

**TAB 10: NATIONAL INSTITUTE OF STANDARDS AND
TECHNOLOGY**

NIST Activities with China FY02 – FY03

Activities under the S&T Agreement

Formal Agreements:

From 1979 to 2000, the National Institute of Standards and Technology (NIST) of the Technology Administration (TA) of the Department of Commerce (DOC) and the State Bureau of Technical Supervision (CSBTS) of the People's Republic of China had a Protocol for cooperation in metrology and related fundamental and applied sciences under the U.S. - China Science and Technology (S&T) Agreement. That Protocol expired on January 15, 2000.

In April 2001, CSBTS merged with the State Administration of Inspection and Quarantine (SAIQ) and was renamed the State Administration of Quality Supervision, Inspection and Quarantine (AQSIQ). AQSIQ is responsible for both documentary standards and national primary standards of measurement in China.

AQSIQ includes the National Institute of Metrology (NIM) which is NIST's counterpart for measurement related activities, the Certification and Accreditation Authority (CNCA), which is responsible for supervising accreditation body certification; administering laboratory accreditation; and, administering products subject to compulsory certification, and the State Administration Commission of Standardization (SACS), which is charged with unifying China's administration of product standards. NIM has over 70 laboratories focusing on 12 research areas: Length, heat, mechanics, electromagnetics, microwave and high frequency, time and frequency, optics, ionizing radiation, general techniques, energy saving research, engineering technology and standards technology.

In January 2003, NIST Director Dr. Arden Bement traveled to China and met with AQSIQ Vice Minister Wang Qiping. They agreed, in principle, to develop a new Protocol to serve as a framework for cooperation between NIST and AQSIQ. AQSIQ requested that the Protocol be signed between AQSIQ and DOC.

A Statement of Intent to develop a Protocol between TA/DOC and AQSIQ was signed by Deputy Commerce Secretary Bodman and AQSIQ Vice Minister Li Chuanqing on September 23, 2003 during an AQSIQ visit to DOC. On October 27, 2003, Commerce U/S Phil Bond met with AQSIQ Vice Minister Li Zhonghai in China and VM Li indicated AQSIQ's desire to sign the Protocol during the visit of the Chinese Premier to the United States in December.

The Minister for AQSIQ and the Deputy Secretary for the Department of Commerce (DOC) signed the Protocol on December 9, 2003. The Protocol allows for exchange of scientific and technical information, exchange of experts, joint research and development, and exchange of samples and materials. The primary activity under this agreement is expected to be information exchange. In order to carry out the activities under this

Protocol, AQSIQ and DOC agree to establish four Joint Working Groups: metrology, documentary standards, and accreditation and information technology. The Office of International and Academic Affairs (OIAA) at NIST and the Director General of the Department of International Cooperation at AQSIQ will coordinate activities under the Protocol.

In keeping with the NIST policy to welcome visitors from other countries to promote the use of U.S. system of measurements and standards, AQSIQ typically sends two or three delegations to NIST each year to meet with NIST staff to discuss topics of mutual interest. We consider these visits very important to our mission to promote the use of U.S. measurements and standards internationally.

There are no funds dedicated to this Protocol and all joint activities are subject to the availability of funds. A PDF copy of the Protocol is attached.

Visitors:

In keeping with the NIST policy to welcome visitors from other countries, NIST has welcomed delegations from China since the establishment of the science and technology relationship in 1979. Not only do these exchanges expose other countries to the U.S. system of measurements and standards and increase the potential for others to adopt similar practices, they also contribute to the development of the measurement infrastructure necessary to support international trade and ultimately, increase U.S. exports. One mechanism NIST utilizes to address these important issues, is informational exchange visits, both by receiving visitors from around the world and by sending NIST staff to other countries. NIST is committed to protecting sensitive and proprietary information, therefore, visitors do not have access to any sensitive or proprietary information and NIST staff is trained on protecting such information in their interactions with any non-NIST employee.

We have traditionally welcomed visitors from China to discuss non-sensitive, non-proprietary information (FY2002 - 211 and FY 2003 - 230). Most of the visitors we accept from China are from our counterpart organizations, AQSIQ (formerly CSBTS) or the Chinese Academy of Sciences, though we have also received delegations from universities and from other Chinese government organizations.

