News Briefs

Developments

INFRARED SYSTEMS DEVELOPED TO TEST GALLIUM ARSENIDE WAFERS

Detecting flaws in gallium arsenide (GaAs) semiconductor materials should be easier with the two polarized infrared light systems developed by NBS researchers. Both are nondestructive methods that wafer manufacturers can use to screen materials before marketing.

One system can examine an entire wafer, while the other employs a 75- to 600-X microscope to view isolated wafer portions. Both systems allow digital storage of images and the use of false-color graphics to represent wafer characteristics, such as variations in the transmitted infrared intensity, which could indicate potential problems.

GaAs wafer applications in high-speed electronic and optoelectronic devices are growing rapidly, but production of the near-perfect GaAs crystals needed for optimum performance is not as advanced as with the older silicon technology. The two NBS systems can aid in production control by pinpointing wafer flaws and inhomogeneities. Bureau researchers are using the infrared techniques in-house, but will also assist industries in setting up their own systems.

For further information, contact Dr. Michael Bell, National Bureau of Standards, Gaithersburg, MD 20899.

DATA ENCRYPTION STANDARD TO BE REVIEWED

The Data Encryption Standard, issued in 1977 as a Federal Information Processing Standard (FIPS), is again being reviewed to determine its adequacy to protect computer data. (FIPS are developed by NBS by the federal government.) Comments are invited and must be received on or before June 4, 1987. Send to the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, ATTN: Second Review of FIPS 456, B154 Technology Building, Gaithersburg, MD 20899. The standard provides an algorithm to be used in electronic hardware devices to protect unclassified computer data. It was first reviewed and reaffirmed in 1983.

For further information, contact Dr. Dennis Branstad at the above address, or telephone 301/975-2913.

NBS STEP GENERATOR OFFERS IMPROVED FEATURES

Three NBS researchers have developed a calibration standard for transient waveform recorders that is an improvement over existing commercial instruments in either accuracy or variability of voltage levels. Transient waveform recorders are used to measure rapid voltage pulses in applications such as research into automotive engine performance or the testing of electrical power equipment for its vulnerability to lightning. These instruments also play key roles in nuclear fusion research and weapons testing. Developed by NBS researchers, the device generates precise, fully programmable voltage steps which exhibit fast transitions and exceptionally smooth settling to the final voltage value. Technical details about the step generator's design are available from T. Michael Souders, National Bureau of Standards, Gaithersburg, MD 20899.

SPECTRAL IRRADIANCE SCALE USING SILICON DETECTOR

NBS researchers have established an experimental scale of spectral irradiance for the wavelength range 400–700 nanometers based on an absolute silicon photodetector. Spectral irradiance and the re-

lated scale of luminous intensity are widely used in the photographic, lighting, defense, and aerospace industries for measuring the output of light sources. The new scale makes use of interference filters and a 100 percent quantum efficient light detector invented by researchers from NBS and United Detector Technology, Inc. The new scale is independent of—and has the potential to be easier to use than—either of the traditional scales based on the thermal physics of blackbodies or absolute thermal detectors. From 500 through 700 nanometers in the visible, the new silicon-detector-based scale agrees with the traditional blackbody scale used at NBS to within +0.5 percent to −0.7 percent with a standard deviation of 0.3 percent. When converted to luminous intensity (the scale used to relate irradiance to human eyes), the agreement between the two methods is even better.

For further information, contact Robert Bruening, National Bureau of Standards, Gaithersburg, MD 20899.

NBS/ISRAELI AGREEMENT ON CANCER, BLOOD SERUM RESEARCH

The National Physical Laboratory (NPL) in Jerusalem, Israel, has joined forces with NBS in a cooperative research program to develop and validate methods for chemical analysis of blood serum. An Israeli researcher is collaborating with NBS in providing a quality assurance program to enhance the accuracy of data from laboratories participating in the National Cancer Institute's (NCI's) Cancer Chemoprevention Program.

