International Research Environment at NIMS

November 16, 2005

National Institute for Materials Science (NIMS)
http://www.nims.go.jp/

NIMS Overview

What is NIMS ?

National Research Institute for Metals (since 1956)

National Institute for Research in Inorganic Materials (since 1966)

Independent Administrative Institution

National Institute for Materials Science

Since April 2001

Sakura Site


Sengen Site


Namiki Site

Independent Administrative Institution

From government institution towards private enterprise

- **Management**
  - Five-year program
  - Autonomous management
  - Third-party evaluation
- **Budget**
  - Operating subsidy without usage restrictions

NIMS Mission

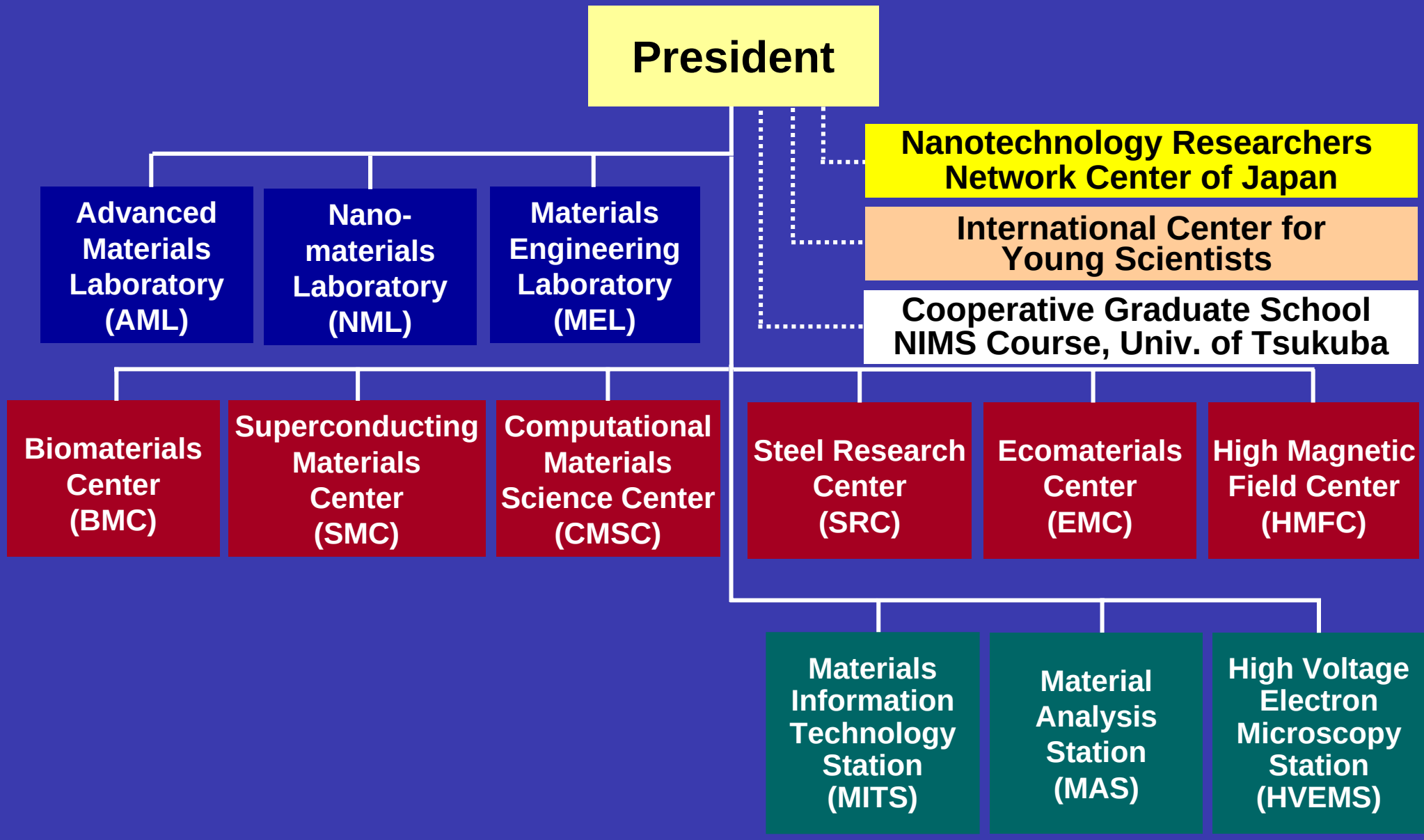
1. Conduct “Basic” and “Generic and Infrastructural” research,

2. Promote dissemination of research outcomes and their utilization,

3. Open advanced facilities and equipments to outside researchers,

4. Educate materials scientists and engineers.

Organization of NIMS



Focused Research Projects at NIMS

Focused R&D areas under the Five-Year Program at NIMS (2001 – 2006)

