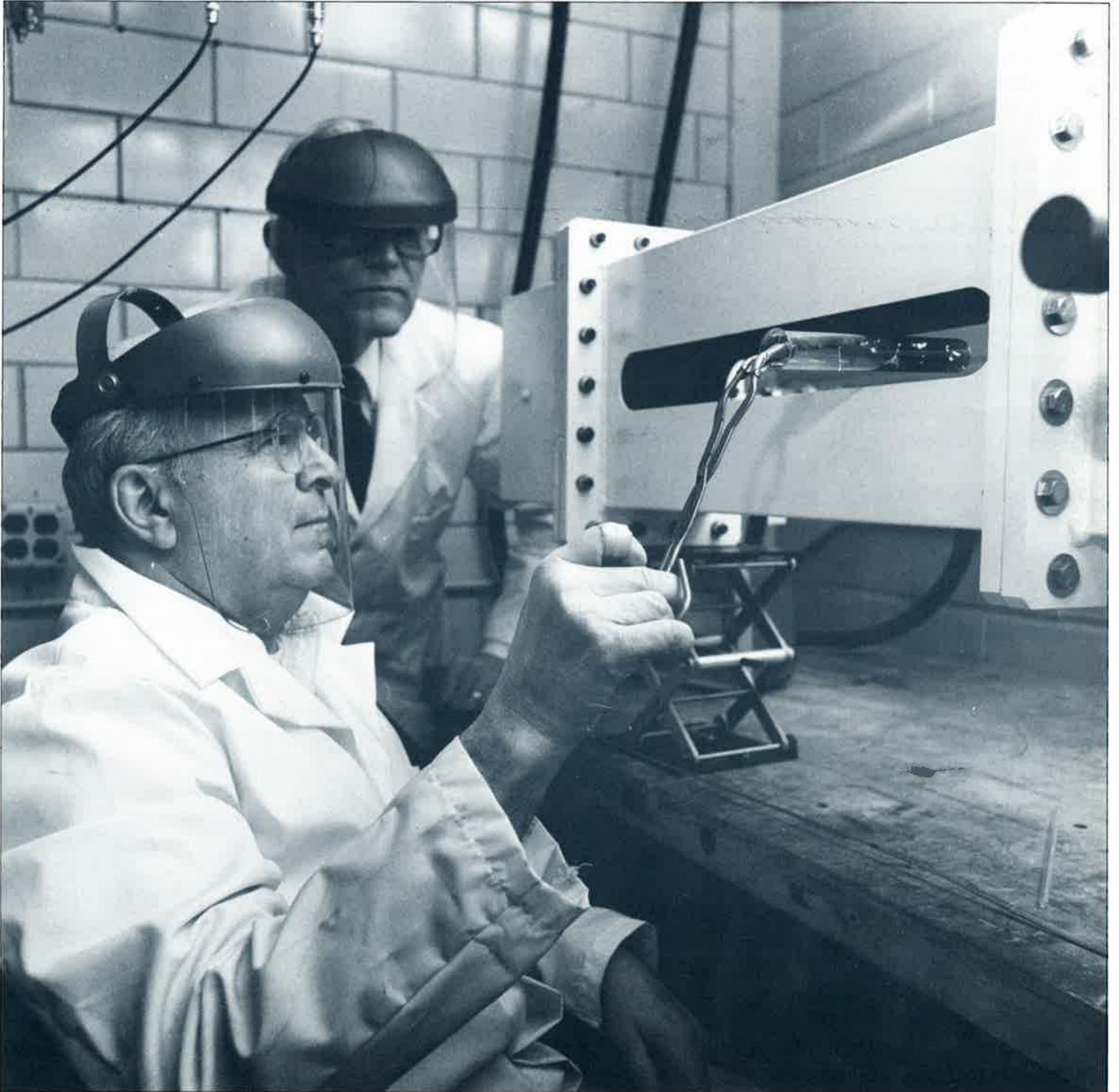


AMES LAB INSIDER



Microwave Research Facility

Ames Laboratory has a new Microwave Research Facility available to scientists for exploring the possibility of using microwave energy in their research. Established using Research and Development Exploratory Funds, Fossil Energy Project funds plus donations from industry, the facility is located in 177 Metals Development.

Some Ames Lab researchers are already using the facility. The primary advantage is the ability to monitor the microwave power so the microwave treatment can be quantified in terms of electric field intensity, energy absorbed by the sample and the time of treatment. When heating materials in a conventional microwave oven, essentially all that is known is the length of time the sample was heated, not the intensity of the electric field or the amount of energy absorbed by the sample.