This program, which aims to determine if certain vitamins and minerals play a role in preventing some types of tumors, requires accurate measurements of the nutrients in blood serum before a link can be made to cancer prevention. The NPL researcher will validate methods based on liquid chromatography with electrochemical detection for measuring fat-soluble nutrients (beta-carotene and Vitamins A and E) in serum. He will help NBS establish accurate values for concentration of these"micronutrients" in serum samples which will be sent routinely to NCI-sponsored labs for testing the accuracy of their analyses. He also will assist in developing a standard reference material certified for nutrient concentration which will be offered for sale to laboratories interested in calibrating their instruments and validating their analytical methods. The NBS/NPL agreement is expected to last 2 years.

For further information, contact Willie May, National Bureau of Standards, Gaithersburg, MD 20899.

NBS-DEVELOPED FIRE MEASUREMENT TOOL CONSIDERED BY ASTM

The American Society for Testing and Materials has published a proposed voluntary fire hazard test method based on an instrument developed at NBS. The instrument, known as the NBS Cone Calorimeter can be used to predict how much heat a burning object such as a piece of furniture will release, by testing a small sample of material. This rate of heat release is one of the most important measures of fire hazard and figures prominently in predicting the course of a fire and its effects. The bench-scale instrument is based on a method of measuring the amount of oxygen consumed. The NBS Cone Calorimeter also can be used to make other fire hazard measurements such as the time it takes for the material to ignite and the amount of soot and smoke produced. Five instrument suppliers are manufacturing the device. The International Organization for Standardization (ISO) also is considering adopting the Cone Calorimeter as a standard measurement device and method.

For further information, contact Vytenis Babrauskas, National Bureau of Standards, Gaithersburg, MD 20899.

NBS DEVELOPS NEW POLYMER ELECTROLYTE FOR BATTERIES

NBS scientists have developed a new lightweight polymeric electrolyte material that has wide potential use in solid-state, high energy density batteries for weapon systems, satellites, and consumer products that require a lightweight energy source. The polymeric electrolyte is based on a design of interpenetrating polymer networks (IPN's) with two co-continuous phases, like a sponge with holes.

One phase is a cross-linked epoxy that provides strength and dimensional stability; the other is a low-molecular weight poly (ethylene oxide) with dissolved salt that gives high conductivity. Polymers that dissolve salts and conduct ions are an important class of materials because they are inert to lithium, the lightest metal that can be used in batteries, and they also can be fabricated in thin films for high technology applications. The NBS research was partially funded by the Office of Naval Research. A patent application has been filed for the new polymeric electrolyte material.

For further information, contact T. George Davis, National Bureau of Standards, Gaithersburg, MD 20899.

ATTENUATION MEASUREMENTS ON DEFORMED OPTICAL FIBERS

The optical attenuation of lightguides is one of the most important parameters to system designers [1]. In addition to the inherent attenuation of a given fiver, designers must take into account the added losses caused by the perturbations of bending, twisting, stretching, and overlapping of uncabled fibers. NBS has investigated these losses in short lengths of a variety of multimode fibers, using optical time domain reflectometry. The results of the studies showed that bending and microbending are the sources of most of the losses, that tension causes up to 4 dB/N·km of loss (depending on the type of fiber), that twisting losses are negligible, and that overlapping causes losses somewhat less than bending does.

Reference

[1] NBSIR 86-3052, Attenuation Measurements on Deformed Optical Fibers, available from the National Technical Information Service, Springfield, VA 22161 ($26.90 prepaid, order by PB# 87-132-289).

CYCLE-COUNTING METHODS FOR FATIGUE ANALYSIS

Structures such as bridges, aircraft, vehicles, pressure vessels, or offshore platforms are subjected to random cyclic loads that may result in structural failure. The designer or engineer needs information about the fatigue life of a structure in order to create a design that won't fail. Current approaches to random load fatigue analysis need the determination of stress cycles and associated stress ranges that are ambiguous in a random load history. NBS has devised Fortran IV programs that use the rainflow counting method and the mean crossing-range technique to determine the stress ranges and cycles of random load histories. These techniques reduce the complexity of the history so that results can be compared to non-random test results. A new NBS publication [1] presents the concepts and complete Fortran IV programs for these analysis methods.