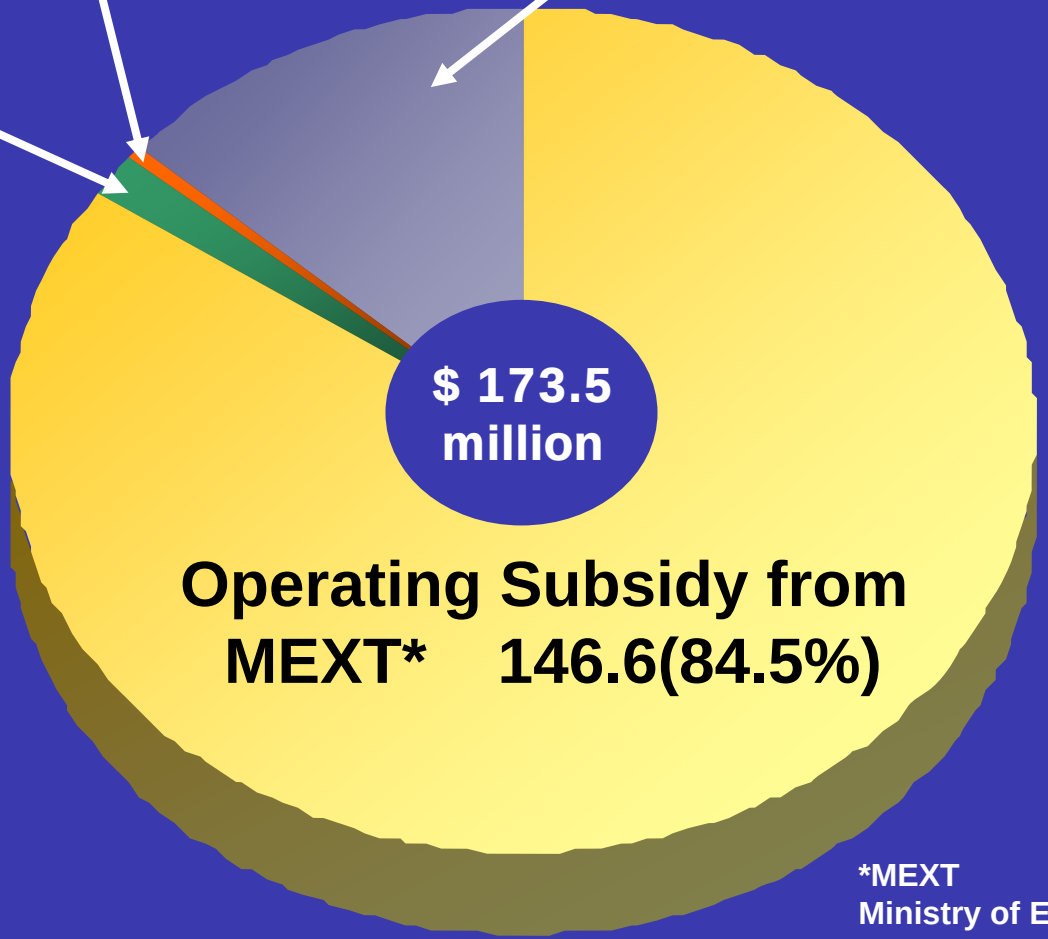
Nanomaterials — nano-device materials, nano tubes, photonic crystals, superconducting materials, etc.

Safe Materials — biomaterials, ultra-steels, DDS materials, materials risk information platform, etc.

Environment and Energy Materials — high temperature materials, recycled-steels, etc.

Improvement of Research and Intellectual Infrastructure — synchrotron radiation, combinatorial methods, materials data base, materials data sheet, etc.

Budget for FY2005 (Income)

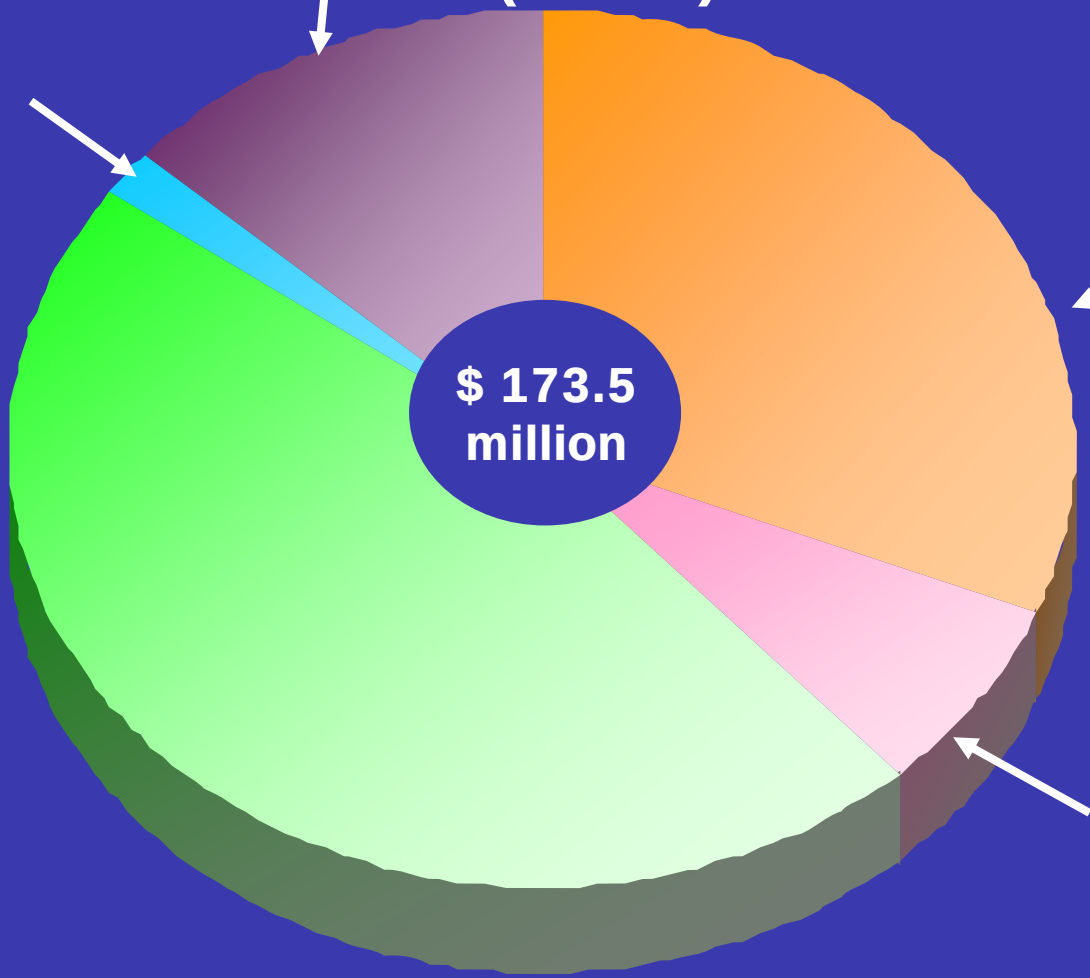


Exchange rate
$ 1.00 =110 yen

(unit: $ 1 million)

*MEXT
Ministry of Education, Culture, Sports, Science and Technology

Budget for FY2005 (Expense)



Expenses for
Entrusted Research
23.2 (13.4%)

Facility
Expenses
2.8 (1.6%)