This research facility could be considered for the following types of research:

- 1) Batch heating, similar to heating in a microwave oven.
- 2) Small sample heating by inserting the sample into a slotted-waveguide.
- 3) High electric field heating by using a resonant cavity.
- 4) Microwave plasma assisted treatments (e.g., plasma oxidation, plasma polymeriza-

tion, plasma etching, and plasma assisted chemical vapor deposition).

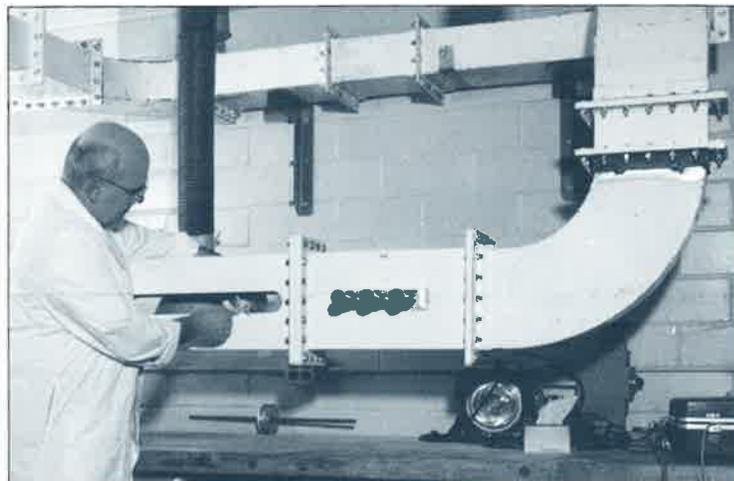
Preliminary tests for some applications can be done by simply inserting samples into slotted-waveguides. Other testing may not be as easy to do because it would require special equipment such as closed systems for gases and pumps, and special applicator designs.

The facility has equipment for microwave processing of materials at 915 MHz and 2.45 GHz. The equipment available at 915 MHz includes: a 10 kW generator, waveguide and metering to measure forward and reflected power (all donated by Despatch Industries to ISU); a slotted-waveguide applicator; a triple-stub tuner; and a water load. This facility was fully assembled and initially operated last December after generator alignment by Despatch Industries; performance tests were conducted in January. Future plans include the design and fabrication of a resonant cavity/plasma generator applicator that will allow microwave irradiations of samples either under vacuum, in inert gas, or in the presence of a plasma.

The 2.45 GHz equipment is part of the Experimental Microwave Applicator System (EMAS) acquired for a 1987 Fossil Energy research project on chemical coal cleaning. The EMAS includes: a 6kW source, a triple-stub tuner, three slotted-waveguide applicators,

a resonant cavity applicator (cylindrical - 4 in. diameter) with associated inert atmosphere quartz tube, a slide-screw tuner, a multi-mode cavity with turntable, a water load, and metering to measure forward and reflected power.

If you are interested in using the Microwave Research Facility, contact Delwyn Bluhm, Manager, Engineering Services or Glenn Fanslow, Associate at 294-3757. □



Glenn Fanslow positions a sample for later microwave heating at 915 MHz.

First Anniversary of Third Floor Conference Rooms

The Lab's renovated conference rooms on the third floor of Spedding Hall are one-year old. Since its completion last March, usage of the facility has increased significantly. Providing rooms for meetings, seminars, program reviews, retirement parties, and other events, the conference area is a first-class facility.

Accommodating 83, the auditorium (301B) can be expanded to hold 120 by opening the room divider to the back conference room. A speaker's lectern, projection screen and an audio system with a wireless microphone are available.

The small conference room (301A) seats 12 and the back

conference room (305) seats 25. Both rooms have chalkboards, projection screens, EtherNet ports, and VAX and HP3000 connections. In addition, the small conference room has a telephone and an ISN connection.

Audio visual equipment available includes slide projectors, dissolve unit, overhead projector, video player and monitor (1/2" VHS or 3/4" VHS), cassette tape player, laser pointer, portable display system, and easels. Coffeepots, punch bowls, serving platters, utensils, paper napkins, and cups are available for use in the serving area.

To make reservations, please call Jeanine Crosman, Engineering Services, 294-3757.

On the Cover: Glenn Fanslow, left, and Delwyn Bluhm processing a sample in the slotted waveguide at 915 MHz during initial performance testing of the new facility.

