizer Classifiers...	Barnes, C. (SEAL)	Navy	35,000
Elect. Prot. Assess. Analysis Tech. Dev., DO #0002	Morris, G. (SEAL)	Air Force	735,000
Elect. Prot. Assess. Analysis Tech. Dev.	Morris, G. (SEAL)	Air Force	522,000
Elect. Prot. Assess. Analysis Tech. Dev.	Morris, G. (SEAL)	Air Force	150,000
Design, Analysis and Test Support	Daher, J. (SEAL)	Mission Research Corp.	100,000
Signal Processing Test Program	Meadors, J. (STL)	U.S. Dept. of Defense	249,974

GTRI Employees Give P-Card An A-Plus

By Joey Goddard, OCA



Quimin Lam



Ann Harbert



Pat Rose

Twenty GTRI employees are part of a pilot program for the P-card, a new way of purchasing materials needed for work — and the people we spoke with say the method is fast and efficient.

"The P-card is a significant improvement over the old way of making purchases," said Quimin Lam (AIST), a computer service specialist.

The P-card, or procurement card, pilot program began in December 1996 with 50 employees campus-wide. The card, a Visa issued through NationsBank, works like a credit card. P-Card holders may use the cards to purchase any non-equipment, business-related item that is not on a statewide contract. Purchases are limited to no more than \$1,000 per item and \$2,400 per order.

"I just love it," Lam said. "I am able to get the parts I need much more quickly, and as a result, I have been able to increase my response time to the units I support."

"Every case I've had has been positive," agreed Ann Harbert, (EOEML) a senior secretary. "It saves us a lot of time now that we don't have to fill out purchase orders for everything."

"Before, we wrote purchase orders

or used petty cash," explained Pat Rose (ITTL), administrative assistant. "Now, I just make one phone call, and that's it."

P-cards can be used at any vendor that accepts credit cards.

"At some places, it was impossible to use a purchase order," Rose said. "The P-card definitely makes life easier."

Lam is impressed with the increased efficiency the P-Card offers.

"It allows me to talk directly to the vendor," Lam said, "I can tell them what I need, ask questions, and make sure that I'm getting the right part.

"And if they have what I want in stock, I can get it the next day," he said. "I don't have to worry anymore that a part is going to sell out while I'm waiting for the paperwork to be approved."

Added Harbert: "It really saves us a great deal of effort when buying supplies. If I see something I know we've been looking for, I can buy it right then."

"We've been very happy with it," she said.

GTRI coordinators for the pilot program are Julie Blankenship in Research Accounting and Martha Farley in Supply Services.

SAC Offers Summer Fun for Little Ones

Want to offer your offspring some fun and a chance to learn this summer — without driving all over town? Camp Wreck-A-SAC, a summer day program for the 6- to 12-year-old children of GT faculty, staff and students, is a perfect opportunity.

The 1997 sessions are held at the Student Athletic Center (SAC) from 8 a.m. to 5 p.m. July 7 - Aug. 15. Each session lasts two weeks, and enrollment is by the session or the week. The price per week has not been determined yet. Aftercare will be offered from 5 to 5:30 p.m. for a small additional fee.

In addition, two special fee-based classes will be offered to interested children: swimming, which meets four days per week and costs \$15, and Taekwondo, which meets two days per week and costs \$10. Each class meeting is 40-45 minutes.

A complete information packet, including prices, will be distributed to employees the last week in March. Registration for employees' children is scheduled for:

- 9 a.m. to 2 p.m. Apr. 9, 1997
- 2 to 6 p.m. Apr. 10, 1997
- 9 to 2 p.m. Apr. 11, 1997.

Those who cannot register in person can register by mail.

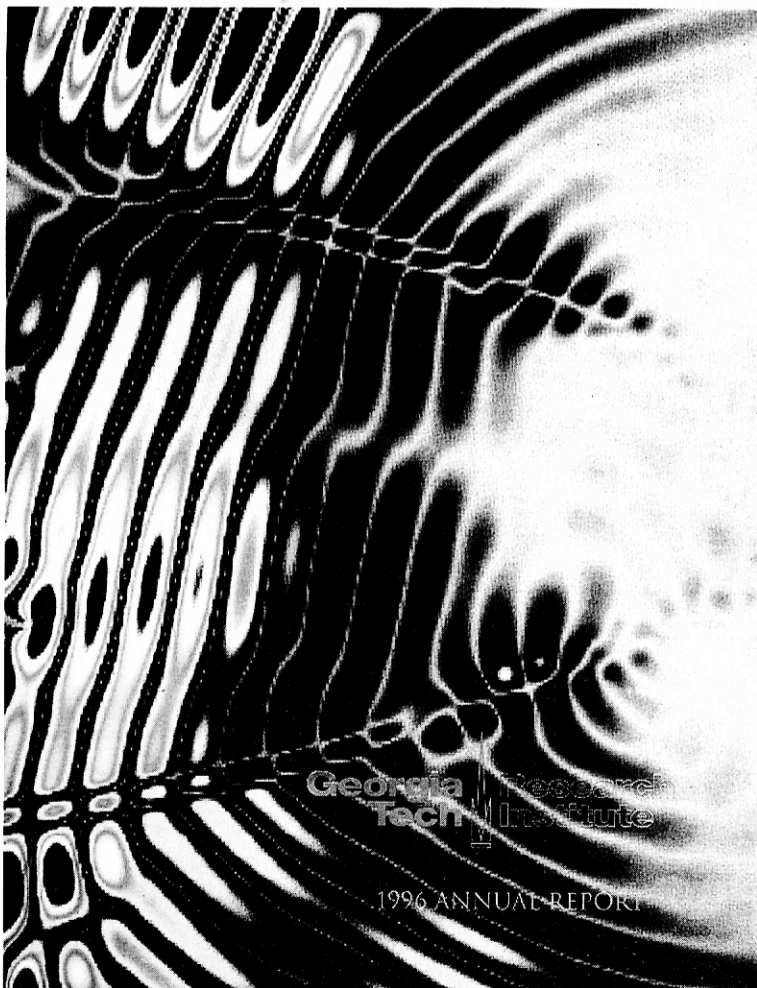
The camp can accept 50 children maximum, so please register early. For additional information contact Courtney Wiles 894-9984, or send e-mail to wreck.a.sac@sac.gatech.edu.