Personnel
Expenses
53.2 (30.7%)

Operation
Expenses
81.7(47.1%)
↓
52

Non Permanent
Employee
Expenses
12.6 (7.2%)

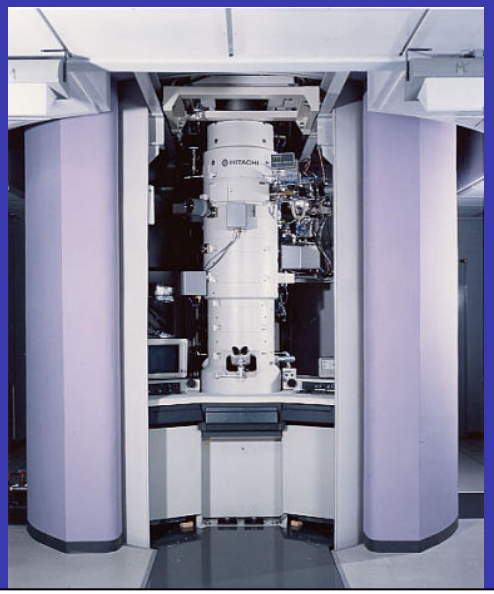
Exchange rate
$ 1.00 =110 yen

(unit: $ 1 million)

World-leading Facilities of NIMS

Spring-8

37.9 T Hybrid Magnet



High Resolution ultra HVTEM

1 GHz class NMR Magnet

NIMS Position

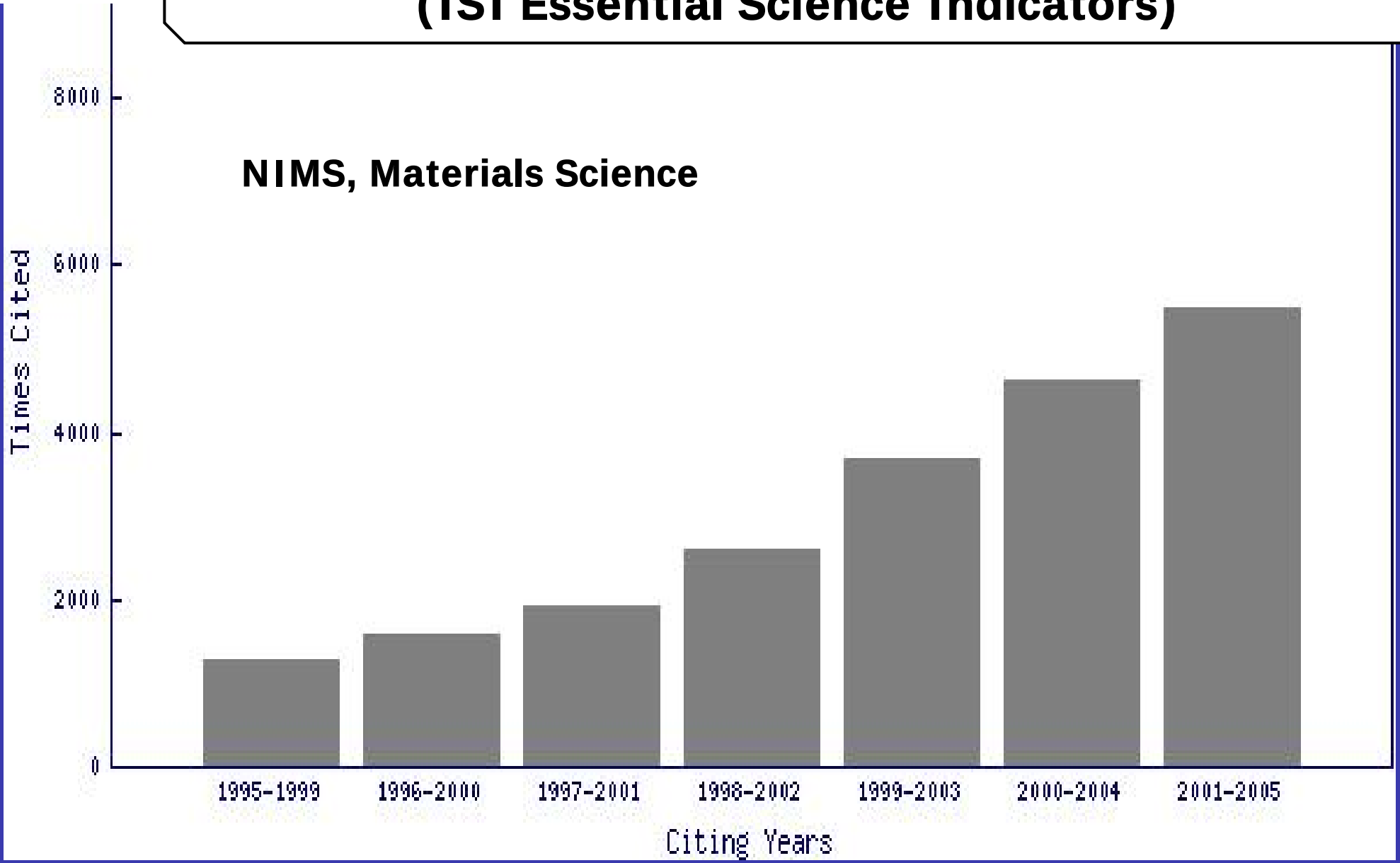
ISI Institutional Citation Ranking

(Over the last 10 years + 8 months)

Materials Science (522 Institutes)				
Ranking	Institution	Citations	Papers	Citations per Paper
1	Max Planck Society	28,572	3,029	9.43
2	Tohoku University	25,608	4,668	5.49
3	Chinese Academy of Sciences	19,796	7,119	2.78
4	MIT	19,606	1,645	11.92
5	University of California, Santa Barbara	17,365	955	18.18
6	Pennsylvania State University	16,323	1,978	8.25
7	University of Cambridge	15,323	1,922	7.97
8	Kyoto University	14,897	2,561	5.82
9	Osaka University	14,284	2,836	5.04
10	Russian Academy of Sciences	13,927	6,620	2.10
…	…	…	…	…
15	NIMS	12,320	2,577	4.78