Ames Lab Superior Service Awards

An account specialist and a research technician are winners of the 1990 Ames Lab Superior Service Award. Each year the Lab honors two employees for outstanding performance in support positions with a \$500 U.S. Savings Bond and a framed plaque.

This year's Administration Division winner "has one of the toughest and perhaps least appreciated jobs in the Lab," said Tom Barton, director, at a recent awards luncheon.

ELLEN PRICE has one of those jobs where one has tremendous responsibility; if you do a perfect job, nobody notices it, but if you make a mistake, we are in deep trouble."

An account specialist in the Accounting Office, Price is responsible for the general ledger control, cash control and travel audits. She informs travelers about unallowable expenditures that have been claimed or calls them to ask whether or not they forgot to claim such things as parking fees or taxi fares. "In my own experience, it always means that she won't let you get a penny you don't deserve," Barton says, "but she is equally diligent in getting you every penny that you do deserve." One of her nominators said, "She is a key and vital link to the effective accounting functions and the reporting of accurate financial activity to Laboratory manage-

ment and the DOE. Ellen is always willing to assist and help all Laboratory staff and consistently contributes to the supportive work environment in the Accounting Office." Another wrote, "She has all the rules and regulations at her fingertips and applies them confidently." A principal investigator said, "She puts in the extra effort when needed to ensure that all accounting deadlines are met."

Price has worked at the Lab for 11 years and was very surprised and pleased to learn of her selection.

She grew up on a farm near New Hampton in northeast Iowa and worked in Iowa City for four years before coming to Ames. She enjoys auctions, gardening, refinishing furniture, reading, camping, and aerobics.

Nominated by an entire research group for "his superior service and excellent workmanship as a welder and machinist," **CHARLES BURG** won the Superior Service Award in the Operations Division.

Burg frequently consults with graduate students and postdoctoral fellows when they are designing or modifying equipment. His nominators stated, "Often we turn to Charlie in times of desperation, when our problems require immediate solutions. ... On several occasions, Charlie has rewelded pieces or fabricated new pieces because the original design



Charles Burg and Ellen Price receiving congratulations from Tom Barton

did not exactly fit the student's needs, or some other unforeseen problem arose when installing the new piece."

In experiments requiring ultrahigh vacuum, Burg excels. "It is essential that all the welds are leak-tight, clean and composed of proper materials," a nominator said. "The vacuum welding technique requires a skilled welder to consistently fabricate leak-tight joints. ... His attention to detail exemplifies Charlie's pride in his craftsmanship. ... Charlie will go the extra mile to help improve or complete a project."

A principal investigator stated, "I literally trust my life and the lives of my technical assistants to the quality of Charlie's welds." Another wrote, "Charlie's welding service has been indispensable to our group. He is not only a highly motivated, excellent welder, he is full of ideas and suggestions."

Burg is the current District

Director of the American Welding Society. An active participant in the design, construction and maintenance of PrISUM, ISU's solar car, he was a member of the support team that traveled in Sunrayce 90 and was instrumental in obtaining a portable welder that he used for on-site repairs. His work on the solar car was featured in last December's issue of the American Welding Society's *Welding Journal*.

A senior research technician in the Engineering Services Machine Shop, Burg likes golf, antiques and restoring old cars. □

Service Awards

Twenty percent of Ames Lab's permanent employees have worked here for more than 25 years. The Laboratory annually recognizes length of service, superior service and other achievements, such as the R&D-100 award, at an awards luncheon. The 1990 awards honored 41 employees, with 36 receiving the length of service award.

30 Years



Ralph Appelgate, left, and Paul Ness

RALPH APPELGATE

began as a sheet metal apprentice in the Maintenance Shop, and now, 30 years later, is the manager of Mechanical Services which includes the sheet metal, plumbing, construction and paint shops.

Appelgate enjoys living on a peaceful 4-acres of wooded countryside and likes boating and fishing. He has two grown children and is expecting his first grandchild in March.

PAUL NESS began in 1960 as a research technician.

Today he is a senior research technician working for Dr. Finnemore.

Ness lives in Story City and has four children and one grandson. He is the President of the Iowa Coachman Caravan and frequently takes long trips and weekend excursions with the caravan.