News & Notes

GTRI FY 96 Annual Report Available

The full-color, 32-page 1996 GTRI Annual Report is now available for employees to share with current and potential sponsors and colleagues. It features research from each lab, collaborative research with Georgia Tech's schools and colleges, new research initiatives, work for industry, internal research, Olympics research and GTRI operations during the 1996 Summer Games.

Employees received copies of the report in their mailboxes earlier this month. If you did not receive a copy of the report — or if you need additional copies — you may call the Research Communications Office at (404) 894-3444.



Microflyers from page 1

ultimately won't work, and we'll probably have to use some other method to get efficient motion in an aircraft this small. We may have to learn from insects and birds."

Beyond basic aerodynamic techniques, severe weight restrictions demand new types of flight controls, power sources, propulsion systems and avionics to fit within the 50 grams (two ounces) allowed for the vehicle and its payload.

Full-sized aircraft use motors and hydraulic actuators to move wing and tail structures that provide directional control, for instance. Because of the weight associated with those devices, however, MicroFlyers must use radically different control techniques.

Georgia Tech engineers are developing innovative control concepts. Robert Roglin (AERO) is investigating electrically actuated piezoelectric structures that differentially alter lift. Bob Englar (AERO) is applying techniques for directing engine thrust across the wings.

Researchers at several institutions are studying tiny jet turbine engines, pulsejets, ducted fans and other concepts for propulsion. But since the MicroFlyers could contact humans during their search

STL researchers are using finite-difference time-domain (FDTD) techniques to study closely coupled radome/antenna systems. (Photo by Stanley Leary, Graphic Courtesy STL)

Continued on page 6

Focus on Research

Gene Greneker (SEAL) works on the Olympic heart beat monitoring system, which was designed to wirelessly monitor cardiac vital signs. (Photo by Gary Meek)

Lab Overview Series

This is the second in a series of articles reviewing research capabilities in the labs. For a copy of the previous article on ITTL, see <<<http://www.gtri.gatech.edu/connector/conn1196/itll.htm>>>, or call (404) 894-4259.

SEAL: Antennas, E³, Radar and Undersea Acoustics

By Joey Goddard, OCA

The Sensors and Electromagnetic Applications Laboratory (SEAL), under the direction of Robert Trebits, focuses on research in radar systems, antenna technology, electromagnetic environmental effects and undersea acoustics applications. With its three divisions and one program office, SEAL boasts a highly published research faculty and has developed a number of short courses taught worldwide.

Antenna Technology and Development Division

The Antenna Technology and Development Division (ATDD), led by Bill Cooke, is responsible for antenna development within GTRI. "We handle everything from antenna analysis, performance evaluation, design, fabrication and testing," explained Trebits. "If it has to do with antennas, it is done in the ATDD."

The division has a variety of military, federal and industrial sponsors and plays a significant support role to the Systems Development Laboratory's (SDL) threat system research.

One of ATDD's growth areas is in phased and conformal array antennas. Phased array antennas allow the direction of the antenna pattern to be controlled electronically. This kind of antenna is much more versatile than antennas that are controlled mechanically; however, the cost of phased arrays has hindered their development, Trebits said. The division is evaluating Russian phased array technology for possible U. S. radar applications.

"The Russians have a totally different approach to phased array technology," said Trebits. "Where U.S. technology emphasized performance, the Russians concentrated on low cost and ease of maintenance. We are hoping that the Russian technology will give us insight into how we can reduce costs without sacrificing performance."

Electromagnetic Environmental Effects Division

With more than 30 years of experience in defining and measuring electromagnetic characteristics of electronic systems, the Electromagnetic Environmental Effects Division (EEED), led by David Millard, addresses issues of electromagnetic interference and compatibility. The division performs electromagnetic interference tests for

pacemakers, data from which are then submitted by manufacturers to the Food and Drug Administration (FDA), which regulates medical devices.

In the newly established Electronic Article Surveillance (EAS)/Medical Device E3 Test Center, sponsored by the International EAS Manufacturers Association, EEED continues to research the effects of electromagnetic interference on medical devices.

"EAS systems are used to detect, identify and track merchandise in stores across the country," explained Jimmy Woody, head of the center. "As the use of both EAS and implanted medical devices has grown, there has been concern on both sides about the potential problems of electromagnetic interference.

At the center, we expose medical devices to a representative number of EAS systems to determine how the devices interact."