*Time period for *ESI* counts: January 1, 1995 – August 31, 2005

Number of Citations in Five-Year Intervals
(ISI Essential Science Indicators)



ISI Institutional Citation Ranking

(Over the last 4 years + 8 months)

Materials Science (522 Institutes)		
Ranking	**Institution**	**Citations**
1	Chinese Academy of Sciences	10,201
2	Max Planck Society	9,287
3	Tohoku University	7,915
4	NIMS	5,309
5	MIT	4,910
6	CSIC (Spain)	4,633
7	Osaka University	4,464
8	University of Tokyo	4,440
9	University of Cambridge	4,338
10	University of California, Berkeley	4,204

*Time period for *ESI* counts: January 1, 2001 – August 31, 2005

ISI Institutional Citation Ranking

- Present and Past -

Jan. 1996 – Dec. 2000		
Rank	Institution	Citations
1	Max Planck Society	4,886
2	Tohoku Univ.	3,990
3	UC Santa Barbara	3,204
4	MIT	3,095
5	Russia Acad. Sci.	2,982
6	Univ. Cambridge	2,570
7	Penn State Univ.	2,517
8	Kyoto Univ.	2,443
9	Osaka Univ.	2,370
10	Sandia National Lab	2,260
…	…	…
30	NIMS	1,570

Jan. 2001 – Aug. 2005		
Rank	Institution	Citations
1	Chinese Acad. Sci.	10,201
2	Max Planck Society	9,287
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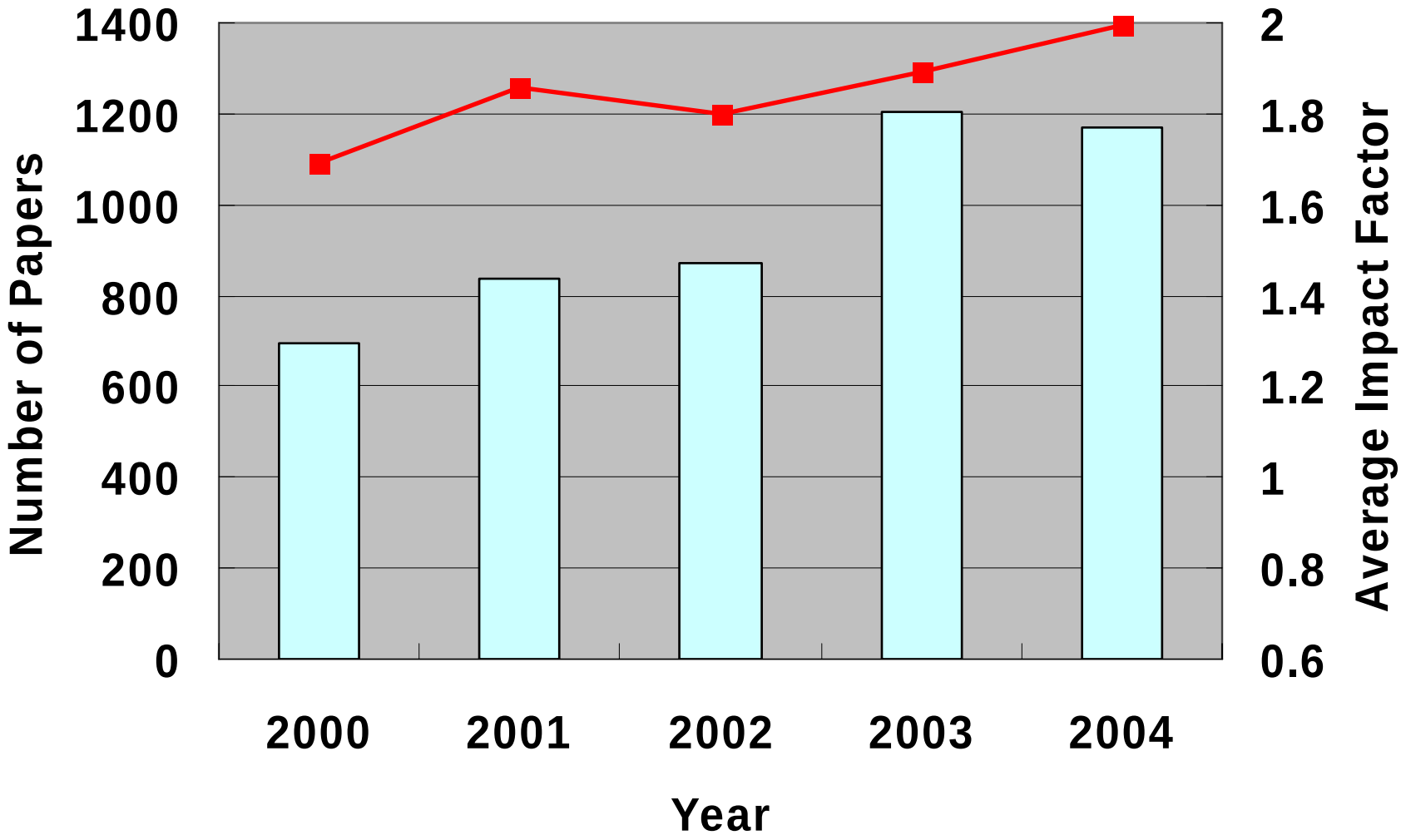
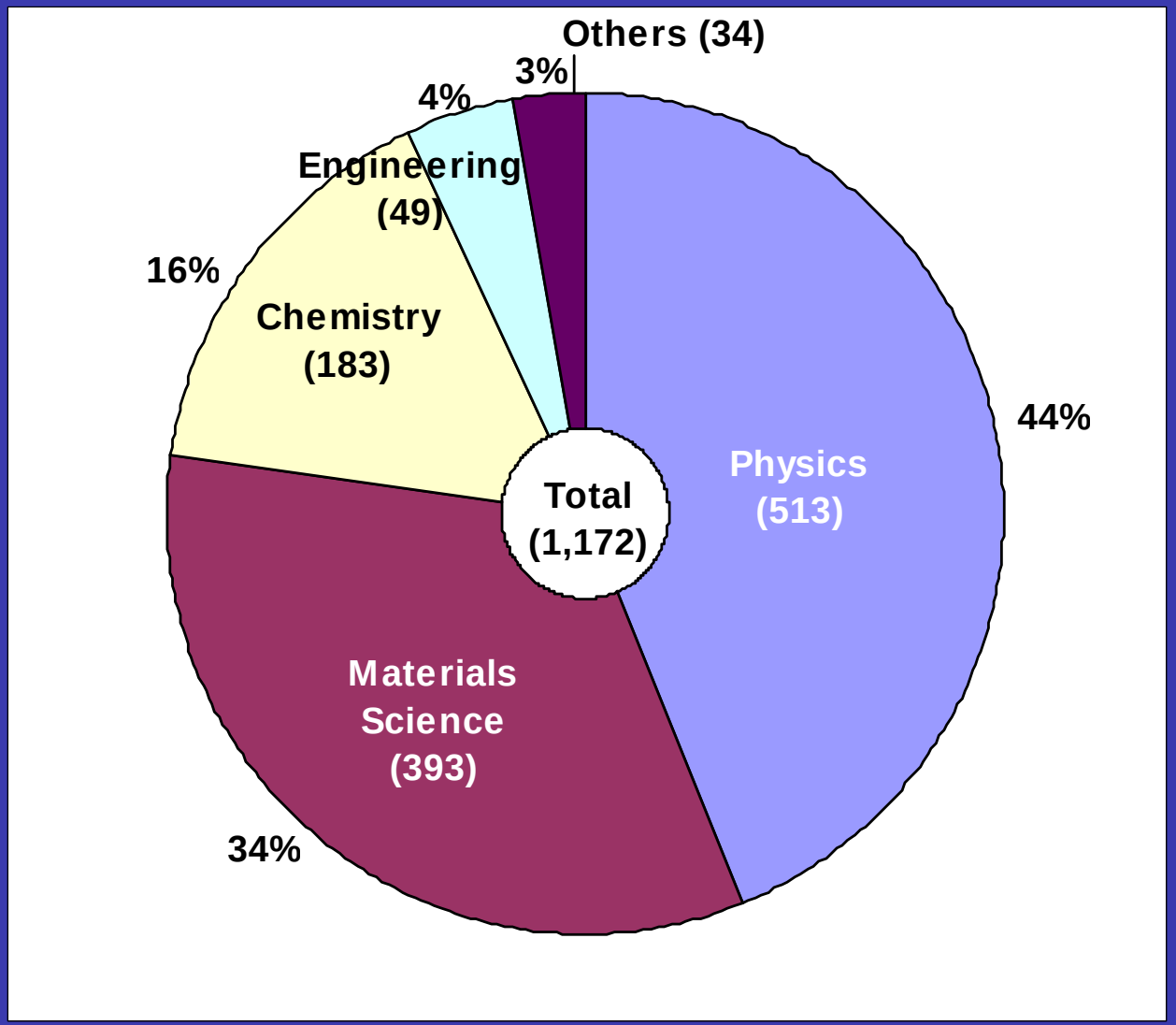
Number of SCI Papers by NIMS



