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**22<sup>nd</sup> International Conference on  
Fusion Reactor Materials**

**September 28 to October 3, 2025  
Shizuoka, Japan**

**Venue : MARINART (Shimizu Cultural Hall),  
Shizuoka, Japan.**

**URL : <https://www.shizuoka-cb.com/en/portfolio/marinart-hall/>**

**URL : <https://www.icfrm-22.com>  
email : [icfrm22@jtb.com](mailto:icfrm22@jtb.com)**





The 22<sup>nd</sup> International Conference on  
**Fusion Reactor Materials**  
September 28 to October 3, 2025  
Shizuoka, Japan

## SCOPE

ICFRM is the major international conference and the leading platform for experts studying, developing and characterizing materials for fusion energy technologies. This biennial conference focuses on structural, functional, plasma facing and high heat flux materials including irradiation effects, materials engineering and technologies, and cutting-edge research. The ICFRM-22 will include plenary lectures, invited and contributed oral presentations, as well as poster sessions and tutorials. As hosts, we are looking forward to welcoming you in Shizuoka, Japan, while encouraging interesting and inspiring discussions, interactions and science.

## SCIENTIFIC TOPICS

Within this conference, the topics of presentation and discussion of new scientific and technical developments on fusion materials have been divided as follows:

### A. Development and qualification of structural materials for DEMO and beyond.

- Ferritic/martensitic steels
- Advanced and ODS steels
- Ceramics, ceramic composites, and other low-Z materials
- Tungsten, refractory alloys, and other high-Z materials
- Novel highly radiation-resistant alloys

### B. Materials for high heat flux plasmas facing components: divertor, limiter, first wall.

- Plasma-facing materials
- High heat-flux materials: heat-sink and structural application
- Materials for limiters
- Liquid metal divertors: material issues

### C. Development and characterization of functional materials applied in blankets and other n-irradiation affected systems

- Breeding and neutron multiplier ceramic materials
- Coatings
- Barriers, insulating materials and flow-channel inserts
- Plasma-diagnostic system materials
- First mirrors and auxiliary systems
- Magnetic materials

### D. Fusion-specific applications of materials, including environmental effects.

- Tritium and deuterium: retention, accumulation, diffusion and release, including effects of irradiation
- Concomitant hydrogen and helium embrittlement
- Irradiation and coolant accelerated crack extension
- Chemical compatibility: oxidation, corrosion, and environmental effects

### E. Materials engineering and application including joining of similar or dissimilar materials.

- Fabrication and materials engineering
- Joining of similar and dissimilar materials: process optimization, properties and development of characterization methods
- TBM: material issues and technologies
- ITER material technologies open issues

### F. Qualification of irradiation effects in neutron sources, accelerators and other test systems including advanced characterization methods.

- Intense fusion neutron sources for materials validation
- Approaches to best estimate irradiated materials engineering data combining databases and modeling ITER-TBM as irradiation test bed and model verification
- Other neutron irradiation devices and test facilities
- Advanced microscopy and characterization methods

### G. Materials-design interface and interactions codes, standards, and standardization including SSTT.

- Materials database development and material property handbooks
- Advanced design methodologies and design criteria for future fusion facilities
- Damage accumulation, interaction and critical failure modes
- Development of test technologies towards standardization and norms including SSTT
- Safety criteria and requirements

### H. Fundamental studies of radiation effects: modeling and experimental validation.

- Multi-scale approaches and design of radiation resistant materials
- Defect production and microstructural evolution
- Fundamental helium, hydrogen, and tritium effects

### I. National fusion projects and private fusion activities.

### J. Cross-cutting issues and synergism with materials applications in other large-scale projects or highly loaded systems.

- Cross-cutting material issues for fusion and fission nuclear power systems
- Synergies with material development in other energy research communities
- Education and training

## LANGUAGE

The working language of the conference is English.

## CALL FOR ABSTRACT

All abstracts must be submitted through the website.

(<https://www.icfrm-22.com/>)

Please follow the instructions. Abstracts must be written in English and must not exceed 250 words. Acceptance of an abstract for presentation will be based on a rigorous review. Abstracts that fall outside the scope of the Conference, or describe previously reported results, or do not demonstrate a high standard will be rejected. Submissions by graduate students describing their work are encouraged.

## PUBLICATION

Authors are encouraged to submit full-length papers to either the Journal of Nuclear Materials or Nuclear Materials and Energy, which could be published as special issues after peer review. (under negotiation)

## CONFERENCE VENUE

Conference will be held at the MARINART (Shimizu Cultural Hall), Shizuoka, Japan. URL : <https://www.shizuoka-cb.com/en/portfolio/marinart-hall/>

## KEY DATES

First announcement June 1, 2024

Second announcement October 4, 2024

Abstract submission deadline February 7, 2025

Notification of abstract acceptance June 6, 2025

Early Registration deadline August 1, 2025

Conference starts. Welcome reception September 28, 2025

Manuscript due date October 4, 2025