Guest Researchers:

In accordance with Statutory Authorities: 15 V.S.C.272(c) (5) and 15 V.S.C. 278g (a), NIST is authorized to accept researchers from around the world to work in the NIST facilities. Through the NIST Foreign Guest Researcher Program, foreign scientists are given the opportunity to work collaboratively with scientists in the NIST laboratories on research projects of mutual interest. Each foreign guest researcher is assigned a NIST host who will be responsible for the working arrangements. A total of 87 guest researchers worked at NIST during the fiscal years 2002 and 2003.

The proposed research project for the foreign guest researcher is carefully defined and made clear to both parties before the researcher arrives. Foreign Guest Researchers are not permitted to work on cooperative research and development projects between NIST staff and US Industry. In addition, foreign guest researchers are not permitted access to any sensitive or proprietary information during their tenure at NIST.

Most of the Guest Researchers NIST has received from China do not represent AQSIQ and therefore, are not considered official exchanges under the Protocol. A list of guest researcher during fiscal years 2002 and 2003 is attached.

Other NIST Activities with China (outside the S&T agreement)

Workshops:

U.S.-China Standards in Trade Workshop on Pressure Equipment, Piping, Cranes, and Elevators was designed to contribute to the Department's efforts to expand standards-related contacts with China in critical technology areas. The Deputy Under Secretary of Commerce for Technology Ben Wu gave the keynote address. The participants found common points and dissimilarities in the U.S. and Chinese standards systems and expressed the need to continue the dialogue in this important area.

Common points:

1. Both sides agreed on the importance of safety.
2. Both the US and China, in the development of their code systems, want comprehensive and complete codes.
3. Although conditions are different in our two countries, we have common interests and wish to explore the possibility that we may adopt different requirements for different equipment.

Differences:

1. Our political systems are different – the USG pays greater attention to the role of associations; China pays greater attention to uniform practice within China.
2. Our processes for developing standards are different – the development of standards in the US and the openness of the legislative process are quite different from the practice in China.

Technical Committee participation:

NIST assumed the role of Secretariat of the Versailles Advanced Materials and Standards (VAMAS) from May 1999 to May 2002. During this time, a new Technical Working Area (TWA), "Thermal Properties of Thin Films", was established. The objective of this TWA was to evaluate measurement methods for determining thermal properties of thin ceramic films and coatings. A round robin to evaluate different methods of measuring thin-film thermal conductivity, with eighteen laboratories from the United States, Japan, Germany, China, and Korea participating, was organized as the first TWA activity.

In October 2002, NIST sent a representative to attend the International Electrotechnical Commission (IEC) general meeting in China and to chair two working groups. In October 2002, a NIST staff member traveled to Shanghai, China to participate in standards for multimedia data working groups meeting; MPEGWG11 and MPEG-7. He led several sessions of MPEG-7 Interoperability and Profiling Group and presented seven MPEG-7 contributions at the joint meeting with the MPEG Audio Visual, Systems. These technologies are important and will benefit the NIST Information Access Division (IAD) MPEG-7 based speech recognition, image visual, human ID, and Smart Space projects.

In October 2003, another NIST researcher traveled to Shanghai to attend and participate in the 62nd meeting of the ISO/IEC/JTC1/SC29/WG11 and WG01 (the international MPEG and JPEG standards committees) as the Chair of NCITS/L3 (the U.S. National Body counterpart to WG11 and WG01).

NIST Staff Travel to China:

The majority of the travel to China by NIST staff is to attend international meetings and conferences. During these trips the NIST staff may use the opportunity to visit laboratories and learn more about China's measurement capabilities and their ongoing research efforts. These visits are informal and no U.S. proprietary information is discussed. Brief summaries of travel that involved visits to PRC institutions or universities are provided below.

On November 12-14, 2002, a staff member from the Office of International and Academic Affairs (OIAA) participated as part of the U.S. delegation for the U.S.-China Science and Technology Cooperation Executive Secretaries' Meeting in Guilin, China. Fourteen other U.S. agencies sent representatives to this meeting. The purpose of the U.S.-China ESM is to strengthen bilateral exchanges and research collaboration with China. The Minister of Science and Technology (MOST) led the Chinese delegation and expressed interest in cooperating with NIST in the areas of nanotechnology and information technology.

