



# World Materials Research Institute Forum:

May 23, 2011

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President, World Materials Research Institute Forum

Advisor, National Institute for Materials Science



# Origin of WMRIF

Round table discussion by directors of national materials research institutes (MRI) in the world

- What should be the mission of national materials research institutes?
- How can we share information and issues and work together?
- How are we different from universities and complementary with them?

# 1st WMRIF Conference

June & July, 2005, Tsukuba, Japan



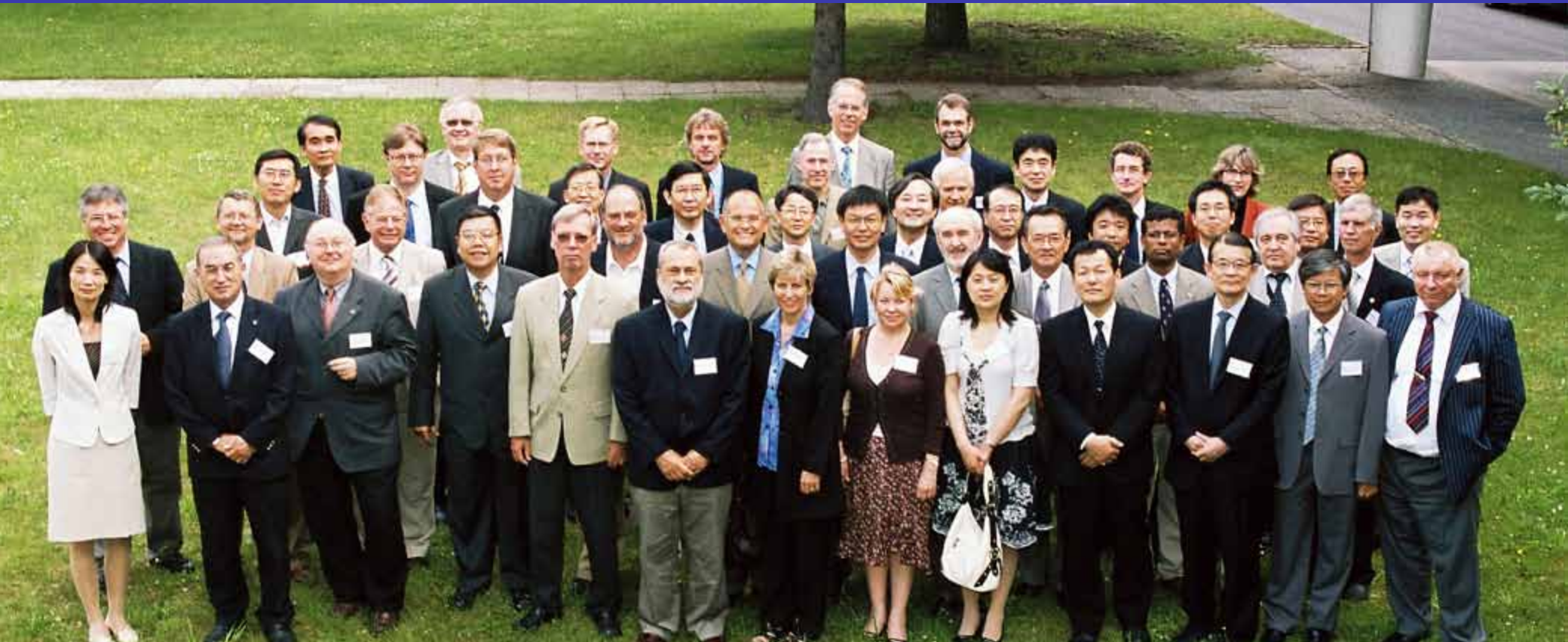
ORNL, NIST (USA),  
CNRS (France), CSIC (Spain),  
Max - Plank, BAM, Karlsruhe (Germany),  
Empa (Switzerland), RAS (Russia),  
IIS (India), CAS (China), KAIST (Korea),  
NIMS (Japan)