*Retrieved from the ISI database

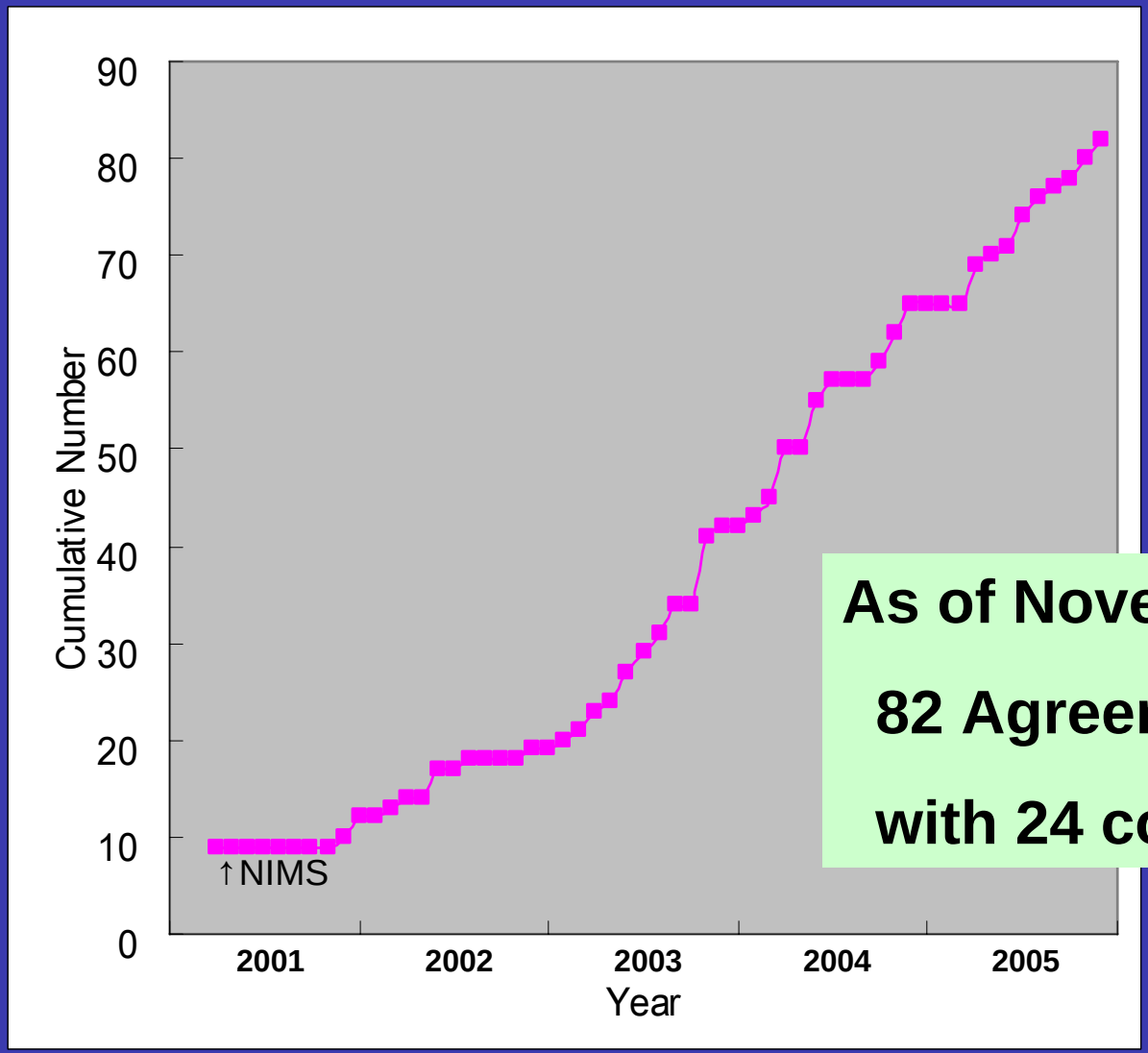
Distribution of NIMS Papers (2004)