25 Years



Left to right: Ronald Foderberg, Thomas Johnston, Rohit Trivedi, Lowell Mathison, Kenneth Lassila, Nile Beymer, and James Holl. Not pictured: John Homer and Clifford Olson

NILE BEYMER started in 1965 as a research technician working for Dr. Fassel. He is now a senior research technician working for Bernard Beaudry.

Beymer lives in Nevada with his wife Betty, who works in Dan William's office. He

enjoys trap shooting and skeet shooting.

RONALD FODERBERG began at Ames Lab as an electrician for Ray Fisher in Facilities Services. He is now Manager of Electrical Services under Mark Godar.

Over the years he has seen

many changes in electronics technology such as the move from mechanical to solid state switching.

He and his wife have two daughters, one at DMACC and one a 5th grader. He loves to camp and recently completely rebuilt a boat.

JAMES HOLL joined Materials Handling as a truck driver. A year later he began working for Rick Schmidt doing arc metaling and arc melting. For 20 years he did alloy preparation for Dale McMasters, and since 1989 he has worked in the Materials Preparation Center.

Holl has three children and six grandchildren. He fishes in Canada every year and plans to farm after his retirement later this year.

JOHN HOMER is in the Instrumentation Group and provides electronic services on MS-DOS machines and networking to the VAX. He began at the Ames Lab Reactor in the Computer Services Group and, over the years, has seen dramatic changes in computing and programming.

Homer has five children and 10 grandchildren who live nearby. He purchased a

tandem bicycle last July; he and his wife have already ridden 700 miles.

THOMAS JOHNSTON is the head of Management Data Systems. He started in 1962 as a junior scientist in the Scientific Computer Services Group and moved from the scientific to the administration division in 1966.

Johnston lives in Nevada, has three children and four grandchildren. He graduated from the University of Maryland in math, likes photography and music, and plays keyboards and sings.

KENNETH LASSILA came to Ames Lab in 1965 as an assistant professor of physics. He is now a senior physicist and professor in Theoretical High Energy Physics. He spent 1964 in Finland as a Fulbright research scholar and in 1973 was a Fulbright lecturer in Finland, Greece and Norway. He has spent several summers in Europe, Scandinavia, and Finland.

The physics of music is a special interest of his; he plays

the violin and loves cross country skiing. Until two years ago, he played in the Central Iowa Symphony.

LOWELL MATHISON began at ISU in 1961 and came to Ames Lab in 1965 as a health physics technician. He is currently the program manager of Safety, Health and Plant Protection.

Mathison graduated in secondary education in 1961 from the University of Wisconsin, River Falls. He has two children at home, loves hot air ballooning and is an amateur ham radio operator.

CLIFFORD OLSON does his research at the University of Wisconsin Synchrotron Radiation Center in Stoughton, Wis. He began as a graduate student for David Lynch and received his Ph.D. from Iowa State in 1970.

He has two children, ages 11 and 12. When he has time, he likes to fish and canoe. He visits Ames two or three times a year for such things as program reviews.

ROHIT TRIVEDI received his Ph.D. from Carnegie

Melon in Pittsburg and began as a postdoctoral associate under Jack Smith. He is now a senior metallurgist and ISU professor of materials science and engineering.

Trivedi has three children, one at ISU and twin daughters at Ames High. His list of hobbies includes skiing, skating, photography, metal and clay sculpturing, oil painting and traveling. He has had sabbaticals in Germany, Switzerland, France and California. □

20 Years



Constantine Stassis. Not pictured: Jackie Cummings and Gareld Jones.

15 Years



Left to right: Stephen Elbert, Eugene Pedersen, Helen Struve, Jerry Hand, John Hill, Kent Mogard, and Thomas Wessels. Not pictured: Alexander Firestone, Mark Grootveld, Dennis Jensen, Michael Sevd, Walter Struve, and Daniel Veeder.

10 Years



Left to right: Judy Grass, Fred Schnelle, Diane Drake and Warren Straszheim. Not pictured: Otto Buck, Arthur Gautesen, Charles Harrell, James Rose, and Bruce Thompson.

R & D - 100 Award



Left to right: Rick Schmidt, David Peterson, and John Wheelock received Ames Lab's fifth R&D - 100 Award since 1984 from Research & Development magazine for the Thermite Reduction Process, one of the 100 most significant technological innovations of the year.

A major goal of the Insider is to recognize Ames Lab employees for their career and personal achievements and for interesting facets of their lives that are not always apparent in the workday environment. To help insure that recognition is given in a fair and timely manner, your assistance is requested.

