



The International Standing Committee for FNST

Welcomes

All Participants to ISFNT-9

and

**Wishes all a very successful conference
and a most enjoyable stay in the
wonderful city of Dalian**

Introductory remarks for ISFNT-9: Mohamed Abdou, ISC Chair

The International Symposium on Fusion Nuclear Technology (ISFNT) series of conferences was conceived in the 1980's with the following goals:

- Foster interactions among scientists and engineers working on the many technical disciplines and the many multidisciplinary issues for Fusion Nuclear Science and Technology (FNST).
- Enhance international collaboration.
- Recognize FNST as a key pillar of fusion development.

Fusion Nuclear Science and Technology (FNST)

Fusion Power & Fuel Cycle Technology

FNST includes the scientific issues and technical disciplines as well as materials, engineering and development of

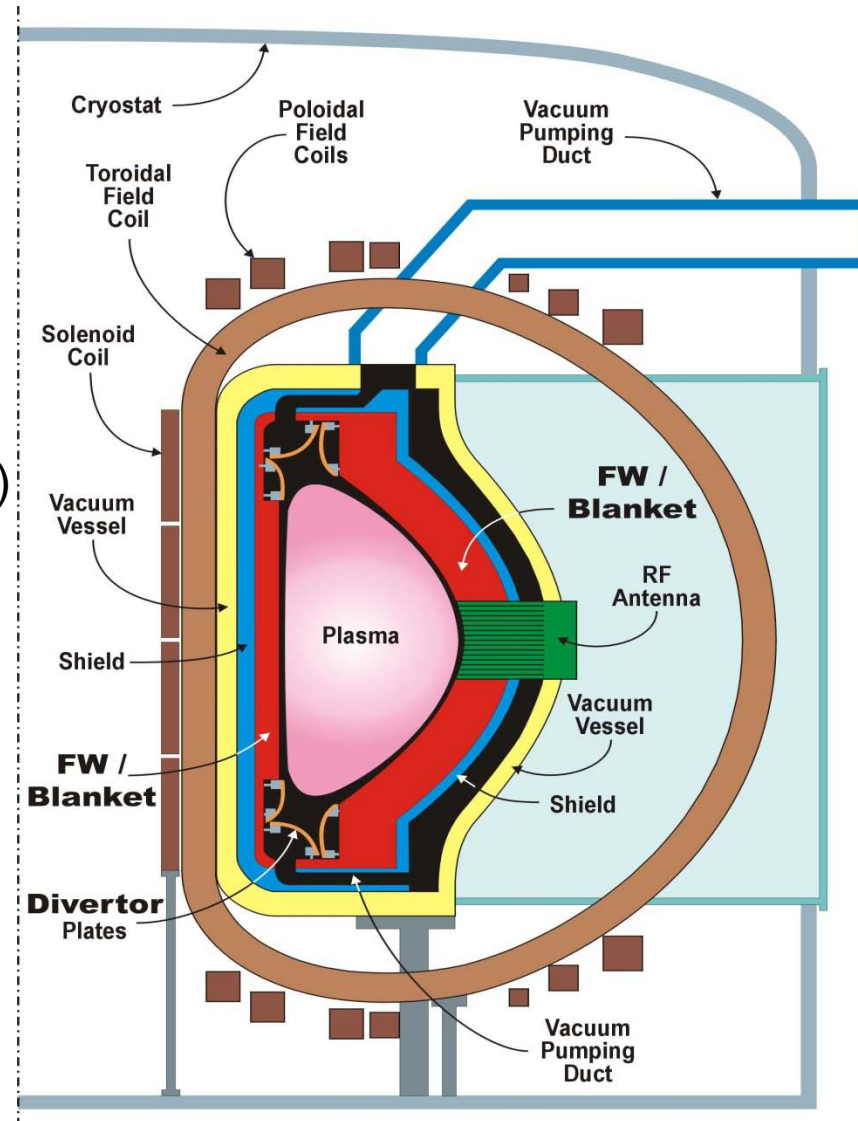
fusion nuclear components:

From the edge of Plasma to TF Coils:

1. Blanket Components (includ. FW)
2. Plasma Interactive and High Heat Flux Components (divertor, limiter, rf/PFC elements)
3. Vacuum Vessel & Shield Components