Reference

[1] NBSIR 86-3055, Cycle-Counting Methods for Fatigue Analysis with Random Load Histories: A Fortran User's Guide, National Technical Information Service, Springfield, VA 22161 ($13.95 hardcopy or $6.50 microfiche prepaid, order by PB# 87-104758).

NBS USING SOUND WAVES TO DETECT FLAWS IN CONCRETE

NBS researchers have developed a nondestructive method to detect flaws in concrete [1]. Known as "impact-echo," the technique works on the same principle as the sonar pings used to locate and determine the depth of a submarine. An impact on the concrete generates sound waves which are reflected by flaws inside the concrete. A receiver mounted on the surface of the concrete picks up the reflections, or echoes. The location of a flaw is determined by measuring how long it takes to receive the reflected echo. So far, the NBS researchers have successfully used the technique to find artificial flaws embedded in a number of different concrete slabs. In addition, they have been able to detect pockets of unconsolidated concrete and the depth of cracks which are perpendicular to the surface. They also have been able to distinguish a hollow metal duct from one that is filled with grout. The NBS team plans to test the technique on other structural elements such as rectangular beams and round columns. Also, they want to investigate its potential for detecting other types of flaws, such as voids, beneath pavements.

Reference

[1] NBSIR 86-3452, Impact-Echo: A Method for Flaw Detection in Concrete Using Transient Stress Waves, National Technical Information Service (NTIS), Springfield, VA 22161 ($24.95 prepaid, order by PB# 87-104444/AS).

EVALUATING HVAC PERFORMANCE IN "SMART" BUILDINGS

In a report [1] for the General Services Administration, NBS researchers describe specifications for evaluating the thermal and environmental performance of advanced-technology buildings. These buildings, sometimes called "smart" buildings, have sophisticated controls for heating, ventilation, and air-conditioning systems. The specifications will help avoid design, construction, and operation errors which may result in buildings which are unsuitable for occupants or which have excessive operating costs. They include ways to measure airtightness and infiltration rates and to determine insulation effectiveness. Also included are methods to evaluate indoor pollutant levels. The report describe various diagnostic tests and the materials and equipment needed. It also contains work statements which describe how each test should be conducted, how data should be analyzed, and how the results should be presented. Although the specifications were developed for use on advanced-technology

buildings, most of the methods can be used to evaluate other buildings as well.

Reference

[1] NBSIR 86-3462, Specifications for Thermal and Environmental Evaluations of Advanced-Technology Office Buildings, available from the National Technical Information Service, Springfield, VA 22161 ($13.95 prepaid, order by PB# 87-134326/AS).

REPORT LISTS 23 YEARS OF SEMICONDUCTOR PUBLICATIONS

Looking for resources on such semiconductor-related topics as spreading resistance, linewidth measurement, test structures, or dopants? Do you need information on Raman backscattering, Schottky barriers, or the Monte Carlo method? If so, these and many other subjects are listed in an NBS bibliography now available [1].

Cataloging Bureau publications on semiconductor measurement technology produced between 1962 and 1985, the document is categorized by year, author, and subject. Other useful information is included, such as how to obtain an NBS videotape on safe operating area limits for power transistors and one on laser scanning of active semiconductor devices.

Reference

[1] NBSIR 86-3464, Semiconductor Measurement Technology: A Bibliography of NBS Publications for the Years 1962-1985, available from National Technical Information Service, Springfield, VA 22161 ($16.95 prepaid, order by PB# 87-112298).