# 2nd WMRIF Conference

June, 2007, BAM, Berlin, Germany



**America** ORNL, LLNL, NIST, AMES, EWI, INMETRO, BNL

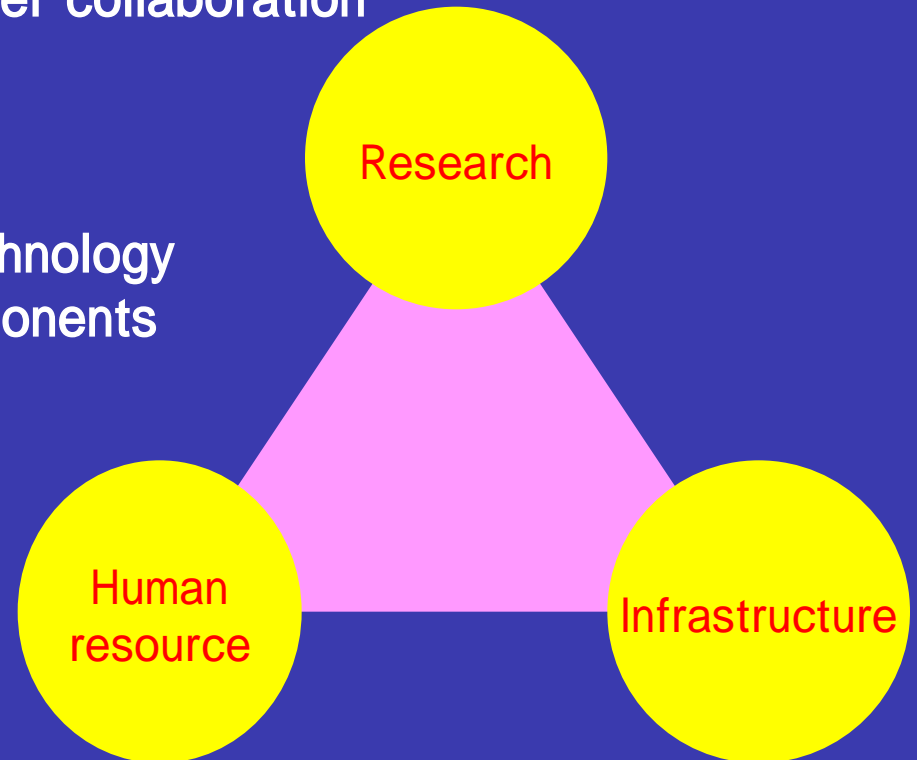
**Europe** BAM, NPL, VTT, LNE, NIIC - RAS, ISC - RAS, CSIC (2), EMPA, KFKI, INMAT, SP, Max - Planck, CNRS, BRPW, U. Sheffield

**Asia** NIMS, AIST, CAS - IMR, CAS - IP, KIMS, KIST, IMRE, ITRI, MTEC, VAST, KAIST, JNCASR

**Africa** MINTEK

- **Founding Declaration**
- **Constitution**
- **Presidential Board and Organization**
- **Working Groups**
  1. Research resource mapping for better collaboration
  2. Materials science outlook
  3. Promotion of young scientists
  4. Global database
  5. Materials for sustainable energy technology
  6. Materials for reliable and safe components
  7. Materials simulation

<http://wmrif.nims.go.jp>



# WMRIF Organization

## Presidential Board

**President** T. Kishi (NIMS)  
**Vice Presidents** T. Boellinghaus (BAM)  
Tomas De La Rubia (LLNL)  
**Working Group Leaders**

## Secretariat

**Secretary General** M. Kitagawa  
National Institute for Materials Science

## Working Groups

General  
Assembly

MRI  
Directors

**WG1:**  
Promotion of Research  
Collaboration  
using Large - scale Facility

**WG2:**  
Publication of Materials  
Science Outlook  
Leader: T. Hyodo  
A. R. West

**WG3:**  
Attracting the Young  
Scientists  
Leader: T. Boellinghaus

**WG4:**  
Promotion of Global  
Database  
Leader: G. Sims

**WG5:**  
Research on Materials  
for Sustainable Energy and Environment  
Leader: M. Simonson

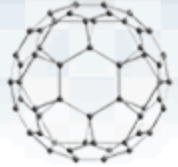
**WG6:**  
Research on Structural  
Materials Reliability  
Leader: A. C. Ritschkoff

**WG7:**  
Research on  
Materials Simulation  
Leader: Christian Mailhot



# WMRIF Website

Welcome Guest



## WMRIF 世界材料研究所フォーラム World Materials Research Institutes Forum

- About the Forum
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- Working Group
- Member Institutes
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News

- First Announcement of the 4th WMRIF
- The 2nd Asia-Oceanic WMRIF
- The 2nd International Workshop for Young Materials Scientists
- The 3rd World Materials Research Institute Forum, Gathersburg MD, USA
- 3rd World Materials Research Institute Forum General Assembly and Symposium on Materials Challenges for Clean Energy

### Welcome to World Materials Research Institute Forum

The World Materials Research Institute Forum was held to bring together several executives from the world's leading materials research institutes to exchange information on current national policies and research management strategies and to discuss future directions of materials research and possible international cooperation.



