

## Scope

The Symposium is a joint Japanese-Italian forum for exchanging information and for exploring individual research programs on *nano-structured materials* and *nanotechnologies* in order to enhance fruitful joint R&D cooperation between the two Countries. This Workshop is organized as a result of the successful *First Italy-Japan Workshop Inter-disciplinary Materials Science and Technology, Politecnico di Torino, November 28-30, 2001*. Special attention will be given to the joint participation of private companies with the specific purpose of enhancing the technology transfer of available nanotechnologies as well as to stimulate further the development of new advanced industrial applications. The Workshop focuses on processing, surface modification, characterization and evaluation of nanostructured materials for structural applications and nanodevices.

## Organizing Committee

- G. Maizza (I-J Coordinator, Politecnico di Torino, MIUR)
- T. Noda (I-J Coordinator, NIMS, NANONET, MEXT)
- M. Aono (Director, Nanomaterials Lab., NIMS)
- G. N. Babini (Director, ISTECC-CNR)
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- G. Fonti (Director, International Relation Department, MIUR)
- D. Gatteschi (President, Nat. Inst. of Mat. Sci. and Tech., INSTM)
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- A. Nishijima (Deputy Director, Int. Affairs Dept., AIST)
- M. Takeshita (Director, Nanotechnology and Mat. Dept., NEDO)
- K. Tsuzaki (Deputy Director-Gen., Steel Research Center, NIMS)
- K. Ushiki (Assistant Director, Int. Affairs Dept., AIST)
- A. Volpi (Scientific Attache, Italian Embassy of Tokyo)
- K. Yoshihara (Director, Materials Engineering Lab, NIMS)

## Rapporteurs

- T. Aihara (Gunma University)
- F. Cleri (ENEA)
- D. Firrao (Politecnico di Torino)
- K. Nagai (NIMS)

## Registration

The registration is free for invited speakers. No admission fee for auditors

## Supporting Organization

The joint Symposium is co-sponsored by governmental Institutions, namely the Italian Ministry of Foreign Affairs, the National Institute for Materials Science (NIMS), the Nanotechnology Researchers Network Center of Japan, and the additional support of the National Institute of Advanced Industrial Science and Technology (AIST) and that of the New Energy and Industrial Technology Development Organization (NEDO).

## The Symposium site



## Deadlines

The invited speakers are required to send an **ABSTRACT** of their presentation by November 8, 2002 by E-mail to Coordinators: [maizza@polito.it](mailto:maizza@polito.it) and [noda.tetsuji@nims.go.jp](mailto:noda.tetsuji@nims.go.jp). An Abstract booklet will be provided to participants at the Symposium site.

## Advisory Board

- K. Aoyagi (Executive Director, NEDO)
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## Japan-Italy Joint Symposium Nano-structured Materials for Structural Applications and Nanodevices



### Symposium Co-chairs:

T. Saito (NIMS) and M. Kamimoto (AIST)  
R. Pasca (MAP) and G. Fonti (MIUR)

**Tsukuba, November 25-27, 2002**

National Institute for Materials Science - MEXT

Supported by:

Italian Ministry of Foreign Affairs  
Nanotechnology Researchers Network Center of  
Japan - MEXT

National Institute of Advanced of Industrial  
Science and Technology and NEDO – METI

<http://www.nims.go.jp/ijjs/>

## November 25

### Welcome and Opening address

- 8:30-8:40 Tetsuya Saito, Vice President, NIMS  
8:40-8:50 Angelo Volpi, Scientific Attache, Italian Embassy in Tokyo  
8:50-9:00 Masayuki Kamimoto, Director, AIST Head Quarter

### Welcome and Opening address

#### Session chair: L. Battezzati, K. Tanaka

- 9:00-9:30 A. Inoue, Tohoku University  
Sub-nanoscale structure-controlled alloys produced by stabilization of supercooled liquid  
9:30-10:00 T. Yoshida, University of Tokyo  
NEDO nano-coating project  
10:00-10:30 E. Borsella, INFN-Unit of Padova  
N-materials for structural applications: an overview of the results of the European NANOMAT Network project

10:30-10:45 **Coffee break**

### Nano-material processing and characterization

#### Session chair: A. Inoue, G.N. Babini

- 10:45-11:15 A. Fujishima, Tokyo University  
Nanostructured diamond  
11:15-11:45 L. Battezzati, Univ. Torino, INSTM  
Nanostructured alloys: selected examples for fundamental and applicative studies  
11:45-12:15 M. Vittori-Antisari, ENEA  
Synthesis of carbon nanotubes by arc discharge in unconventional environments  
12:15-12:45 K. Hiraga and Y. Sakka, NIMS  
Development of high-strain-rate-superplastic ceramics by colloidal processing  
12:45-14:00 **Lunch time**  
Session chair: T. Yoshida, G.N. Babini  
14:00-14:30 O. Odawara, Tokyo Institute of Technology  
N-diamond particles by explosion process  
14:30-15:00 A. Tsuge, FCRA, NEDO  
Synergy Ceramics  
15:00-15:30 K. Nagai, NIMS  
Present status and future of ultra-steel  
15:30-16:00 K. Tsuzaki, NIMS  
N-precipitates design for high-strength martensitic steel  
16:00-16:15 **Coffee break**