A representative of the Quantum Physics Division visited East China Normal University in Shanghai in 2002 to discuss possible collaboration and potential guest scientist visits. The possible topics of collaboration include research on the optical atomic clock, laser spectroscopy, and single-atom tracking. JILA, a partnership between NIST and the University of Boulder, has a long-standing collaboration with the university.

The Deputy Director of the Physics Laboratory traveled to Shanghai, China, in October 2002, to attend the SPIE Conference, and consult with colleagues at the Institute for Electric Light Sources at Fudan University, at Beijing Institute of Technology, and at Beijing Institute of Physics of the Chinese Academy of Sciences.

A NIST representative traveled to Beijing and Tokyo, November 2002, to participate as part of ANSI delegation to China and Japan. The U.S. delegation met with officials from the Chinese Ministry of Information Industries (MII). The U.S. information technology and telecom representatives raised a number of concerns regarding duplicative and confusing product certification requirements for IT and telecom equipment shipped to China. The Chinese representatives responded that they are working with the Certification and Accreditation Administration of China (CNCA) to clarify roles and possibilities for certifications. The Chinese stated their eagerness to participate in the APEC Telecommunications MRA with the US. The delegation also met with representatives of AQSIQ, SAC, and CNCA. Since April 2001, AQSIQ, SAC and CNCA were created and China joined the WTO. It was an opportune time to meet these agencies and learn more about the roles and responsibilities of each agency and how they

ensure meeting WTO obligations. The visit also helped clarify the procedures for obtaining a CCC mark and opportunities for participation by foreign companies in the standards development process in China. The visit was also very fruitful from NIST's perspective as NIST receives many requests from manufacturers and other U.S. Government agencies on appropriate contact points in China and requests for information on China's standards and conformity assessment requirements.

The Director, NIST and the Director, OIAA visited China from January 20-25, 2003. The purpose of the trip was to follow-up on recent Department of Commerce interactions with the Ministry of Science and Technology (MOST) and the General Administration of Quality Supervision, Inspection, and Quarantine (AQSIQ) and to explore the potential for cooperation with various Chinese scientific organizations, including the Chinese Academy of Sciences (CAS), Tsinghua University, the Ministry of Industry and Information (MII), and the National Institute of Metrology (NIM). They met with AQSIQ Vice Minister Wang Qinping, MOST Vice Minister Liu Yanhua, State Council Informatization Office (SCITO) Vice Minister Liu He, MII Deputy Director General Mr. Zhang, and CAS Deputy Secretary General Guo Huadong.

A representative of the NIST Radio-Frequency Technology Division held discussions in Beijing with Chinese representatives attending a wireless conference and exposition to promote the acceptance of broadband wireless standards recognized by the Institute of Electronics and Electrical Engineers (IEEE) into China. Harmonization of such standards will promote the broadband wireless access industry worldwide.

In April 2003, a representative of the Physical and Chemical Properties Division traveled to China to attend an International Conference on Cryogenics and Refrigeration in Hangzhou and to visit the Technical Institute of Physics and Chemistry of the Chinese Academy of Sciences in Beijing.

A member of the Semiconductor Electronics Division traveled to Shanghai, China, to prepare and plan the 2003 International Conference on semiconductors, which was held in China from November 2-12, 2002. China and other Asia Pacific countries are increasing their semiconductor activities. These activities are directly related to the start-up of numerous semiconductor manufacturing plants and the resultant economic benefits. This trip allowed the traveler to meet many of the premier semiconductor characterization scientists/engineers in China.

Another representative of the Semiconductor Electronics Division traveled to Beijing from 25 April to 1 May 2003 to represent the U.S. as the Chief US delegate for the Micro-Electro Mechanical Systems (MEMS) Summit and presented a talk entitled "MEMS and Nanotechnology Activities in the U.S." MEMS is an emerging technology for making miniature tools operated by integrated circuits. Examples include mini accelerometers that sense a crash and tell an airbag to inflate, tiny flow meters that control release of measured doses of medicine directly into blood vessels. This trip provided an opportunity for NIST to participate in the international standardization of MEMS.

A NIST researcher visited the Quantum Division of the National Institute of Metrology (NIM) in China in preparation for a bilateral Josephson Voltage Standard (JVS) comparison between NIST and NIM. This comparison was done under the Comité International des Poids et Mesures (CIPM) Mutual Recognition Arrangement (MRa). This Arrangement provides a framework for cooperation in the measurement sciences by providing the technical basis for acceptance of calibration certificates issued by the national measurement institutes.