Please alert the *INSIDER* editorial staff about awards, honors, planned retirements, program reviews, announcements, or human interest stories or ideas that you deem appropriate. In this way, the *INSIDER* will reflect the unique character of the Ames Lab and the cooperative community atmosphere that makes it the fine organization it is.

Graphic Communication Services is exceptionally busy right now, especially in the design area. Please allow two weeks for most projects and longer for large projects. March is the time when WAS budget documents are printed, slowing down the response time in the printing shop. PLEASE PLAN YOUR PRINTING, PHOTOGRAPHY AND DESIGN PROJECTS ACCORDINGLY.

The ISU Undergraduate Research Assistantship Program (URA) provides research experiences for undergraduates in their areas of interest. Awarded to juniors and seniors who have demonstrated outstanding academic ability, the program provides hands-on experience in a formal research environment. Faculty (or students) interested in participating in this program must apply by March 8. Forms and additional information can be picked up from Donna Millang, 201 Spedding.

Please submit ALL address changes to Personnel. Mail is delayed, or may not reach you at all, if addresses are not correct.

Following are upcoming tours of Ames Lab, arranged through Saren Johnston, Office of Information, 4-3474.

Tuesday, March 12 - 3:30 to 5:00 - Central Iowa Section of the American Society of Mechanical Engineers (ASME). Approximately 30 to 40 ASME members will visit the Lab.

Wednesday, April 3 - 11:00 to 12:00. Tour for approximately 75 high school seniors visiting ISU to attend Shadow Day. Sponsored by the Golden Key Honor Society, Shadow Day acquaints prospective students with ISU, its honors programs and honors societies.

COMPUTER SECURITY

We continue our discussion of the Information Systems security environment.

Treat information as you would any valuable asset.

You would not walk away from your desk leaving cash or other valuables unattended. You should take the same care to protect information. If you are not sure of the value

or sensitivity of the various kinds of information you handle, ask your manager for guidance.

Use government computer systems for lawful and authorized purposes only.

Computer crime laws prescribe criminal penalties for those who illegally access government computer systems or data.

Observe policies and

procedures established by Laboratory management.

Requirements for the protection of information at Ames Lab have been issued by the Deputy Director.

Recognize that users are accountable for activities on computer systems.

Activities should be restricted to those functions needed to carry out job responsibilities.

Report unusual occur-

rences to your manager.

Many losses would be avoided if computer users would report any circumstances that seem irregular. Warning signals could include such things as unexplainable system activity that you did not perform, data that appears to be of questionable accuracy, and unexpected or incorrect processing results. □

Never Stop Learning

Saying science writing is an opportunity to never stop learning, Michael Purdy is getting the chance to learn a lot lately. Joining the Office of

Information staff as its newest science writer in early January, Purdy keeps up a hectic pace meeting people and researching and writing stories for *Inquiry*, Ames Lab's science quarterly.



Michael Purdy

Purdy grew up in St. Charles, Missouri and graduated from the University of Missouri's famed journalism school. He completed a science writing internship at Argonne National Laboratory in the summer of 1989, which

he says gave him a good idea of the kinds of research taking place in DOE national labs. "I was happy to come to the Ames Lab because I knew I would see some interesting scientific work," notes Purdy. Purdy says he likes science writing because it gives him the opportunity to write stories about unusual topics. "Science writing allows for more creativity than writing about politics or business," explains Purdy. "An important part of my job is writing in a manner that the average reader finds both informative and entertaining."

Purdy's science interests include aeronautics and astronomy, but the sky is not the limit for him. Purdy also finds quantum mechanics and particle physics fascinating and challenging to understand. Following his ambition to continue learning, he plans to one day earn a second undergraduate degree in physics.

Purdy is gradually getting acquainted with Ames Lab, its people and its science. "It seems like a nice place to work; I like the atmosphere of a smaller lab," Purdy smiles. □

Going Up



In the little ups and downs of life, the Wilhelm Hall elevator finally had its "up" day! Celebrating the completion of the long-awaited elevator installation, a ribbon cutting ceremony was held on February 5. A crowd of close to fifty looked on as Rollie Struss (middle) cut the ribbon with the help of Mike Vaclav (left) and Mark Godar.

Announcing the elevator was "finally open for business," Vaclav challenged the crowd of onlookers for volunteers to join him on the first ride. Mark Godar, John Mason and Dorothy McNee stepped bravely forward.