### Advanced characterization techniques for N-structures

#### Session chair: A. Tsuge, P. Milani

- 16:15-16:45 G.N. Babini & S.G. Guicciardi, CNR  
Processing and characterization of nanostructured structural ceramics  
16:45-17:15 T. Nakayama, NIMS  
Electrical characterization of nanostructured materials by multiprobe scanning tunneling microscopy

- 17:15-15:45 M. Vittori-Antisari, ENEA  
Modern electron microscopy for N-structured materials  
17:45-18.15 M. Murayama, NIMS  
HRTEM analysis of nano-structured metallic materials  
18:30 **Banquet**

## November 26

### Nanostructured surface modification and characterization

#### Session chair: O. Odawara, M. Vittori-Antisari

- 8:45-9:15 H. Murakami, University of Tokyo  
Application of Ir-base alloy coatings to heat resistant Ni-base superalloys  
9:15-9:45 P. Milani, Milano Univ. , INFN  
Supersonic cluster beams: a powerful method for the anipulation of clusters and the synthesis of nanostructured materials  
9:45-10:15 M. Tosa, NIMS  
Nano surface modifications  
10:15-10:30 **Coffee break**  
Session chair: K.Ushiki, M. Vittori-Antisari  
10:30-11:00 G. Cao, Cagliari University, INSTM  
Synthesis of dense nanometric materials through mechanical and field ctivation  
11:00-11:30 S. Usuba ,Y. Abe, AIST  
Nano-matreials fabrication under low- and high-gravity  
11:30-12:00 K. Iga, JSPS  
Overview on Nanotechnology in Japan

12:00-13:30 **Lunch time**

### Nanodevices

#### Session chair: A.Nishijima:, G. Cao

- 13:30-14:00 N. Koshizaki, AIST  
Nanopowders and Nanocomposite for functional devices  
14:00-14:30 E. Traversa, Roma University, INSTM  
Nanostructured Materials for Innovative Chemical Sensors  
14:30-15:00 Chao-Nan Xu, AIST  
Strong mechanoluminescent ultrafine materials and application  
15:00-15:30 E. Borsella, INFN  
Applications of N-structured Si in optical amplifiers  
15:30-15:45 **Coffee break**

### Computational Nanoscience

#### Session chair: G. Maizza, T. Noda

- 15:45-16:15 F. Cleri, ENEA  
Multiscale modelling of mechanical properties in nanostructured materials  
16:15-16:45 T. Aihara, Gunma University  
Application of MD to Nano-scale structures  
16:45-17:15 H. Onodera, NIMS  
Computer simulation for nano-structured materials  
17:15-17:45 Mikami, AIST  
Computer simulation system for Nano-technology  
18:30 **Buffet party**

## November 27

### Industrial Nanotechnologies I

#### Session chair: N. Koshizaki, P. Perlo

- 8:30-8:50 P. Perlo, CRF - Torino  
Nanostructured metals for optical applications  
8:50-9:10 S. Ito, Research Center, Asahi Glass Co., Ltd.  
Nano-Structure and property of glass  
9:10-9:25 M. Borgna, Borgna Vetri s.r.l., Italy  
N-technology request in glass manufacturing  
9:25-9:45 H. Matsubara, Japan Fine Ceramics Center  
Nano Coatings Fabrication –Nanostructure Coating of Oxide Ceramics by EB-PVD System-  
9:45-10:05 **Coffee break**

### Industrial Nanotechnologies II

#### Session chair: K. Nagai, P. Perlo

- 10:05-10:20 F. Raimondi, T.A.G. S.r.l.  
Request for new N-structured-coatings and processes  
10:20-10:40 H.Z. Song, Fujitsu Laboratories Ltd., Japan  
Fabrication of arbitrary quantum dot array assisted by AFM oxidation  
10:40-11:00 L. M. Ferrero, Focusweld S.r.l.  
Rapid sintering of nano-powders by means of capacitor discharge heating process  
11:00-11:20 K. Tomita, Materials & Processing Research Center, NKK  
Hot-rolled high strength steel sheet strengthened by Nano-Size precipitates  
11:20-11:40 Keramo S.p.A.; T.E.M.I. S.r.l.  
Technology request -nanostructured ceramics and processing technologies-  
11:40-12:15 **Conclusions**  
12:15-14.00 **Lunch time**  
14:00-18:00 **Japan-Italy Round Table**  
**I-J NETWORK of Excellence on Nanomaterials and Nanotechnologies**  
Note: only invited I-J partners will participate to this meeting.  
18:30 **Dinner**