"The EEED also has an emerging base of commercial sponsors in other areas of electronics," Trebits noted. "Many U.S. companies are coming to us to certify that their products meet the electromagnetic compatibility standards of the European Economic Community."

Still, a major part of EEED's research includes the evaluation of military systems to insure that electronic equipment does not interfere with other electronics operating simultaneously.

Radar Systems Division

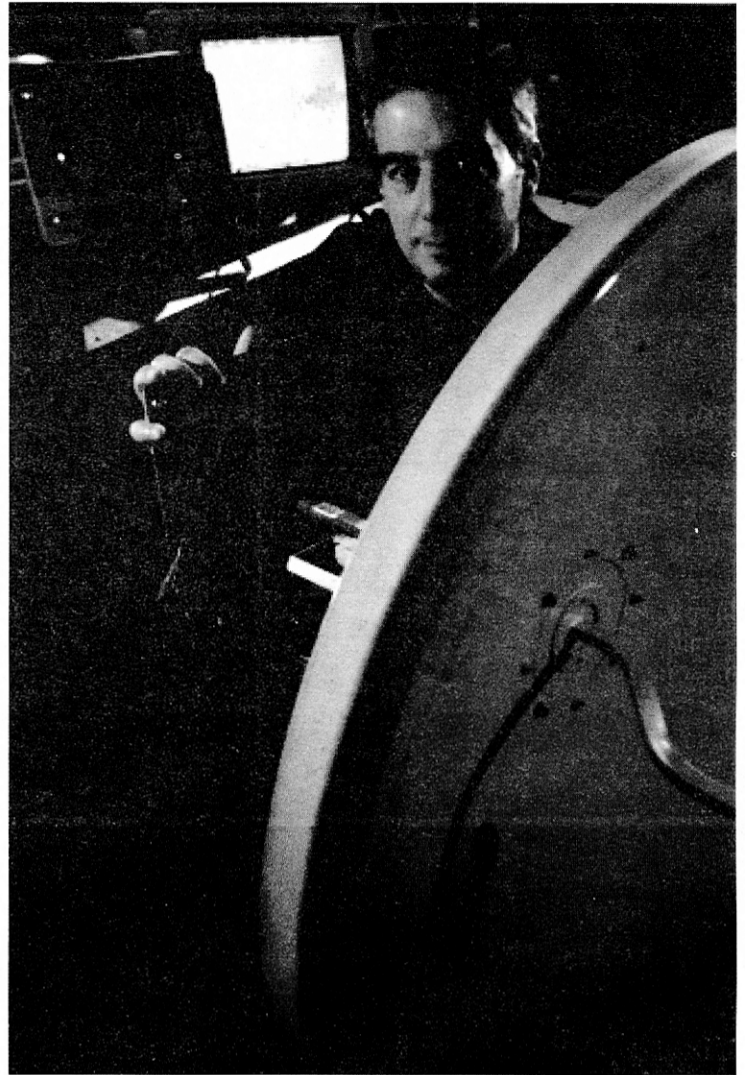
The third SEAL division, the Radar Systems Division (RSD), handles every attribute of radar performance and design. RSD, under the direction of Guy Morris, has offices at the Cobb County Research Facility, Fort Monmouth, N.J. and Dayton, Ohio. One of RSD's areas of specialty is electronic counter countermeasures (ECCM).

"This is the inverse of the work that ELSYS does in electronic countermeasures," Morris said. "Where they develop ways of jamming radar, we try to make the radar more effective so that it can't be jammed."

Another growth area within RSD is development of synthetic aperture radar. This radar system generates high resolution imagery, even through clouds.

"This technology can be used for battle damage assessment, crop identification, target detection and to determine weather conditions," Trebits said. "Unlike a camera, synthetic aperture radar sees through clouds, and in some cases, can penetrate the ground. And it is not limited by day or night."

RSD, in cooperation with ELSYS and industry, also supports the Air Logistics Center at Robins Air Force Base in main-



taining the radar in F-15 fighter planes. "As these planes get older, the parts necessary to run the radar systems become obsolete," Trebits explained. "To keep the planes in the air, we have to find a way to keep their radar working." Morris added that the division expects to expand this support role to other older planes in the coming year.

Another area of growth for RSD is cooperative and non-cooperative target recognition systems that use radar to distinguish between friends and foes in a hostile environment.

"This is a large field where we will be able to play a much larger role in the future," Morris said.

Underwater Research Program Office

At the Underwater Research Program Office (UPRO) headed by Gary Caille, researchers from GTRI and the School of Mechanical Engineering do research in underwater acoustics. Although most of URPO's work is done for the Navy, researchers also explore nondestructive testing, using acoustics techniques. The URPO staff recently completed underwater acoustic measurements within boundary layers in the Yellow Sea cooperatively with the People's Republic of China.

SEAL Goals

In the coming year, SEAL hopes to further expand its sponsor base to increase the number of non-Department of Defense agencies and industrial sponsors, Trebits said.

"We will continue to do a great deal of work for the Department of Defense, but our research is growing into areas beyond just military applications," he said.

To read the third article in the Lab Overview Series, turn to page 6.

News & Notes

Printed and Web Materials Available

Need materials about GTRI to use with current and potential sponsors, colleagues and friends of GTRI? The following are available in printed form in the Research Communications Office:

GTRI folder
GTRI brochure
1996 GTRI Annual Report
Recent issues of *Research Horizons* magazine.