The forum web organizer:  
National Institute for Materials Science, Japan  
Launched May 2007.

- What is the main purpose of the WMRIF? [WMRIF founding declaration][WMRIF constitution]
- Who are the member-institutes? [see "Member-Institutes"]
- How is it organized? [What are the working group activities? Localization in ...]
- What are the main activities in the past?[Brief of 1st and 2nd Forum]

<http://wmrif.nims.go.jp>



# 1st WMRIF Workshop for Young Scientists

July, 2008, NIMS, Tsukuba, Japan







# 3rd WMRIF General Assembly and Symposium

June, 2009, NIST, Washington D.C., USA

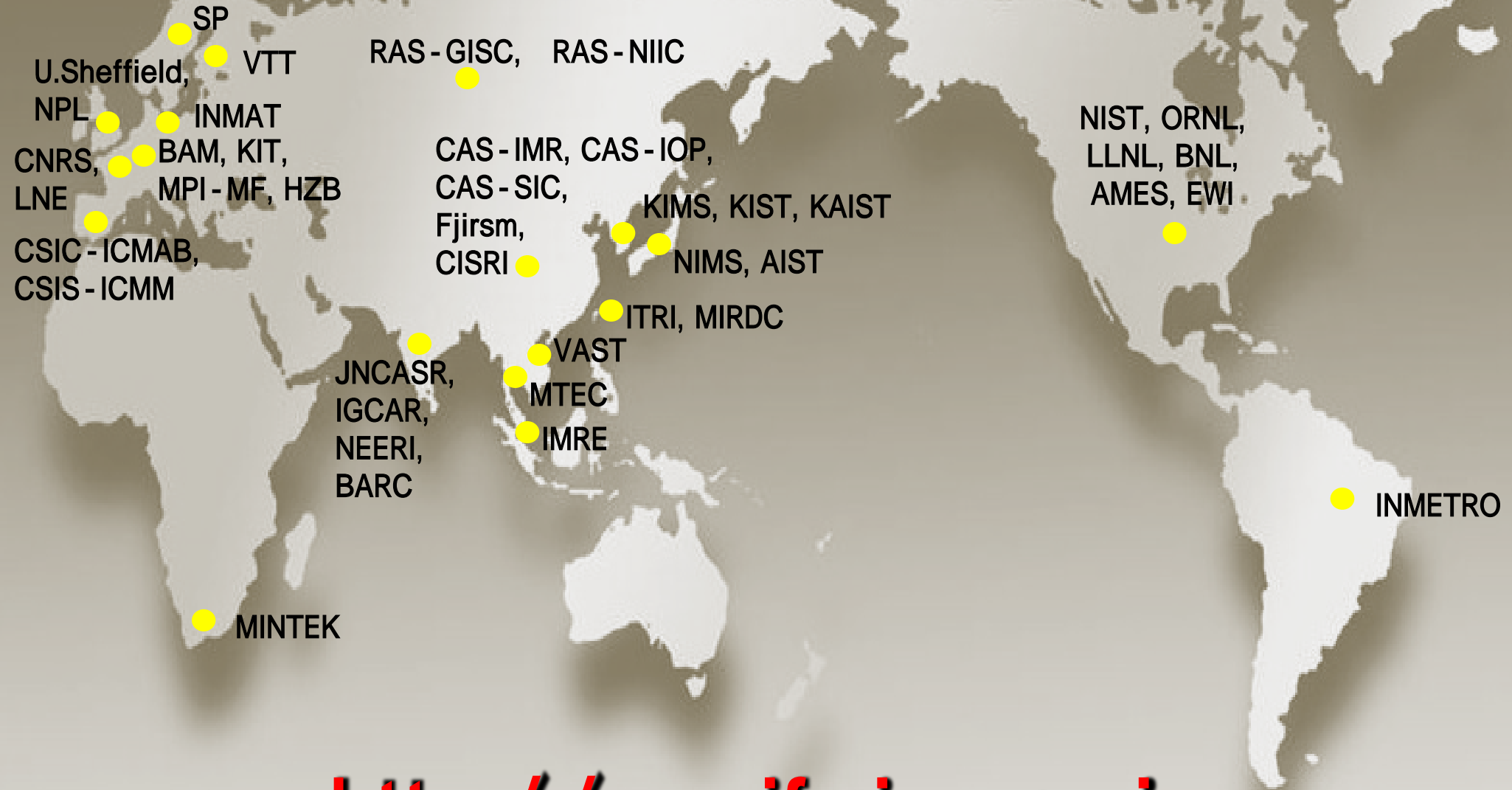




# 1st WMRIF Symposium on Materials Challenges for Clean Energy

1. Overview Session: USA, Japan, and EU
2. Solar Energy
3. Hydrogen and Bio - Energy
4. Energy Storage and Conversion
5. Energy Efficiency
6. Nuclear Materials
7. Special Topics: NanoEHS, Synchrotron, and Sustainability

# 44 WMRIF Member Institutes



<http://wmrif.nims.go.jp>

# 4th WMRIF

## Materials Challenges for Safety and Reliability

**May 22-26, 2011, IMR-CAS Shenyang, China**

### 1. The topics of the symposium

- Design and fabrication of high-performance materials
- Characterization and evaluation of advanced materials
- Property and performance of advanced materials
- Applications of advanced materials

### 2. Chairman: Prof. Dr. K. Lu

### 3. Committees

- *International Scientific Advisory Committee*
- *International Organizing Committee*



### 4. Schedule

May 22 Registration

May 23-24 Symposium

20 Invited lectures & Posters of recent achievement

May 25 General Assembly

**Round table discussions among directors**

**Posters of Institute**

May 26 Local tour for general assembly member



# Fields of Symposium

Category 1	Category 2
1 Design and fabrication of high-performance materials	II 3) Surface protection of structural components (surface modification, coatings etc.) II 4) Reliability assessment of multi-length scale structural components (life time prediction etc.)