Construction on the elevator began in April 1990. Using nonflammable synthetic hydraulic fluid, it is safer for the environment but more difficult to get good performance. A few details still need to be worked out, but the elevator is officially operational. □

Jiles Earns Higher Doctorate

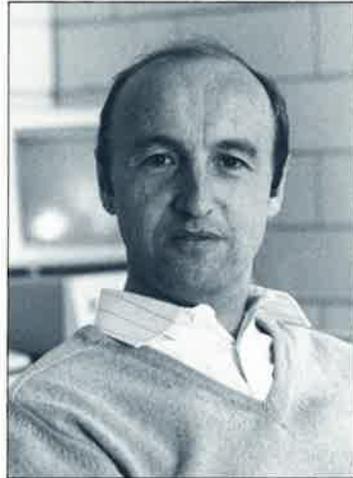
“I’m very pleased,” says David Jiles, senior physicist and ISU professor of materials science and engineering. Smiling, he continued, “Receiving it was a thrill and gave me a great sense of satisfaction!”

What Jiles received was a higher doctorate in Physics and Space Research from the University of Birmingham, England. He was awarded the degree for publication excellence in the field of magnetic and electronic properties of metals.

The recipient of the Degree of Doctor of Science (DSc) must be recognized as an authority in his or her field and have completed significant and extensive published works representing the results of original research.

Only a few higher doctorates are given each year by British universities. The candidate must hold a previous degree from the university to apply. Jiles, a native of London, received his master's degree from the University of Birmingham in nuclear physics in 1976 and completed his Ph.D. at the University of Hull in 1979.

Since the DSc can be awarded in any subject, there are not a great number of past recipients in the area of physics. Jiles was one of just two individuals who received the higher doctorate from the University of Birmingham in 1990. A prestigious honor, the DSc has no U.S. equivalent.



David C. Jiles

“I have wanted to get the DSc for a long time,” Jiles says. “There are not too many of them around, and it’s worth having,” he notes.

Jiles began the long process of applying for the DSc in November 1989. The regulations governing the degree require submission of three copies of a bound thesis containing the candidate’s published work, a synopsis and a statement indicating the part the candidate played in papers involving joint authorship. Submitted to the University of Birmingham in June 1990, Jiles’ thesis contains seventy of his best papers, including one on magnetic hysteresis which he considers his most important work.

Thesis examination procedures call for a review by three experts in the field, a process taking a minimum of three months. Jiles was notified of his recommendation for the DSc in October 1990.

Arriving in Birmingham just before Christmas to accept the

DSc in person, Jiles donned a bright red gown and took part in the degree ceremony. Following the conferring of degrees, Jiles’ father commented on the specialness of the occasion and the colorful red gowns beaming, “Santa has come early this year!”

Earning the DSc was not Jiles’ only endeavor that came full circle in December. The product of three and half year’s work, his book, *Introduction to Magnetism and Magnetic Materials*, was published December 13 in London. Jiles picked up personal copies of the book the day before he received his DSc, making the trip home to England a doubly gratifying event!

Jiles figures he has been pretty fortunate in his career, commenting that he’s been associated with a lot of good people over the years. Con-

ducting research at Ames Lab since 1984, Jiles says, “I find the Lab an exciting and fertile environment in which to work.” □

NEW EMPLOYEES

- Todd Hathaway,
Research Helper
(Tom Barton)
- Jonn Nebbe,
Research Helper
(Bernard Beaudry)
- Betsy Pfister,
Research Helper
(Bill Haas)
- Eugene Postma,
Student Associate
(Art D’Silva)
- William Vanbommel,
Graduate Assistant
(Tom Wheelock)
- Mark Vannette,
Student Associate
(Art D’Silva)

AMES LAB INSIDER

Volume 2/Number 3/March 1991

Ames Lab Insider is published 12 times a year for the employees of the Ames Laboratory by the Office of Information. Ames Laboratory is operated by Iowa State University (ISU) for the U.S. Department of Energy under Contract W-7405-Eng-82, and is part of the Institute for Physical Research and Technology consortium of fundamental and applied research centers.

Address comments to:
Editor, *INSIDER*
201 Spedding Hall
Ames, IA 50011-3020
515/294-1856

<i>Dianne Borgen</i>	<i>Editor</i>
<i>Saren Johnston</i>	<i>Writer</i>
<i>Chris Fullhart</i>	<i>Layout Artist</i>
<i>Dennis Sailsbury</i>	<i>Photographer</i>

Address correction requested
P-208-9