Brochures

Electronic Protection/Attack Research Test and Evaluation Research
Information Technology/Telecommunications
Modeling and Simulation
Powering the State of Georgia
GTRI and Industry

Fliers

Food Processing Industry Programs
Manufacturing Tech. Capabilities
Communication, Networking and Navigation
Aerospace/Transportation Capabilities
Electro-Optics Research
Safety, Health and Environmental Technology
Commercial Acoustics Research

Materials Science/Technology Research
Missile Systems Research

You may also refer contacts to GTRI's web pages, which incorporate these materials: <<<http://www.gtri.gatech.edu/>>>.

A flier on the field offices and one on defense acoustics research are in progress. Brochures on antennas and electromagnetics and radar are planned, as well.

Printed materials are available in Rm. 223 CRB. To have materials sent via campus mail, call the Research Communications Office at (404) 894-3444.

Lunch 'N Learn Offers Insight into GTRI Opportunities

By Eliesh O. Lane, EOEML

EOEML's Safety, Health and Environmental Technology Division's (SHETD) monthly Lunch 'N Learn sessions offer a casual, yet informative, way for division members to get information on GTRI programs and spend some time together.

Since August 1996, employees within SHETD have been organizing monthly Lunch 'N Learn sessions on a variety of topics, including program initiation, the World Wide Web, accounting procedures and mentor/mentee programs.

The idea for the sessions grew out of facilitated meetings for each of the division's three branches early last year. The need for improved communication and program awareness was a common frustration voiced in the meetings. The Lunch 'N Learn sessions address those concerns by offering junior and senior researchers an informal opportunity to learn about procedures, programs and research opportunities around campus and beyond.

Each session is held on the last Friday of the month from noon until 1:00 p.m. — although casual, sessions always start and end on time. A week before the session, an e-mail invitation announces the current month's topic. Attendees bring their own lunches.

Previous Lunch 'N Learn topics have included:

- An introduction to the Office of Contract Administration's (OCA) Program Initiation Division (PID). Matt Gedney, Janis Goddard, and Teri Hansen of PID presented an overview of how PID services can benefit researchers. They provided

information about submitting proposals to agencies including the Environmental Protection Division, the National Institutes of Health and general industry.

- A follow-on session about OCA's program development assistance. Joan Leitch and Joey Goddard (OCA) discussed services available for identifying new programs, searching the Commerce Business Daily, requesting solicitations and customized searches for research interests.

- An overview of GTRI Accounting and Management and Project Support Services (MAPS) information. Julie Blankenship (Accounting) and Vickie Fennell (MAPS) discussed APLC, PMC, budgets, "green sheets" and timesheets. Division members found out about an additional way to track their projects via Georgia Tech's WWW home page. Here, financial reports for projects and purchase order statuses can be accessed quickly, at any time.

- An introduction to EOEML's Communications and Technology Transfer Branch (CTTB). Dara O'Neil presented a session entitled "Using EOEML's WWW Site to Communicate Your Research Findings." The presentation relied on the latest technology in LCD projectors and identified ways that EOEML researchers are using the home page to display research projects, publications and capabilities. Sev-

eral lab members have been contacted by potential sponsors as a result of exposure on the site, and some projects have been funded. The site has been traversed by visitors from as far as England and Thailand. The session also provided attendees with techniques for easily developing their own home pages.

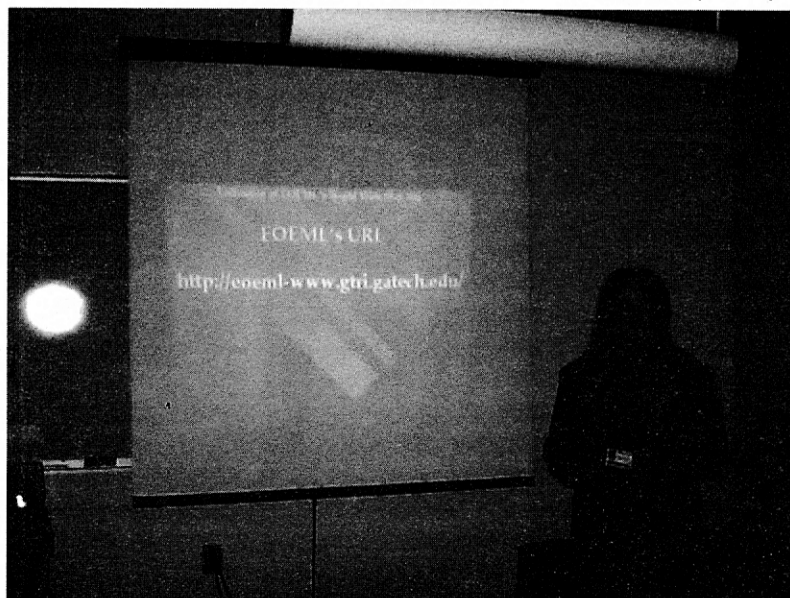
- Kirk Mahan of EOEML's Safety, Health and Ergonomics Branch (SHEB) discussed the Georgia Tech Mentor/Mentee Program. This program pairs junior researchers (mentees) with a senior researcher and provides contract development funds to the mentee to write at least one proposal during the term. Mahan participated in the program several years ago — he addressed the goals and objectives of the program as they relate to contract development at GTRI.