FIRST REPORT ON NBS LARGE-SCALE SEISMIC PROJECT AVAILABLE

As part of their studies on how full-scale bridge columns perform during earthquakes, NBS researchers constructed and tested six one-sixth scale replicas of the columns. The results will be used to determine if the behavior of full-scale columns can be extrapolated from model behavior. The first in a series of reports on the project [1] is now available and gives a detailed description of the design, fabrication, testing, and evaluation of the model columns. Included among the findings for small-scale columns is that recent California Department of Transportation specifications were sufficient to prevent the longitudinal reinforcing bars from pulling out of the footings for all the specimens. Testing of the first full-scale column was completed in July 1986. A second full-scale column is being fabricated at NBS and will be tested this year.

Reference

[1] NBSIR 86-3494, Behavior of 1/6-Scale Model Bridge Columns Subjected to Cyclic Inelastic Loading, available from the National Technical Information Service, Springfield, VA 22161 ($24.95 prepaid, order by PB# 87-152245).

OPTICAL FIBER MEASUREMENT SYMPOSIUM PROCEEDINGS

The 1986 Optical Fiber Measurements Symposium, held in September 1986 in Boulder at NBS, brought together over 300 representatives from 17 countries to present 34 papers. Topics of the 29 contributed papers spanned the full range of measurements necessary to specify an optical fiber, with a heavy emphasis on dispersion and mode-field diameter measurements in single-mode fibers. The five invited papers summarized the state of the art and looked to related and future measurement problems in the characterization of sources, detectors, specialty fibers, and planar waveguide devices. Summaries of the papers are presented in the proceedings of the symposium [1].

Reference

[1] NBS SP 720, Technical Digest: Symposium on Optical Fiber Measurements 1986, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 ($8 prepaid, order by stock no. 003-003-02772-3).

ELECTROMECHANICAL PROPERTIES OF SUPERCONDUCTING MAGNETS

Accurate data on superconductor performance under mechanical load is essential to the design of the magnets used in various fusion energy devices. NBS is conducting a 3-year research program sponsored by the Department of Energy to obtain this data and to quantify the electromechanical properties of promising new superconductor materials. A new NBS publication [1] gives the results of the first 18 months of the program. Included are data on the properties of experimental ($PbMo_6S_8$ and liquid-infiltrated Nb-Ta/Sn) and commercial (Nb_3Sn) superconductors and stainless steel conductor-sheathing materials. A new electron-tunneling diagnostic tool for probing the energy gap of practical superconductors is described.

Reference

[1] NBSIR 86-3044, Electromechanical Properties of Superconductors for DOE Fusion Applications, National Technical Information Service, Springfield, VA 22161 ($40.90 prepaid, order by PB# 87-125-753 A-06).

REPORT DETAILS 1986 NBS ANALYTICAL CHEMISTRY ACTIVITIES

Analysis of foreign particles in semiconductor devices, determination of the origin of ancient objects, and the measurement of human exposure to pesticides are just a few of the activities described in a new NBS report [1]. The document gives capsule summaries of 1986 NBS research in analytical chemistry. Major publications and staff talks are listed, along with tallies of the analytical chemistry Standard Reference Materials produced in 1986. (These materials, sold by NBS, are widely used by industries such as metals and chemicals, as well as in clinical and environmental laboratories, to improve analytical measurements.) The 184-page report also spotlights basic research on new measurement techniques and analytical chemistry's continuing role in providing data for highly complex sample types—samples such as foods, high-technology materials, hazardous chemical and nuclear wastes, plant and animal tissues, and body fluids.

Reference

[1] NBSIR 86-3486, Technical Activities 1986—Center for Analytical Chemistry, available free of charge from Center for Analytical Chemistry, A309 Chemistry, National Bureau of Standards, Gaithersburg, MD 20899, telephone: 301/975-3143.

NBS STUDIES ABILITY OF AEC INDUSTRY TO EXCHANGE CAD DATA

The use of computer-aided design (CAD) systems in the architecture, engineering, and construction (AEC) industry is increasing steadily. But a recent study [1] at NBS confirms that it is difficult and often impossible to transfer data and drawings from one CAD system to another.

NBS researchers found the primary constraint is a lack of dependable and verifiable methods of exchanging data between different CAD systems. Intermediate formats and translators are available, but, say the researchers, they are not adequate for comprehensive AEC CAD operations.