*Defined by the ISI classification

International Cooperation

International Cooperation Agreements



As of November 2005:

82 Agreements

with 24 countries

International Cooperation

Research Collaborations

71 MOUs

- Europe : 31
- US : 13
- S. Korea : 11
- China : 6
- India, South Africa : 2
- Taiwan, Singapore , Thailand , Canada, Mexico, Australia: 1

Sister Institutes

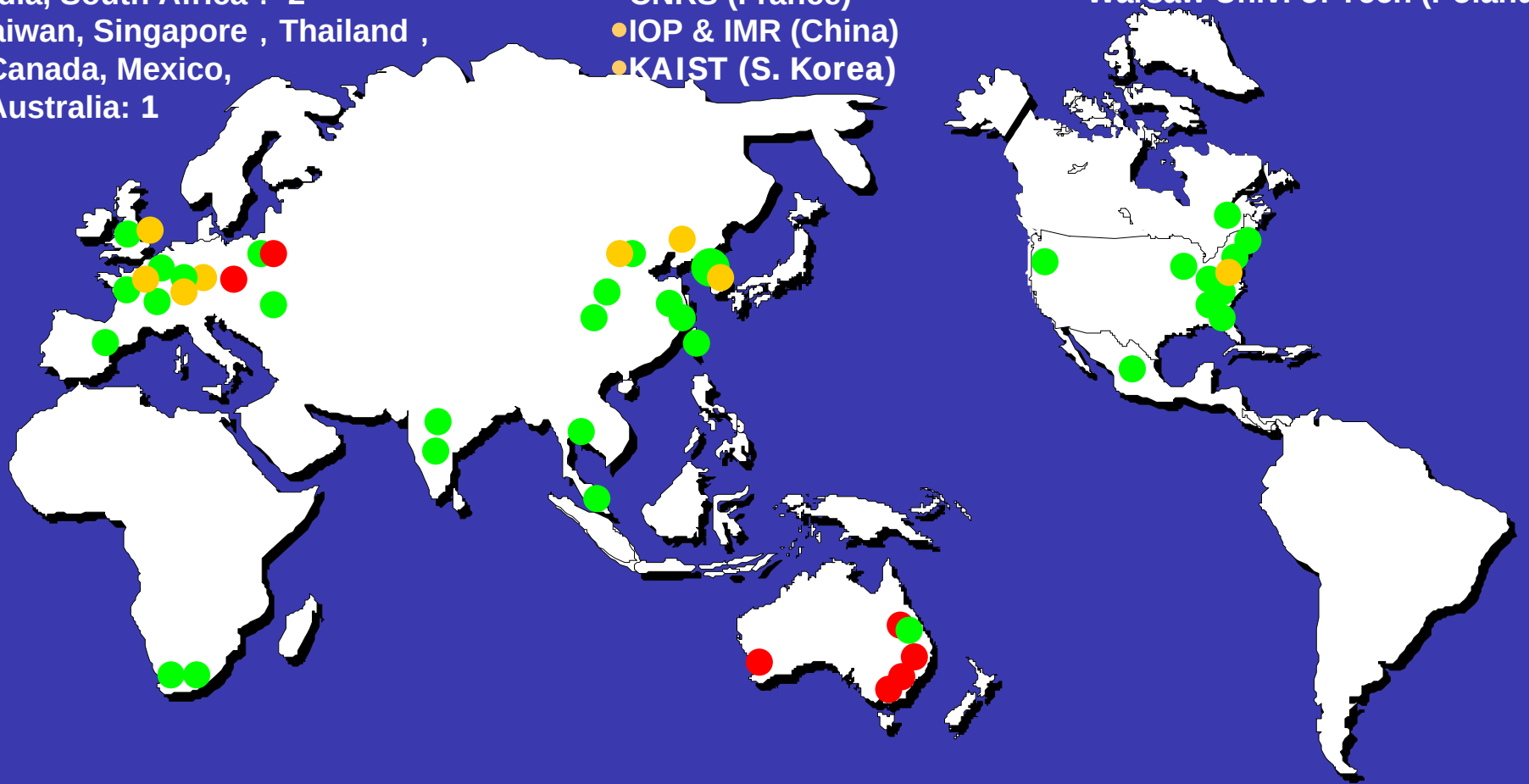
8 Sisters

- MPI-MF (Germany)
- NIST (USA)
- Cambridge Univ. (UK)
- ETHZ (Swiss)
- CNRS (France)
- IOP & IMR (China)
- KAIST (S. Korea)

Joint Graduate Schools

7 Grad schools

- Charles Univ. (Czech)
- Sydney, Queensland, New S. Wales, Melbourne, W. Australia (Australia)
- Warsaw Univ. of Tech (Poland)



International Strategy

International Strategy
- From NIMS to I2MS -

NIMS aims at becoming a world-leading core institute in materials research

- **Creation of alien-friendly environment**
- **Multilateral international networking among world research institutes / foreign scientists**
- **Securing and fostering young scientists on a global scale**

Number of Staffs

As of April 2005

	Number	(Foreigner)	(Female)
Total	1535	232	298
Permanent	551	21	38
Executives	6	0	0
Researchers	398	21	21
Engineers	46	0	1
Administrative Staffs	101	0	16
Non Permanent	984	211	260
Research Advisers	17	4	0
Guest Researchers	194	5	3
Visiting Researchers	526	184	71
Support Staffs	247	18	186

Country	Number
China	95
India	18
Korea	12
UK	9
Germany	7
Russia	7
France	5
Czech	4
Ukraine	3
Slovak	3
Others	21
Total	184

Creation of Alien-Friendly Environment

Introduction of bilingual environment

- Technical support in English
- Manuals and guidebooks in English, etc.