Future Lunch 'N Learn sessions are expected to address GTRI and Economic Development Institute program opportunities, sustainability initiatives, overviews of laboratory activities and the new FAR accounting system. Ideas for past and future sessions have been identified by Eliesh Lane and Catherine Joseph, who coordinate the monthly sessions, and via suggestions from division members. Evidence of the effort's success is continued attendance by many of SHETD's mem-

bers, and the interest of invited speakers.

For more information on SHETD's Lunch 'N Learn program, or to offer suggestions for future sessions, you may contact Eliesh Lane (894-8044 or eliesh.lane@gtri) or Catherine Joseph (894-2645 or catherine.joseph@gtri).

Dara O'Neil (CTTB) discusses EOEML's WWW page and how researchers can benefit from it at the November 1996 Lunch 'N Learn. (Photo courtesy Eliesh Lane)



**More
of the
Lab
Series**

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**Lab Overview
 Series**

**ELSYS: Electronic
 Systems,
 Electromagnetics,
 Research and
 Teaching**

By Joey Goddard, OCA

The Electronic Systems Laboratory (ELSYS) is primarily concerned with research into electronic systems and electromagnetics, says director Bud Sears.

"Our main focus is in electronic defense, or those systems which are employed to protect our troops in battle," he explained.

As the nation's leading university-based electronic defense research organization, ELSYS provides analysis, fundamental understanding and hardware implementation of electronic defense concepts. In addition to conducting ground-breaking research, several ELSYS faculty members teach undergraduate classes or serve on national advisory boards.

System Evaluation Division

Researchers in this division work with new and emerging electronic systems from their inception through test and evaluation.

"Our job is to determine how electronic warfare systems and threat systems will interact," said Bill Rogers, division chief. "To do this, we develop models and then use these models to analyze the effectiveness of electronic warfare systems against the threats."

One area of growth for the division is in the development of models for their military sponsors. "The government is developing a common software architecture that all future system and threat models will have to follow," Rogers explained. "We want to ensure that the analysis capabilities we need are included in the models that will run under this new architecture."

The division also supports improvements to the Air Force's test range infrastructure in its development of test instrumentation. One of their key breakthroughs in this mission is the development of the Automatic Data Reduction System for processing flight-test data.

"It used to take weeks to get data back from flight tests," Rogers said. "Meanwhile, planes are flying with systems that may or may not be working properly. This system makes it possible for us to download and analyze flight test data immediately and fix any problems before the next test flight."

Human Factors Branch

This group studies how people interact with various electronic systems. The branch is the only research group in the

country that has collected the data required to model how humans operate threat systems; it also has been recognized by the Navy as one of the nation's leading experts in helicopter cockpit design. However, not all their work is done for the military, Sears said.

"We are seeing a great deal of growth in applications of high technology in the area of traffic management," Sears said.

Through a contract with the Federal Highway Administration (FHA), the branch is helping make traffic management systems more effective for the people who operate them.

"As we continue to move toward intelligent vehicles and intelligent systems, we have to remember that traffic management control centers must be designed with people in mind," added Sears.

System Engineering Division

The focus of the System Engineering Division is on fielded systems — systems that are already in use. Much of their work is in technology insertion, replacing worn out or obsolete electronics in aging aircraft.

"If the electronics of the radar become outdated, then the plane can't operate as effectively in a competitive electronic environment," explained Katherine Schlag, associate division chief. "We pull out the old subsystems, redesign them and then integrate them with the other systems on board. Changes can be tested in the lab efficiently before they are tested in the field. It's a much more cost effective way to upgrade the aircraft."

One of the lab's emerging areas of research is in competitive information technologies. Known in the Department of Defense as "information warfare," this research involves techniques and technologies used to gain an information advantage over adversaries or competitors. "Information warfare research studies also include how to protect your information from others," Sears said. "This type of research is vital to anyone who runs a network."

"Studies have shown that most attempts to break into networks are successful and undetected," added Myron Cramer, who leads an interdisciplinary New Initiatives Group on Information Security. Cramer has tested network security for a number of commercial sponsors. "We are able to find weaknesses in their systems and help them develop better capabilities to respond," he said.

The lab is also home to the new Test and Evaluation Research and Education Center. There, researchers from universities nationwide collaborate with Georgia Tech and GTRI faculty to perform test and evaluation (T&E) research.

"We have a threefold mission," explained Sam Blankenship, center director, "to do sponsored research, to further education and training in T&E, and to assist those working in the T&E community."

The center teaches short courses in T&E, and holds conferences on various T&E issues, as well as performing research for a variety of sponsors. Blankenship believes the center will enhance Georgia Tech's position at the forefront of T&E research. "When people think of T&E, we want them to think of us," he said.

ELSYS Goals

In the coming year, ELSYS hopes to enhance its reputation as a world-class electronic systems research and development organization.

"We will continue to support our existing sponsors with high-quality research, and work to extend our research further into both non-military government agency and commercial applications," Sears said. "We offer expertise in a number of key research areas and we are growing in many more. Our skills and our research results will help us remain one of the top universities in the nation for electronic systems research."

Microflyers

from page 3

missions, whirring rotor blades or exposed propellers may be too dangerous to use.

Batteries or other electrical sources offer another challenge, as do guidance and navigation systems — and the tiny payloads that will transmit television images or sniff the air for contaminants. Recent advances in micro electro-mechanical systems (MEMS) and microelectronics technology give engineers confidence that systems that tiny could one day be practical.