To help resolve the problem, a committee was formed in 1984 to develop specifications for exchanging AEC information as part of the Initial Graphics Exchange Specification (IGES). IGES has been a national standard since 1981. The IGES/AEC committee currently is developing additional exchange specifications to be incorporated into the next version of IGES. For further information on this committee, contact Kent Reed, co-chair, IGES/AEC Committee, B306 Building Research Building, National Bureau of Standards, Gaithersburg, MD 20899. Telephone: 301/975-5852.

Reference

[1] NBSIR 86-3476, The Current Ability of the Architecture, Engineering, and Construction Industry to Exchange CAD Data Sets Digitally, National Technical Information Service, Springfield, VA ($11.95 prepaid, order by PB# 87-134334/AS).

Standard Reference Data

CHEMICAL KINETICS DATA FOR COMBUSTION CHEMISTRY

NBS has published the first volume in an important new series of compilations of evaluated data on chemical kinetics for combustion chemistry [1]. Computer models of the complex chemistry of combustion have become important tools in the development of combustion systems of high efficiency and low pollution, but such models can never be better than the data fed to them. The new publication includes critical kinetic and thermochemical data for over 300 reactions involving the combustion of methane. Later papers will expand the coverage to include the data needed to model the combustion of all the alkanes, and, over the long range, other organic compounds typical of fossil fuels. The work is sponsored by the Department of Energy and NBS.

Reference

[1] W. Tsang and R. F. Hampson, Chemical kinetic data base for combustion chemistry, Part I. Methane, J. of Phys. and Chem. Ref. Data, V. 15, No. 3, pg. 1089.

NBS Services

NBS SURVEYING TIME/FREQUENCY SERVICE USERS

The National Bureau of Standards is conducting a survey of users of all of its time and frequency services, such as WWV and WWVH shortwave broadcasts, WWVB 60-kHz broadcasts, or telephone time-of-day service. It requests users to participate in this Time and Frequency Services Users Survey. The survey form is available from:

Time & Frequency Survey, Div. 524.00
National Bureau of Standards
Boulder, CO 80303

or call 303/497-3294 between 8 a.m. and 5 p.m. MDT to request a copy.

The survey results will help NBS provide the best mix of services and levels of service to the broad spectrum of users who depend on them. Feedback from all kinds of users is needed to assure that the Bureau's resources for these services are allocated in the most effective way.

NEW WATTHOUR METER CALIBRATION FACILITY OFFERS HIGHER ACCURACY, MEASUREMENT OF REACTIVE POWER

A facility for calibrating watthour meters that offers a fivefold improvement in accuracy over the existing calibration system is now in operation at NBS. It incorporates digital technology and will ensure the accuracy of meter standards used in laboratories by utilities and meter manufacturers.

The facility, designed and built at NBS, enables routine meter calibrations to be made with a 0.01 % uncertainty. Previously, typical NBS calibrations were in the 0.05 % uncertainty range.

Traditionally, the Bureau has performed calibrations by maintaining accurate standard watthour meters that are compared to ones sent to NBS for calibration. The new digital system is more accurate because it features a well-characterized, electronically generated signal source. The signal has a known value which is fed into the meter being calibrated. The meter error is then displayed in digital form. The updated facility also is faster, allowing measurements that previously took 12 to 14 minutes to be made in just a few seconds. Additionally, NBS now will have the capability to calibrate meters for measurement of reactive power, a service not previously available. Initially, the NBS facility will provide calibrations at 60 Hz which is the frequency domestic utilities use, and at 50 Hz to support the export market. Later, other frequencies will be added, such as 400 Hz, used on spacecraft as well as on commercial and military aircraft. Frequencies as high as 20 KHz are also being considered.

For further information, write John Ramboz, National Bureau of Standards, Gaithersburg, MD 20899, or phone 301/975-2434.