A NIST scientist traveled to Xi'an, Oct 18-27, 2003, to visit the Materials Science and Engineering (MSE) Department at the Xi'an Jiatong University, and to learn about their research programs. Xi'an Jiatong University is the premier university in Western China. Potential collaborations via student and staff visits to NIST were discussed.

The Director of the Materials Science Engineering Laboratory went to Beijing, in October 2003, to participate on the Visiting Committee for the Institute of Chemistry of the Chinese Academy of Sciences (ICCAS).

Several NIST representatives from the Technology Services and the Building and Fire Research Laboratory traveled to Beijing, China from October 26-29, 2003, to participate in a US-China Standards Workshop co-sponsored by the Ministry of Science and Technology (MOST) and the U.S. Department of Commerce. The China National Institute of Standardization (CNIS) and U.S. Embassy in Beijing organized the workshop, which was attended by more than 100 individuals. NIST Staff made presentations entitled: "Introduction to Standards: US Infrastructure and Approach" and "Laboratory Accreditation and Certification: the US Approach." Other topics covered included a brief introduction to standardization in China, China's technical standards strategy, communications standards work in China, and green (environmentally friendly) building construction. NIST staff also participated in a roundtable discussion on information technology issues, co-sponsored by the State Committee on Information Technology of China and the US Department of Commerce. PRC Vice Minister Qu and U/S Bond co-chaired the roundtable. Private sector sponsors included the Business Software Alliance, Coalition of Service industries, and the US Information Technology Office. Discussion at the roundtable touched on standards issues, including encryption and general information security standards.

A representative of the Office of International and Academic Affairs accompanied Under Secretary Phil Bond during the DOC trade mission week from October 26-29, 2003. U/S Bond had bilateral meetings with the Ministry of Science and Technology (MOST), the General Administration of Quality Supervision Inspection and Quarantine and the Ministry of Information and Industry. They visited the Zhongguancun Science Park in Beijing, the Shenzhen Hi-Tech Park, the Hong Kong Science and Technology Park, and the Cyberport in Hong Kong. During this week, they also met with executives from several U.S. industries such as INTEL, Dupont and Raytek in Beijing and Huawei Technologies, a Chinese IT industry in Shenzhen.

A representative of the NIST Measurement Services Division traveled to Beijing in October 2003 give an invited talk at the International Conference on Scientific Resources Sharing Policy, and to meet with officials of the China Reference Materials Program. The NIST representative participated in a discussion with representatives of the National Institute of Health (NIH) and the National Research Council and MOST officials on approaches to publishing and dissemination scientific literature and scientific data collection in China as well as discussions with the Director of the Reference Materials Department at the Chinese Association for Standardization on the development of international policy on the use of reference materials in laboratory accreditation.

Chinese Visitors hosted at NIST:

The Engineering Metrology Group hosted a visitor from the China National Petroleum Corporation for technical discussions on thread gauges and methods of verifying gauges to American Petroleum Institute Standards. During this time NIST staff demonstrated various measurement techniques for verification of rotary gauges, and discussed methods for estimating uncertainty.

On December 15, 2003, NIST Acting Deputy Director Hratch Semerjian met with Zheng Weihua, Deputy Director General of the China National Institute of Standardization (CNIS). NIST also hosted a six-person delegation from CNIS. This visit was a follow-up to the recent China-U.S. Workshop on Standards, held in Beijing October 27, 2003. CNIS is responsible for drafting a national standards strategy for China. NIST briefings will focus on the role of government agencies in drafting and implementing the U.S. National Standards Strategy. The delegation also met with representatives of the American National Standards Institute (ANSI) and visited a manufacturer of spectrophotometers in southern California before returning to China.