Here at Georgia Tech, for instance, researchers have been working to integrate multiple functions into single chips. Progress to date has demonstrated integrated image acquisition, processing and data compression, including demonstration of optical-through-wafer interconnects. Drs. Joy Laskar, Nan Marie Jokerst, Martin Brooke, April Brown and Scott Wills (ECE) make up the project team developing the chips.

GTRI researchers including Nile Hartman (EOEML) and Bob Schwerzel (EOEML) are working on the area of miniaturized integrated-optic chemical and biological sensor systems.

Though flown under human control, the MicroFlyers must be independent enough to avoid obstacles and maintain stable flight by themselves.

"Flying a remote-controlled helicopter is extremely difficult, and even experienced people crash them all the time," Blankenship said. "These aircraft will need autonomy so we don't have to spend a lot of time training people to operate them."

Since they may search environments containing toxic chemicals or biological hazards, the MicroFlyers also must be inexpensive enough to be thrown away. Designers are aiming at a \$1,000 per-unit cost for the expendable vehicles.

The effort to design MicroFlyers involves many different technical challenges, so Blankenship believes only organizations with broad interdisciplinary expertise will be successful in building them.

"We're not really sure what will turn out to be the most difficult challenge," he added. "Nobody has ventured into this realm before."

Speakers at the conference include James McMichael, director of the micro Air Vehicle (microAV) program at DARPA, and Michael Francis, former director of the microAV program.

Information about the conference is on the World Wide Web at <<<http://spbtrc.gtri.gatech.edu/MicroVehicle>>>.

GTRI Greetings

Welcome to some of our newest employees!

Ten Good Things We Know About Lynn Fountain

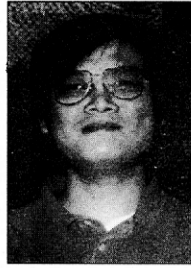
1. Lynn has worked with STL since September.
2. A Research Scientist II, Lynn studies the RCS of background clutter and threats.
3. Lynn has been at Georgia Tech since 1986, when she began working on her Ph.D. in physics. She graduated in 1992.
4. Before starting work at GTRI, Lynn worked as a program manager at the Center for Education Integrating Science, Mathematics, and Computing (CEISM) for four years.
5. Lynn also has a bachelor's degree in physics and a master's degree in electrical engineering from Tennessee Tech in Cookeville, Tenn.
6. Because she was born here, Lynn considers herself a native Atlantan, but the rest of her family now lives in Tennessee.
7. She and her husband, David, a Tech graduate in electrical engineering, have a cat named Jasmine.
8. Her father, John Matthews, is an adjunct faculty member in the College of Electrical and Computer Engineering. He commutes weekly from Cookeville, Tenn.
9. Lynn's hobbies include quilting and crocheting, which she learned while spending childhood summers with her grandmothers in Tennessee.
10. She also spends her free time reading, baking and doing yardwork.

Ten Good Things We Know About Samuel Li

1. Samuel has worked as a graduate research assistant in SEAL since August.
2. He is doing basic research work to develop a new approach to protect radar signals from jamming.
3. Before coming to GTRI, Samuel worked as a design engineer for ADT's Electrosignal Laboratory, then as a software engineer for Marpos Techno, and most recently as a software engineer for



Lynn Fountain



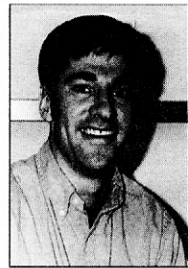
Samuel Li

Motorola-Codex.

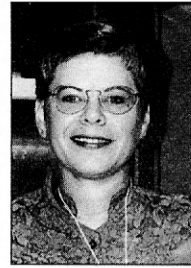
4. He is a Ph.D. student in the College of Electrical and Computer Engineering here at Tech.
5. He has a master's degree in electrical engineering from the University of Texas at Arlington and a bachelor's degree in the same subject from Tamkang University in Taiwan, R.O.C.
6. His wife, Emei, just graduated from the University of Maryland in College Park with a Ph.D. in mathematics.
7. The two make their home in Healy Apartments here on campus.
8. Samuel grew up in Taiwan, but considers Georgia his home. He came to the United States in 1985 to live with his sister in Texas.
9. Working and studying keep Samuel very busy, but when he has free time he enjoys playing ping pong, chess, tennis and bridge.
10. Samuel also likes music, sightseeing, computers, electronics and is a photography buff.

Ten Good Things We Know About Phil Hurwitz

1. Phil is a technical writer for ELSYS.
2. He writes the on-line help files, user's manuals and code documentation for ELSYS software. He also edits management reports, promotion papers, proposals and other lab publications.
3. Phil started work at GTRI as a Tech Temp and became a permanent employee in September.
4. A graduate of the University of Florida in Gainesville, Phil holds a bachelor's degree in psychology and a master's degree in English education.
5. Before coming to work for GTRI, Phil worked as a substitute teacher in south Florida and later at Crabapple Middle School in Roswell, Ga.
6. After getting his master's degree, he spent a year teaching English in Japan.



Phil Hurwitz



Ann Jaudon

7. Phil grew up in Miami, Fla. He moved to Atlanta in 1994.
8. He lives in Buckhead with two roommates, whom he has known since the fifth and seventh grades.
9. In his spare time, Phil studies karate. He has a blue belt in the sport.
10. Phil also is an avid photographer, and spends his weekends assisting with wedding photography.