SOFTWARE TEST CENTER MOVED TO NBS

NBS and the General Services Administration have agreed to transfer the GSA testing service for programming language compilers to the NBS. The service allows vendors who want to sell compilers to the federal government to validate that the product conforms to a particular Federal Information Processing Standard (FIPS). In addition, NBS plans to work with GSA, other Federal agencies, and industry to develop a government-wide policy for testing products and services for conformance to Federal standards. The policy would establish criteria for identifying the products and services for which conformance testing would be required.

NBS has played an active role in developing conformance tests. Most recently, NBS is working with industry to develop conformance tests for software standards, including standards for graphic systems, database management systems, office systems/document interchange, and operating systems.

For further information, write the Software Standard Validation Group, National Bureau of Standards, Building 225, Room A266, Gaithersburg, MD 20899, or phone 301/975-3247.

NVLAP REQUIRED BY NRC FOR PROCESSING DOSIMETERS

The Nuclear Regulatory Commission (NRC) has amended regulations to require all NRC-licensed organizations to have their personnel radiation dosimetry device readings performed by a processor that is accredited by the NBS National Voluntary Laboratory Accreditation Program (NVLAP). The NVLAP dosimetry program, which provides for periodic evaluations of dosimeter processors, was established in 1984 at NRC request to improve the accuracy of measurements on ionizing radiation that may be received by workers.

Under the personnel dosimetry program, accreditation is limited to personnel services for types or models of dosimeters that document whole body and skin dose radiation. All participating organizations are required to demonstrate that they are able to process each dosimeter type in accordance with ANSI N13.11, Criteria for Testing Personnel Dosimetry Performance.

Currently, the NVLAP has 45 accredited processors with evaluations under way for an additional 13.

For further information, contact Robert Gladhill, National Bureau of Standards, Gaithersburg, MD 20899.

NEW STEAM TURBINE TECHNOLOGY: LARGE ENERGY-SAVING POTENTIAL

Electric utilities could save up to $200 million annually in generating costs by using a new packing ring designed to reduce leakage in steam turbines, according to the Department of Energy (DOE).

The improved ring was developed by Ronald Brandon of Schenectady, NY, with partial funding from a grant by DOE, after NBS reviewed and recommended Brandon's proposal to DOE. Packing rings, located on the turbine drive shaft of an electric generator, typically become worn from vibration during start-up and shut-down, allowing steam to escape and wasting energy. The new ring reduces wear and allows a tighter seal. It was tested recently at a power plant in Maryland.

NBS evaluates, free of charge, ideas for energy-saving inventions. To date, nearly 400 promising ideas have been recommended to DOE for possible support. For further information, contact George Lewitt, National Bureau of Standards, Gaithersburg, MD 20899.

News Reports

NEW SMALL-ANGLE X-RAY SCATTERING FACILITY AVAILABLE FOR COOPERATIVE, PROPRIETARY RESEARCH

An NBS research facility for studying the microstructures of polymers, metals, ceramics, and biological materials is now available to scientists in industry, government, and universities for cooperative and proprietary research. The small-angle x-ray scattering (SAXS) facility at the Gaithersburg, MD, site will help researchers to better understand the performance of existing materials and will aid them in developing new ones with different properties.

Research opportunities with the SAXS method are very broad. Metallurgists can use the SAXS technique to study crystal structure, void formation and growth, and phase separation in metals and alloys. The SAXS method also can be used to study pore characteristics in ceramics, and it can be used to measure molecular arrangements in biological materials.

For polymers research, the SAXS method can be used to study the phase separation of molecules, crystallite morphology, melting and crystal growth, molecular dimensions, and polymer networks.

NBS polymer scientists plan to use their new SAXS instrument to obtain information on the microstructures of polymer blends to develop polymer alloy phase diagrams. It is estimated that polymer blends currently account for 20 percent of the 2.5 billion-pound worldwide consumption of new engineering polymer materials.

The new SAXS instrument, which measures 10 meters in length, uses a 12-kilowatt rotating anode generator to produce a highly collimated pin hole beam of x rays. This extremely narrow beam is used as a probe to characterize the internal structures of materials on a size scale in 1- to 100-nanometer range.

