

CALL FOR PAPERS

Montecatini Terme, Tuscany, Italy
June 6/18, 2010

12th International Ceramics Congress

Facing the Challenge of Innovation
June 6-11, 2010

5th Forum on New Materials

Materials Solutions for Sustainable Energy
June 13-18, 2010



CIMTEC 2010

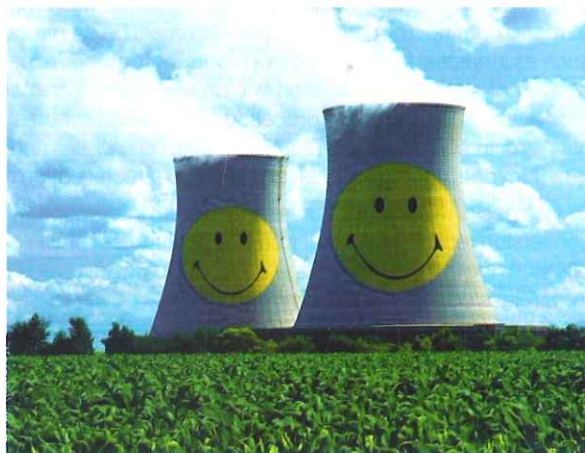
Symposium FF

Materials Challenges for Future Nuclear Fission and Fusion Technologies

Nuclear energy, both fission and fusion, will provide a clean, safe, and cost-effective sustainable energy resource, and is expected to grow significantly in order to meet future energy demand globally. This growth should proceed without adverse impacts to global environmental and climate change.

To meet this grand challenge several nuclear initiatives were proposed aiming to develop advanced nuclear energy technologies and systems that would meet future needs for safe, sustainable, environmentally responsible, and economical energy.

Materials technologies will play a key role to improve economics and long-term reliability of any new advanced nuclear systems. The superior structural material performance will allow higher temperature design and operation for higher thermal efficiency, longer lifetimes, and improved reliability with reduced down time. In addition to the high temperature mechanical properties, resistance to radiation damage is also a key obstacle to improve materials performance and reliability.



The International Symposium on "Materials Challenges for Future Nuclear Fission and Fusion Technologies" will provide an exciting melting pot to foster the international collaboration and crosscutting coordination to advance the science and technology of future nuclear fission and fusion energy. The symposium will focus up-to-date advances in materials research and development, nuclear components and systems design, irradiation effect and damage, and theoretical modelling for both advanced nuclear fission and fusion technologies and applications. Advanced materials such as high-temperature metals, superalloys, ceramics, metal- and ceramic-matrix composites, and functional materials and coatings will be of interest. Basic scientific understanding of radiation effect and damage to the materials microstructure and properties via theoretical modelling and experiments relevant to fission and fusion application environment will also be covered.

International Advisory Board

Co-Chairs:

Harald BOLT, Germany
Hua-Tay LIN, USA (*Programme Chair*)
Tatsuo SHIKAMA, Japan

Members:

Jarir AKTAA, Germany
David BACON, UK
Nadine BALUC, Switzerland
Alfredo CARO, USA
Michel CHATELIER, France
Sergei DUDAREV, UK
Thomas FANGHANEL, Germany
Kaiming FENG, P.R. China
Monica FERRARIS, Italy
Zhengyi FU, P.R. China
E.R. HODGSON, Spain

Jun-Hwa HONG, Korea
Ji-Jung KAI, Taiwan
Yutai KATOH, USA
Akihiko KIMURA, Japan
Akira KOHYAMA, Japan
Myeun KWON, Korea
Marion LE FLEM, France
Rainer LINDAU, Germany
Jochen LINKE, Germany
Stuart MALOY, USA
Kazuo MINATO, Japan
Takeo MUROGA, Japan
Maylise NASTAR, France
Robert ODETTE, USA
Ji Yeon PARK, Korea
Joachim ROTH, Germany

Marek RUBEL, Sweden
Maria SAMARAS, Switzerland
Leo SANNEN, Belgium
Naoki SONEDA, Japan
Roger E. STOLLER, USA
Toshiyuki TAKAGI, Japan
Kostya TRACHENKO, UK
Jaap VAN DER LAAN, The Netherlands
Zhiguang WANG, P.R. China
Wolfgang WIESENACK, Norway
Brian D. WIRTH, USA
Yican WU, P.R. China
Michio YAMAWAKI, Japan
Suyuan YU, P.R. China
Steve J. ZINKLE, USA
Shengyun ZHU, P.R. China