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World Materials Research Institute Forum

June & July, 2005 in Tsukuba

World Materials Research Institute Forum

- **Purposes**
  - To exchange information on current national policies and research management strategies
  - To discuss future directions of materials research and possible international cooperation.

- **Participants**
  - ORNL, NIST (USA), CNRS (France), CSIC (Spain), Max-Plank, BAM, Kurlsruhe (Germany), Empa (Switzerland), RAS (Russia), IIS (India), CAS (China), KAIST (Korea), NIMS (Japan)

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International Programs

For Young NIMS Faculties:

- Research Abroad Program
- One-year Stay Program at ICYS for freshman scientists

For Postdocs:

- International Center for Young Scientists

For Students:

- International Joint Graduate School
- Summer school for students
  - Japan-UK Nanotechnology Summer School
- Internship program

International Center for Young Scientists (ICYS)

- **Purpose**
  - To become more attractive Institute, especially for foreign young scientists
- **Concept ; In^4**
  - **International** : English as working language
  - **Independent** : autonomous research
  - **Interdisciplinary** : a fusion of different cultures and numerous fields
  - **Innovative** : strategic research

ICYS Fellowship

- **Benefits**
  - High salary
  - Research support grant: 5 million yen/ year
  - Ideal research environment…
    - using cutting-edge facilities of NIMS
    - having a single occupancy cubicle
- **Current status**
  - Over 700 applicants
  - **43 successful candidates from 22 countries**
    - UK 6, China 6, Germany 3, India 3, Japan 3, Korea 2 , Switzerland 2, France 2, Spain 2, USA 2
    - Canada, Mexico, Italy, Sweden, Russia, Czech, Hungary, Ukraine, Macedonia, Turk, Iran, Taiwan : 1 each

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International Joint Graduate School with Charles University of Prague

Japan-UK Nanotechnology Summer School

July 11 - 15, 2005 at the Cambridge Nanoscience Centre

Cooperation with Asia

Strategic Promotion of the International Activity of Science and Technology

Council for Science and Technology, Committee on International Affairs

- Intensive promotion of international activity with strategy
- **Building Partnerships in Asia**
- Developing and Securing, and Building a Network of, International Research Personnel
- Strengthening the Foundations of International Activity

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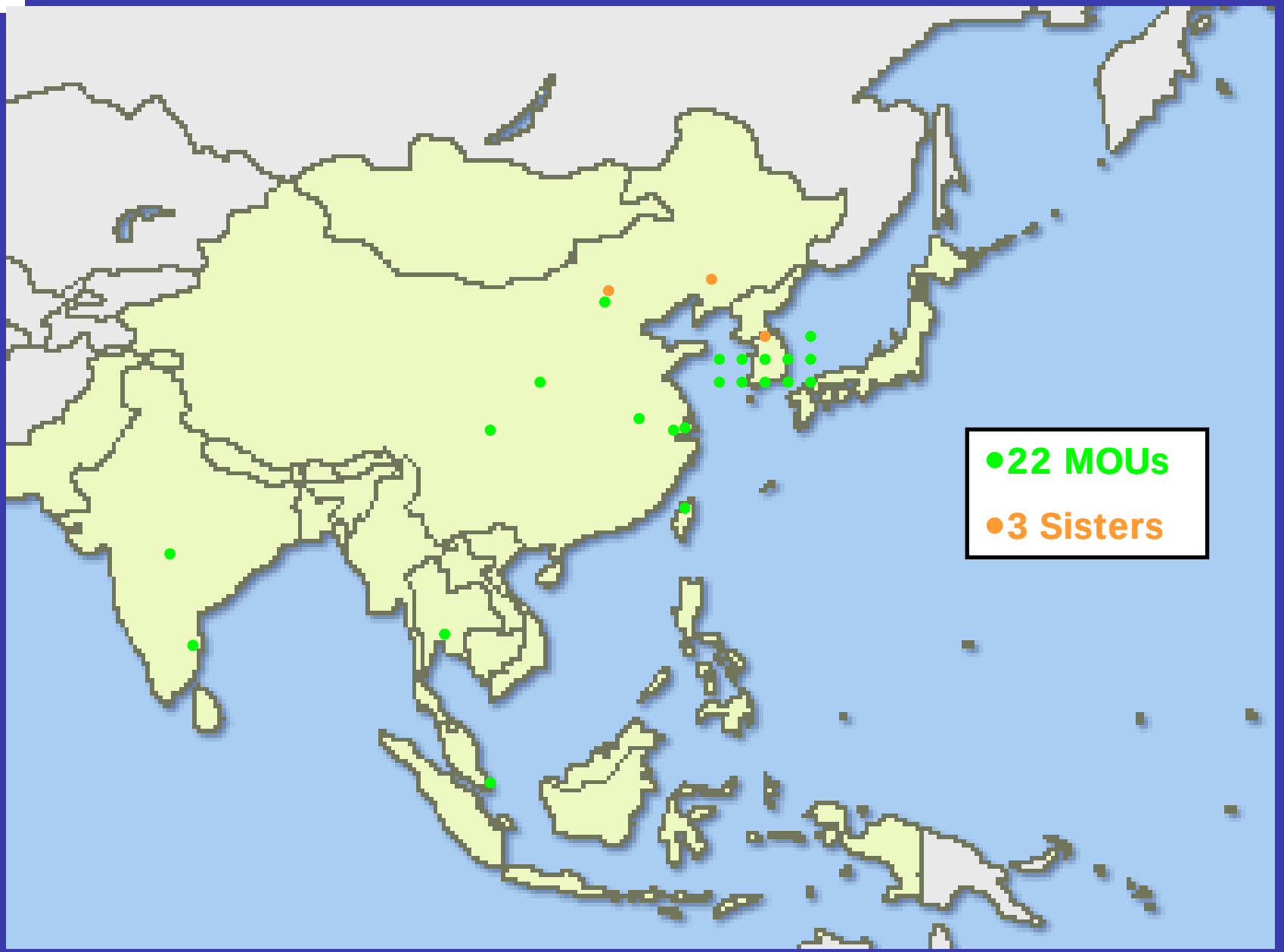
8	Univ. Tokyo	4,440
9	Univ. Cambridge	4,338
10	UC Berkeley	4,204
11	Tsing Hua Univ.	4,142
12	CNRS	3,909
13	Penn State Univ.	3,858
14	AIST	3,812
15	Kyoto Univ.	3,788