National Institute of Standards and Technology
Chinese Guest Researchers during Fiscal Years 2002 and 2003
(Total = 87)

Last Name	First Name	Citizen	Institute	Div	Arrival	Est Depart	Departure
Bai	Mingwu	China	Tohoku University	852	7/19/2000	6/30/2003	6/25/2003
Bi	Zhiyi	China	East China Normal University	847	6/12/2003	8/30/2003	8/30/2003
Chen	Wangchun	China	Indiana University	846	11/14/2001	10/28/2004	
Chen	Donghai	China	University of Florida	844	5/15/2001	6/14/2003	6/13/2003
Chen	Shi Zhi	China	Binghamton University	811	5/27/2003	8/15/2003	8/15/2003
Chen	Li-Jiang	China	Xiamen University	861	8/25/2003	5/1/2004	
Cheng	Guangjun	China	University of Maryland	844	9/30/2003	9/29/2004	
Cui	Jun	China	University of Maryland	856	9/22/2003	6/30/2006	
Deng	Yan	China	University of Maryland	850	1/12/2000	12/31/2004	
Duan	Hu	China	Case Western Reserve University	854	8/31/2001	5/1/2003	5/1/2003
Feng	Xiuping	China	Northwestern University	861	4/2/2001	4/22/2003	4/4/2003
Gan	Li	China	University of Maryland	855	4/3/2000	1/19/2004	1/19/2004
Gu	Xiaohong	China	University of Missouri-Kansas City	861	9/14/1998	10/31/2004	
Guo	Aihua	China	University of Maryland - Baltimore	892	4/26/2002	2/28/2003	2/28/2003
Hu	Tengjiao	China	Chinese Academy of Sciences	854	7/15/2002	7/14/2004	
Huang	Zheng	China	Nesco Service Company	856	1/7/2002	1/6/2004	12/1/2003

Jew	Julie	China	STG International	250	9/14/2001	9/30/2004	
Lee	Yu-Hsin	China	University of Southern Mississippi	854	1/3/2003	11/3/2004	
Li	Zhigang	China	Changchun Institute of Optics & Fine	842	8/15/2002	10/14/2004	
Li	Heshan	China	University of Cincinnati	826	4/28/2003	9/1/2003	8/29/2003
Li	Huan	China	University of Maryland	850	6/16/2003	9/16/2004	
Li	Xiang	China	Rensselaer Polytechnic Institute	852	11/4/2002	12/31/2003	12/31/2003
Li	Guofeng	China	GeoCenters	836	11/12/2002	11/11/2004	
Li	Yili	China	University of Maryland	831	12/1/2001	4/30/2004	
Liang	Yanan	China	Universidad de Oviedo	852	1/16/2003	12/1/2004	
Liao	Nam	China	Pennsylvania State University	854	8/21/2002	10/30/2004	
Ling	Mangmang	China	Intelitrac, Inc.	850	7/15/2003	7/14/2004	
Liu	Ruimin	China	National Institute of Metrology	811	9/7/1999	2/28/2003	2/28/2003
Liu	Jiantao	China	University of Kentucky	855	8/4/2003	12/31/2004	
Liu	Ruimin	China	National Institute of Metrology	811	4/1/2003	6/30/2003	5/31/2003
Liu	Yan	China	University of Maryland	850	7/17/2003	7/16/2004	1/21/2004
Lu	Richang	China	Chinese Academy of Sciences	895	8/7/2000	2/7/2004	2/6/2004
Lu	Chaojing	China	Hubei University	855	12/12/2000	12/27/2002	12/27/2002
Luo	Yan	China	Darmstadt University of Technology	826	1/29/2003	1/28/2005	

Luo	Ercang	China	Chinese Academy of Sciences	838	10/7/2002	3/31/2003	3/31/2003
Luo	Peng	China	Read-Rite Corporation	816	4/1/2003	3/31/2004	
Ma	Li	China	Drexel University	855	3/15/2001	5/31/2005	
Ma	Longsheng	China	Bureau International des Poids et	847	5/30/2003	11/30/2004	
Mei	Ying	China	University of Pennsylvania	854	1/22/2002	12/31/2004	
Qiao	Guixiu	China	Tsinghua University	826	1/23/2002	1/22/2005	
Qiu	Yiming	China	University of Maryland	856	8/5/2002	8/31/2005	
Rao	Guanghui	China	Chinese Academy of Sciences	856	8/4/2003	11/30/2003	11/19/2003
Ren	Wei	China	American University	821	6/6/2002	3/31/2004	
Shao	Guodong	China	Intelligent Automation, Inc.	826	1/30/1997	9/30/2003	9/28/2003
Song	Rui	China	Institute of Polymer Research	854	9/10/2001	6/30/2003	11/1/2002
Song	Yuyin	China	Self-Employed	822	4/19/1999	3/31/2003	3/31/2003
Sun	Zhe	China	University of Colorado	816	4/22/2002	4/21/2003	4/21/2003
Tang	Wing Hei	China	Massachusetts Institute of Technology	894	5/28/2003	8/17/2003	8/15/2003
Tao	Liang	China	University of Maryland	844	7/12/2002	9/2/2003	9/2/2003
Wang	Hao	China	Michigan Technological University	854	10/1/1999	11/27/2004	
Wang	Liangzhu	China	Purdue University	863	5/28/2003	11/15/2003	11/15/2003
Wang	Zhigang	China	State University of New York	854	4/2/2001	12/31/2002	12/31/2002