Materials Solutions for Sustainable Energy

Contributions are invited in the following and related areas:

FF-1 Structural Components for Nuclear Fission and Fusion Applications

- High-temperature metallic alloys and superalloys
- Metal-matrix composites
- Ceramics
- Ceramic-matrix composites

FF-2 Low Activation Structural Materials for Nuclear Fusion Systems

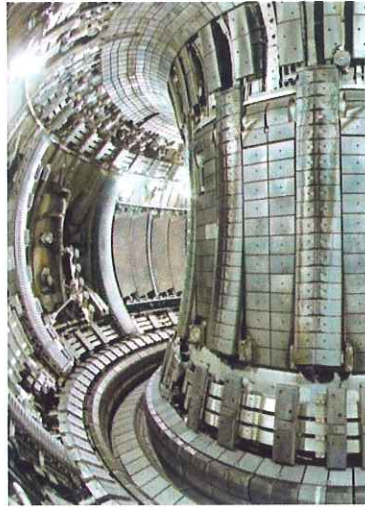
- Ferritic and martensitic alloys
- Vanadium alloys
- SiC and SiC matrix composites

FF-3 Materials for First Wall Components of Nuclear Fusion Systems

- Plasma facing materials
- Blanket materials

FF-4 Functional Materials

- Insulators
- Superconducting magnets
- Coatings



FF-5 Nuclear Fuel Materials

- Processing, microstructure, and properties relationship
- Oxide-base nuclear fuels
- Metal-base nuclear fuels
- Thermomechanical modelling
- Recycle of nuclear fuels
- Fuel cladding materials

FF-6 Radiation Effects

- Defect production and properties
- Microstructure evolution
- Mechanical property changes
- He and H effects
- Theoretical modelling

FF-7 Materials Modelling and Database

- Modelling of performance
- System design and modelling
- Materials and mechanical properties database

FF-8 Crosscutting Materials Issues for Nuclear Fission and Fusion Systems

FF-9 Systems Integration and Interface Design and Components

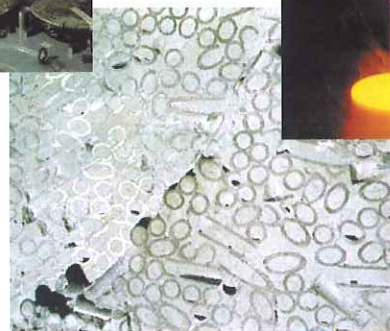
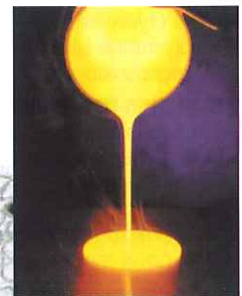
Focused Session FF-10

Materials Technology for Nuclear Waste Treatment and Disposal

This session will focus on the treatment and disposal of low and high level nuclear wastes from commercial power generation, fuel reprocessing and defense operations. Technologies for interim, short-term and long-term storage and disposal are of interest, including mature processes as well as new and innovative technologies. The goal of the session will be to identify and provide solutions to materials issues in the global integration of waste treatment technologies.

Specific topics will include:

- FF-10.1 Waste form development, including glass, ceramic and metallic waste forms
- FF-10.2 Methods of processing challenging waste constituents, such as actinides and noble metals
- FF-10.3 Waste form modeling, performance testing and advanced characterization techniques
- FF-10.4 Design and operation of waste immobilization facilities
- FF-10.5 Repository design, requirements and licensing



International Advisory Board

Chair:
Kevin FOX, USA

Members:
Joonhong AHN, USA
Bruce BEGG, Australia
Rodney C. EWING, USA

Thorsten GEISLER-WIERWILLE, Germany
Russell HAND, UK
Kazuya IDEMITSU, Japan
Carol JANTZEN, USA
Hitoshi MIMURA, Japan
Vincenzo RONDINELLA, Germany
Sergey STEFANOVSKY, Russia

Satoru TANAKA, Japan
Francesco TROIANI, Italy
Pierre VAN ISEGHEM, Belgium
Eric R. VANCE, Australia
Etienne VERNAZ, France
William WEBER, USA
Siegfried WEISENBERGER, Germany