2 Characterization and evaluation of advanced materials	I 1) Time dependent properties with respect to elongation fo life cycles (impact to fatigue, creep, thermomechanical fatigue) , nuemericqal and experimental procedures. I 4) Environmental effect (Nuclear radiation, corrosion etc)
3 Property and performance of advanced materials	II 1) Lightweight composite materials and new alloys (FRP, TI alloys etc.) II 2) High temperature ceramic materials and intermetallics (ceramics, intermetallics)
4 Applications of advanced materials	I2) Damage detection and nondestructive testing (or inspection) I3) Failure analysis and prevention for safe operation (includes fractography) I 5) Standardization issues of components for persisting components and structures II 5) Standardization of new innovative materials

# Biannual WMRIF General Assembly and Symposium 2011

## 4<sup>th</sup> WMRIF 2011



**Prof. Ke Lu**  
**Chairman**



**Prof. H.M. Cheng**  
**Local Organizing Committee**



**Prof. Z.F. Zhang**



**Ms. Z. Zhao**

## International Scientific Advisory Committee

**Co-Chair:** Prof. A. Ritschkoff, Dr. J. Ramirez  
**Secretary:** Prof. Z. F. Zhang

**Members:**

**Europe:** Prof. A. Ritschkoff, Dr. G. L. Bona,  
Prof. Dr. D. Löhe

**America:** Dr. J. Ramirez, Dr. S. J. Zinkle, Dr. W. Luecke  
Dr. Christian Mailhot, Dr. César O. Pruneda

**Asia:** Prof. Z. F. Zhang, Dr. K. T. Hong, Dr. K.-W. Lim  
Prof. Dr. Yutaka Kagawa, Dr. Sung Joon Kim

## International Organizing Committee

**Secretary:** Prof. H. M. Cheng, Dr. M. Kitagawa

**Members:**

**Europe:** Dr. J. Lexow, Prof. I. Barsony

**America:** Dr. F. W. Gayle, Dr. E. Lara-Curzio

**Asia:** Prof. H. M. Cheng, Prof. L. D. Chen,  
Dr. K.-M. Cho, Mr. M. Takemura

**We all thank the IMR and Committee members**

**For very successful preparation of General assembly and Symposium**



Thank you for your attention



# 2nd WMRIF Symposium on Materials Challenges for Safety and Reliability

1. Design and fabrication of high - performance materials
2. Characterization and evaluation of advanced materials
3. Property and performance of advanced materials
4. Applications of advanced materials

20 world leading specialists were invited