For the material characterizations, samples are placed in a special chamber in the beam line where an area approximately 1 millimeter in size is exposed. The x-ray scattering pattern is picked up on a two-dimensional detector located behind the sample chamber. The pattern is recorded by a computer and displayed on a color graphics system. This information may be recovered for later use.

The new SAXS facility will be equipped with a sample chamber to take measurements on materials from room temperature up to 400 C. Measurements also can be taken on materials being deformed under stress.

The NBS facility was designed by polymer physicist Dr. John D. Barnes with assistance from Dr. Frederick I. Mopsik, a research chemist, and mechanical engineer Manfred Osti.

For information on the new NBS SAXS facility, or to schedule cooperative, independent, or proprietary research time, contact: Dr. John D. Barnes, B210 Polymers Building, National Bureau of Standards, Gaithersburg, MD 20899, or call 301/975-6786.

NEW LAB ACCREDITATION PROGRAM FOR CONSTRUCTION SERVICES TO HELP U.S. COMPANIES

A new voluntary laboratory accreditation program (LAP) for organizations that perform construction testing services on concrete, aggregates, cement, soil, rock, asphalt, and geotextiles has been established by NBS. The program will be particularly useful to laboratories testing construction materials for export.

The LAP, established at the request of industry under the procedures of the National Voluntary Laboratory Accreditation Program (NVLAP), automatically assures accredited laboratories of acceptance of their test data by foreign laboratory

systems that have international agreements with NBS.

For example, the United States has an agreement with the Australian National Association of Testing Laboratories (NATA). As a consequence, building materials tested for fire resistance by a NVLAP-accredited U.S. laboratory meet an Australian building-code requirement for testing by a NATA-accredited laboratory.

In addition to Australia, NBS has agreements with the National Testing Laboratory Accreditation Scheme in the United Kingdom, and the Testing Laboratory Registration Council of New Zealand. Negotiations are under way to establish a similar agreement with Canada.

NBS was requested to establish the new construction testing services program because many engineering decisions are made solely on the basis of laboratory test data. The new program will help the buyers of private and public buildings, both here and abroad, to more easily determine if the products in structures meet specific national building codes and insurance requirements.

"Quality assurance in the testing of materials will reduce overall construction costs by eliminating the need to remove products that lack adequate test data," said Harvey W. Berger, NVLAP program manager.

Berger also pointed out that accurate, reliable test data can contribute to the construction of safer, more durable residential, commercial, and public structures.

Under NVLAP procedures, the new construction testing services program can be expanded to include the accreditation of laboratories to test other construction materials such as wood and steel.

NVLAP, established in 1976 and managed by NBS, is a voluntary system whereby organizations and individuals request NBS to establish a laboratory accreditation program. On an individual basis, laboratories seek accreditation for having the competence to use specific test methods.

"Competence" is determined by evaluating applicant laboratories to assure that they have the equipment, staff, and procedures necessary to perform recognized tests in accordance with nationally or internationally accepted standards or test methods.

NVLAP-accredited laboratories pay annual fees, go through on-site reassessment every 2 years, and participate in scheduled proficiency testing to maintain accredited status. The laboratories are listed in the NVLAP directory that is distributed worldwide.

Currently, approximately 170 laboratories are accredited in programs administered by NBS for thermal insulation, carpet, concrete, solid-fuel room heaters, acoustical testing services, personnel radiation dosimeters, commercial products (paint, paper, and mattresses), building seals and sealants, and electromagnetic compatibility and telecommunications equipment. Other LAPs have been proposed for asbestos abatement and electrical and safety testing.

For information on the new construction testing services program, or the public workshop that will be held at the Bureau to develop the technical requirements for the accreditation of laboratories under the LAP, contact: Harvey W. Berger, Manager, Laboratory Accreditation, Room A531 Administration Building, National Bureau of Standards, Gaithersburg, MD 20899, or call 301/975-4016.