Ten Good Things We Know About Ann Jaudon

1. Ann started working for GTRI in July as an administrative assistant in the Advanced Programs Office (APO).
2. Her duties include supporting the manager of APO, as well as preparing budget documents, making travel arrangements and compiling research results.
3. Ann transferred to GTRI from Student Services, where she worked for the Dean of Students in the Student Success Center.
4. Before she came to Tech, Ann spent 15 years with the Coca Cola Co. While there, she worked in international human resources, sales/marketing and operations, and fountain sales.
5. Although she considers Atlanta her home, Ann grew up in Guyton, Ga., a small town outside of Savannah.
6. Ann just bought a house in Brookhaven, where she lives with her cat, Tom.
7. She has one daughter, Melanie.
8. When she's not at work, Ann likes to clown around. Her alter ego Patches the clown entertains for hospitals and children's organizations around the city.
9. Ann spends her free time enjoying her hobbies, reading and exercise, and decorating her home. She considers decorating a "never-ending" but fun pastime.
10. She also loves going to concerts, the theater, the symphony, museums and anything having to do with the arts.

Focus on Folks

Personnel News

New Hires

AERO welcomes **Steven Turney**, REI. AIST welcomes **Dan Walmsley**, Computer Services Specialist III. EOEML welcomes **Bryan Black**, RS II. HRO welcomes **James Lawrence**, Programmer I. SDL welcomes **Michael Seymour**, GRA; **John Cribbs**, SRE; and **Patsy Pye**, Tech Temp. SEAL welcomes **Daniel Diaz**, Student Assistant. STL welcomes **Robert Beasley**, PRE. VPDIR welcomes **Andres Sanchez**, Student Temporary.

Moving On

Margaret Osterman and **Melissa Yale**

(AERO); **Christopher Reynolds** and **James Hill** (EOEML); **Gary Richey** (HRO); **Bradley Newton** and **Robert Pauley** (SEAL); and **Chad DeJong** (PST) are moving on.

Personal Notes

Our Sympathy

...to **Donna Gamble** (EOEML), whose father passed away in January 1997.

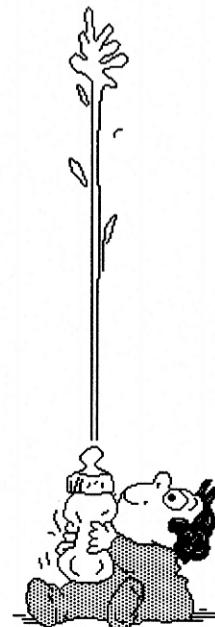
...to the family and friends of retiree **Gary C. Price**, who died in January 1997. Gary was an electronics technician in the former RAIL group.

Cradle Roll

Jill and **Lamar Gostin** (both of SEAL) welcomed a son, Nathaniel Lamar, on Dec. 17, 1996.

Tom Cotter (SDL) welcomed his first grandchild, Thomas Matthew Cotter, on Jan. 16, 1997.

Carey Floyd (SDL) welcomed her second grandchild, Collin Andrew Moncrief, on Jan. 27, 1997.



Focus on Folks

Professional Activities

Aerospace and Transportation Laboratory

Charles Crawford recently presented an invited paper in Japan to the American Helicopter Society (AHS) Japan Chapter.

Bob Englar served as session chairman at applied aero technical sessions on V/STOL, STOL, Rotor and Propeller Aerodynamics during the AIAA 35th Aerospace Sciences Meeting in January 1997. He also presented a technical paper on AERO's NASA research program on advanced aerodynamics of the High Speed Civil Transport at the Wing/Configuration Aerodynamics Session.

Electro-Optics, Environment and Materials Laboratory

Leigh McElvaney, John Pierson, Paul Schlumper, Roc Tschirhart and Jan Youtie (EDI) recently participated in a Compliance Assistance Environmental Benefits Initiative meeting hosted by EPA Region IV's Environmental Accountability Division. **Nancy Davis** and **Ginny Key** facilitated the meeting. EPA, Georgia Tech and the Georgia Environmental Protection Division are jointly developing a project to measure the results of environmental technical assistance efforts in Georgia. This project will also be a part of a national study coordinated by EPA in Washington, D.C.

Steve Hays was invited to present "Managing Construction Safety" at the American Society of Safety Engineer's Compliance Management 2000 Conference in Orlando, Fla. He also presented "Meeting Today's OSHA Standards" to a Workplace Conference in Thomson, Ga., sponsored by the Thomson-McDuffie Human Relations Commission and Chamber of Commerce.

Paul Schlumper and **Jim Walsh** recently worked with the Georgia Tech Center for International Standards and Quality (CISQ) conducting new courses in ISO 14000 for industry and the Georgia Tech community. The courses addressed internal auditing and system documentation, and dealt with the emerging international standard on environmental management systems.

Matthew Malok has been named a Certified Meeting Professional (CMP) by the Convention Liaison Council based in Washington, D.C. The CMP designation is awarded to persons who qualify based on experience, responsibilities, education and professional contributions and then pass the CMP examination.