Other Systems / Components affected by the Nuclear Environment:

4. Tritium Processing Systems
5. Remote Maintenance Components
6. Heat Transport and Power Conversion Systems



FNST research is responsible for advancing and providing state-of-the-art predictive capabilities for many technical disciplines required for the fusion program

- neutron/photon transport
- neutron-material interactions
- plasma-surface interactions
- heat/mass transfer
- thermofluid physics and MHD
- thermal hydraulics
- tritium release, extraction, inventory and control
- tritium processing
- structural mechanics
- radiation effects
- thermomechanics
- chemistry
- radioactivity/decay heat
- safety analysis methods and codes
- engineering scaling
- failure modes/effects and RAMI analysis methods
- design codes

R&D for Fusion Nuclear Science and Technology is a “Grand Challenge” not only because of the **multi-function, multi-physics, multi-engineering requirements** and issues but also because of the complex and unique **thermo-magneto-vacu-tritu-nuclear environment** of fusion

Neutrons (fluence, spectrum, spatial and temporal gradients)

- Radiation Effects (at relevant temperatures, stresses, and loading)
- Bulk Heating
- Tritium Production
- Activation and Decay Heat

Heat Sources (magnitude, gradient)

- Bulk (from neutrons)
- Surface (from particles and radiation)

Particle Flux (energy, density, gradients)

Magnetic Field (3-component with gradients)

- Steady Field
- Time-Varying Field

Mechanical Forces

- Normal (steady, cyclic)
- Off-Normal (pulsed)

Thermal/Chemical/Mechanical/Electrical/ Magnetic/Nuclear Interactions and Synergistic Effects

- Combined environmental loading conditions
- Interactions among physical elements of components

The kind of training needed to perform research and engineering within these highly constrained fusion nuclear components takes many years of education and experience.

This is why ISFNT has particularly encouraged the participation of young scientists and established an award for this purpose.

ISFNT-9 follows 8 highly successful ISFNTs held once every 2-3 years and rotating among geographical regions of the world

ISFNT-1	Tokyo, Japan	April, 1988
ISFNT-2	Karlsruhe, Germany	June, 1991
ISFNT-3	Los Angeles, USA	June, 1994
ISFNT-4	Tokyo, Japan	April, 1997
ISFNT-5	Rome, Italy	September, 1999
ISFNT-6	San Diego, USA	April, 2002
ISFNT-7	Tokyo, Japan	May, 2005
ISFNT-8	Heidelberg, Germany	October, 2007
ISFNT-9	Dalian, China	October, 2009

Scope of ISFNT

The symposium focuses on all technical aspects of fusion nuclear science and technology (FNST) and related disciplines..

The conference includes invited and contributed papers organized around the following topics:

1. First wall technology and high heat flux components
2. Blanket technology
3. Fuel cycle and tritium processing
4. Material engineering for FNST
5. Vacuum vessel
6. Nuclear system design and reactor studies
7. Safety issues and waste management
8. Models and experiments for FNST
9. Remote handling and maintenance
10. Burning plasma control and operation
11. Inertial confinement fusion studies and technologies
12. FNST contributions to other fields of science and technology

ISFNT-9

October 11-16, 2009 Dalian, China

- More than 480 papers were submitted
 - *About 90 oral presentations will be presented*
- The technical program is strong and covers many current activities and issues in FNST and related areas of fusion research and development.
- The social program also looks exciting – please enjoy.

ACKNOWLEDGMENTS

- Thanks to ISC and IPC
- Thanks to the ISFNT-9 Chinese Organizers and Hosts:
 - **General Chairs: Prof. Chuanhong Pan and Jiangang Li**
 - **Scientific Secretary, Prof. Yican Wu**
 - **Publication Chair: Prof. Kaiming Feng**
 - **Local Organizing Committee Chair: Prof. You-nian Wang**

(Full list of the many bright and hard-working young people who worked on LOC and the Scientific Secretariat will be acknowledged on Friday)

- Thanks to Guest Editors: Masato Akiba, Patrick Calderoni, Kaiming Feng, Mohamed Sawan, Yican Wu, (timely and efficient reviews of submitted manuscripts for publication in FED)
- **And the greatest appreciation is to the Conference Participants**

THANK YOU !