Rank	Institution	Citations
16	Tokyo Inst. Tech.	3,645
17	Seoul National Univ.	3,611
18	Univ. Washington	3,445
19	Russia Acad. Sci.	3,413
20	National Univ. Singapore	3,405
21	UC Santa Barbara	3,313
22	Nanyang Tech. Univ.	3,188
23	Oak Ridge National Lab	3,153
24	Univ. Illinois	3,035
25	National Inst. Stand. & Tech.	3,000
26	JST	2,955
27	Korea Adv. Inst. Sci. & Tech.	2,820
28	Univ. Paris 6	2,697
29	Northwestern Univ.	2,692
30	Indian Inst. Tech.	2,567

Building Partnerships in Asia

- Considering rapid development of East Asia and the idea of "East Asian Community", it is important to build an S&T community in Asia. Thus, it is necessary to promote the following activities by considering the diversity of each country.
  1. Promote exchanges of research personnel and raise liaison personnel for the future of Asian community,
  2. Challenge regional common problems such as environmental issues, natural disasters, and emerging /reemerging infectious diseases,
  3. Create platform for sharing S&T information and developing multilateral networking to support activities of Asian community.

Cooperation with Asian Countries



S. E. Asia Network

- Aim: Provide access to experimental facilities at certain centers of excellence for materials scientists.
- Available facilities at NIMS: Hybrid Magnet, NMR Magnet

37.9 T Hybrid Magnet

1 GHz class NMR Magnet

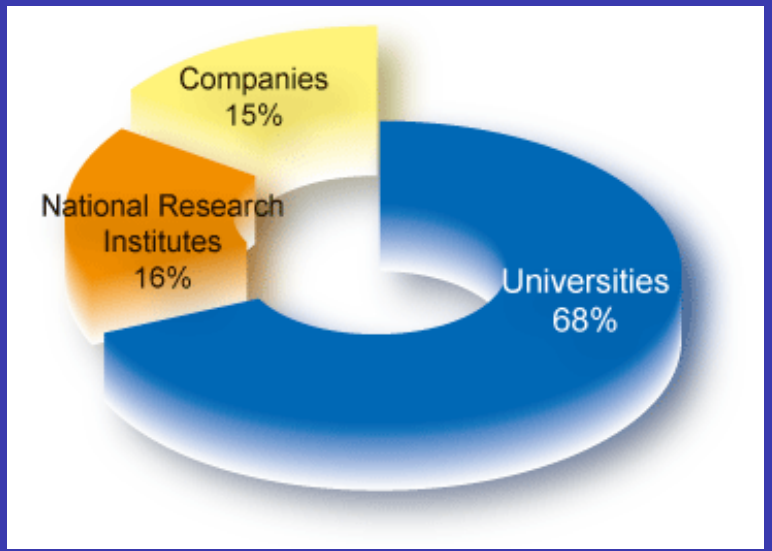
High Magnetic Field

- **Investigation of condensed materials**
  - ✓ Quantum Hall effect, magnetic materials, superconductivity in oxides, heavy fermions and organics
- **New research fields**
  - ✓ Nanometer-scaled materials, spintronics, physical chemical and bio-chemistry, biological systems
- **International standardization of superconducting materials**

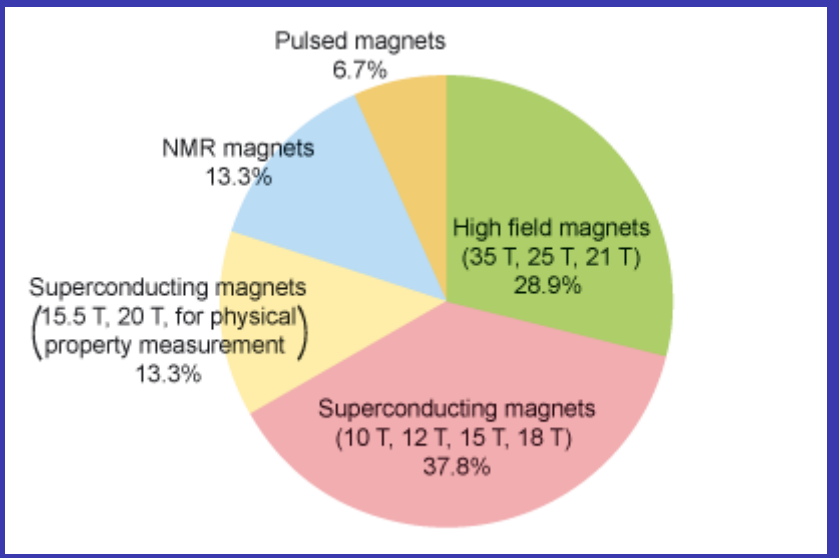
High Magnetic Field Center

High Magnetic Field Center is open to the global user community for both fundamental and applied research through collaboration.

Distribution of Outside Users (2002)



User's Choice of Magnets (2002)



Application for Collaborative Research

Contact:
National Institute for Materials Science

◈**High Magnet Field Center**
http://akahoshi.nims.go.jp/TML/english/
E-mail : magnet@nims.go.jp

or

◈ **International Center for Young Scientists**
Tadashi C. Ozawa
E-mail : OZAWA.Tadashi@nims.go.jp

Thank you very much for your attention!