In October 1996, **Chris Summers, Wusheng Tong** and **Lilly Zhang** attended The 1996 U.S. Workshop on the Physics and Chemistry of II-VI Materials

in Las Vegas, Nevada. Summers served on the program committee and was also chairman of the Conference Session on the Growth of IR Detector Materials. Tong presented a talk titled "Gas-Source of SrS:Ce for Flat Panel Displays." The co-authors of the paper were **T. Yang, W. Park, M. Chaichimansour, B.K. Wagner** and **C.J. Summers**. Lilly Zhang also presented a talk titled "Optimization of the Structural Properties of Hg_{1-x}CdxTe (x=0.18-0.30) Alloys: Growth and Modeling." This work was completed with the help of **A. Parikh, S.D. Pearson, R.N. Bicknell-Tassius** and **C.J. Summers**.

Several members of the Advanced Materials Technology Division attended the Second International Conference on the Science and Technology of Display Phosphors in San Diego, Calif., Nov. 18-20, 1996. This conference was chaired by **Chris Summers**. **Brent Wagner** chaired the New Phosphor Development session. The Phosphor Technology Center of Excellence, the Defense Advanced Research Projects Agency, and the Society for Information Display sponsored the conference. Several papers were presented by PTCOE members. **Wusheng Tong** presented a paper titled "Growth and Characterization of a Novel Low-Voltage Tunnel EL Device." This was co-authored by **B.K. Wagner, H. Menkara** and **C.J. Summers**, along with **P.N. Yocom** and **M. Ling** of David Sarnoff Research Center. Tong also presented a paper titled "Electroluminescent SrS:Ce Thin Films Grown by Gas-Source MBE." This work was co-authored by **T. Yang, M. Chaichimansour, W. Park, B.K. Wagner** and **C.J. Summers**, along with **S.-S. Sun**, and **C.N. King** of Planar America. **Silke Schön** gave a talk on "Improved Photoluminescent Properties of ZnS:Mn Due to the d-Doping Process." This paper was co-authored by **M. Chaichimansour, W. Park, T. Yang, B.K. Wagner** and **C.J. Summers**. **Sen Yang** presented a paper named "Low-Voltage Properties of Y₂O₃:Eu FED Phosphors," which was co-authored by **J.A. Cooper, C. Stoffers, F. Zhang, J. Penczek, B.K. Wagner, S.M. Jacobsen** and **C.J. Summers**. **Christian Stoffers** gave a talk on "Concentration Dependence of the Cathodoluminescence Characteristics of Gd₂O₂S:Tb and Y₂O₂S:Tb Under Low-Voltage Excitation." This paper was co-authored by **S. Yang, S. Jacobsen, B.K. Wagner, J. Penczek** and **C.J. Summers**. **Philip Rack** presented a paper named "Synthesis and Characterization of SrS:Ce/SrTe:Ce Blue Phosphor Powders." This work was achieved with the cooperation of **P.H. Holloway** of the University of Florida, **W. Park, B.K. Wagner, J. Penczek** and **C.J. Summers** of PTCOE/Georgia Institute of Technology, and **W.L. Warren** and **K. Vanheusden** of Sandia National Laboratories. During the poster session, **M. Arnold** presented a poster titled "Formation of Stacking Faults in ZnS Thin Film Epitaxially Grown on GaAs (001)." This was completed with the cooperation of **Z.L. Wang** of Georgia Institute of Technology, and **W. Tong, B.K.**

Wagner, S. Schön, and **C.J. Summers** of PTCOE/Georgia Institute of Technology.

Paul Schlumper and **Scott Brueck** were invited presenters at the Annual Conference of the Georgia Turfgrass Association in December 1996 in Atlanta. Schlumper and Brueck gave presentations on safety, health and environmental compliance issues to a group including golf course superintendents, landscape company representatives and manufacturers.

EOEML's web site (<http://eoeml-www.gtri.gatech.edu>) has won the Editor's Choice Award from LookSmart, a subsidiary of The Reader's Digest. **Dara O'Neil** is webmaster of EOEML's website. This award recognizes the highest standard for providing a useful and high quality website.

Research Communications Team

"GTRI Connected," the electronic website that kept employees informed of Olympics-related information from June to September 1996, won a Special Merit Award for Institutional Relations Projects in the Council for the Advancement and Support of Education's (CASE) 1997 District III competition. Working on the project were **Lea McLees**, editor; **Rick Robinson**, Web administrator; **Lisa Mullikin**, student intern; and **Bob Baggerman**, research engineer (ELSYS).

John Toon and colleagues from the University of Georgia and Duke University presented "What's Happening to Research News?" at the CASE District III Conference in Atlanta, Feb. 9-12, 1997.

Lea McLees presented "The Latest in Printing Technology" at the University Research Magazine Association conference in Tucson, Ariz., Jan. 24-26, 1997.

Systems Development Laboratory

Two SDL representatives are serving as ITEA Atlanta Chapter officers for 1997. **William Poteat** is vice president and **David Price** is treasurer.

Sensors and Electromagnetic

Applications Laboratory

Dayton Adams and **Glenn Hopkins** (SEAL) participated in the Technical Program Committee Meeting held in Denver, Col., on Jan. 12, 1997. They reviewed papers for the Phased Array Antenna Session of the 1997 IEEE Microwave Symposium.

Patti Ryan, on IPA assignment with Wright Laboratories/AECT, is government project officer for the development and delivery of the NCTI (Non-Cooperative Target Identification) Turn-Key System, which will support transition to the user of the NCTI program products.

Amplification

Two IEEE Fellows' names were omitted from last month's Fellows article: retiree **Hugh Denny** and IPA **Bob McMillan**, both of SEAL.

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