Wang	Xiaolei	China	Tohoku University	852	4/4/2003	4/2/2004	
Wang	Xuemin	China	American Ceramic Society	852	10/28/2002	2/10/2004	2/10/2004
Wang	Yijun	China	University of Maryland	850	7/17/2003	7/16/2004	
Wang	Xiaohui	China	Colorado School of Mines	854	10/15/2001	9/30/2004	
Wang	Xianfeng	China	University of Science and Technology of	854	6/27/2002	2/28/2005	
Wang	Quandou	China	Chinese Academy of Sciences	822	6/3/2002	5/21/2004	
Wei	Xiaojin	China	University of Maryland	812	4/1/2001	3/31/2003	3/31/2003
Wu	Tao	China	Pennsylvania State University	854	7/21/2003	7/16/2005	
Wu	Huayu	China	American University	821	6/3/2002	12/31/2003	12/19/2003
Xiang	Dan	China	Johns Hopkins University	822	6/24/2002	2/28/2003	12/31/2002
Xiang	Hong	China	Chinese Academy of Sciences	838	9/22/2003	3/31/2004	
Xiao	Yan	China	GeoCenters	831	9/3/2002	8/25/2004	
Xie	Rui-Hua	China	Queen's University	842	9/4/2001	9/1/2004	
Xu	Youguang	China	GeoCenters	836	3/7/1995	9/30/2003	10/21/2002
Xu	Guangyong	China	Brookhaven National Laboratory	856	9/23/2002	9/15/2004	
Yang	Liang	China	Harvard University	846	11/8/2000	9/1/2004	
Yang	Bo	China	Kent State University	853	6/6/2002	12/31/2003	7/31/2003
Yao	Xiaobo	China	University of Maryland	866	10/28/2002	11/1/2002	11/1/2002

Ye	Peng	China	University of Connecticut	854	5/21/2002	11/29/2002	11/29/2002
You	Lijun	China	American Ceramic Society	852	10/17/2001	10/14/2005	
Yuan	Jian	China	Tsinghua University	892	9/1/2000	2/27/2004	2/15/2004
Zha	XuanFang	China	Singapore Institute of Manufacturing	826	10/7/2002	9/30/2005	
Zhang	Kai	China	University of Minnesota	854	6/18/2003	8/1/2004	
Zhang	Wenhua	China	City College of New York	854	9/15/2002	6/20/2005	
Zhang	Xiaoyi	China	University of Maryland	844	8/4/2003	7/22/2004	
Zhang	Xin	China	University of Maryland	854	11/7/2002	11/3/2003	11/3/2003
Zhao	Li	China	Florida A&M University	839	5/27/2003	6/27/2003	6/21/2003
Zhao	Li	China	Florida A&M University	839	1/10/2003	1/31/2003	1/31/2003
Zhao	Xuezeng	China	Harbin Institute of Technology	821	2/22/2002	2/21/2003	2/21/2003
Zheng	Jian	China	Shen Fei Laser Optical Systems Co. Ltd.	895	7/5/2000	12/31/2003	12/31/2003
Zhou	Hui	China	University of Maryland	821	1/15/2000	1/14/2005	
Zhou	Lian	China	University of Maryland	831	10/1/2002	9/30/2004	
Zhou	Jing	China	University of Maryland - Baltimore	856	6/11/2002	6/10/2004	
Zhu	Baozhong	China	University of Maryland	812	2/5/2002	12/31/2005	
Zong	Yuqin	China	Self-Employed	844	11/28/2002	12/31/2002	12/1/2002