



OECD/NEA WORKSHOP-TCOFF PROJECT

**Hosted by JAEA/CLADS, Fukushima, Japan
at FRC (Fukushima Research Conference)**

10-12 July 2019

**Materials Science for Severe Accident and
Fukushima Daiichi decommissioning
WORKSHOP 2019**

Deadline for submission of abstracts:	15 May 2019
Deadline for Seminar registration:	31 May 2019
Final programme distribution:	20 June 2019

1- Background and Objectives

In the frame of the OECD/NEA TCOFF (THERMODYNAMIC CHARACTERISATION OF FUEL DEBRIS AND FISSION PRODUCTS BASED ON SCENARIO ANALYSIS OF SEVERE ACCIDENT PROGRESSION AT FUKUSHIMA DAIICHI) project, a 2.5 days' workshop devoted to the use of Materials Science for Severe Accident evaluation will be held **by CLADS at Fukushima, 10-12 July 2019.**

The workshop is divided in 5 sessions.

1/ Integral and/or mechanistic severe accident codes

The first session is dedicated to the use of Materials Science and physical-chemistry phenomena in integral and/or mechanistic severe accident codes such as MELCOR, ASTEC, MAAP, THALES-II, SOCRAT, SAMPSON... An overview of the modelling approach and architecture of these codes can be presented and focused on the coupling between physical-chemistry and thermal-hydraulic. Particular relevance is given to the coupling between Thermal-hydraulic and thermodynamics in the Severe Accident codes: key data, methods (coupling or simplified model), sensitivity analysis. Communication can be also dedicated to some SA-key-phenomena such as Fission products release and transport, corium concrete interaction or corium spreading under water as example for the use of thermodynamic data. It is possible at last to propose communication on modeling and evaluation of Fukushima Daiichi 1F1, 1F2, 1F3 Severe Accidents.

2/ Experimental set ups and high temperature experiments

The second session is devoted to the experimental approach and Thermodynamic Data Base (TDB) construction in the field of Severe Accident Conditions. For the experimental data, it is possible to present experimental set up at high temperature, experimental reliability and uncertainties. Communication can be also dedicated to Post-Test Analyses (PTA) methods and reliability for corium measurements. The use and the building of the thermodynamic databases can be presented with a focus on status of knowledge for the systems including corium (U,Zr,Fe,Ni,Cr,O...), Fission Products (I, Ce, Ba, Ru....) and water (H₂O) at high temperature representative of Severe Accident conditions.

3/ Thermodynamic (Calphad) modeling

The third session is focused on Thermodynamic modelling under Severe Accident conditions (high temperature, from liquid state until solid state, vaporization effect). Communication on different corium materials and Fission Products including water with impurities (H₃BO₄, NaCl...), i.e. conditions close to Fukushima Daiichi conditions can be proposed. Communication on current status of knowledge for the different possible solid state of corium for Fukushima-

Daiichi is also possible. Corium leaching and modeling is also a topic of this session. At last, communication on kinetics by thermodynamic approach is possible.

4/ Accident Tolerant Fuels

The fourth session is devoted to Accident Tolerant Fuel (ATF). After Fukushima events, new area of research to manage Severe Accidents have been developed. Especially, ATF could be innovative solution to Severe Accident Management. Communication on the status of knowledge for the thermodynamic data of these systems coupled with the use in Severe Accident codes can be proposed.

5/ Uncertainties and Reliability

The fifth session is focused on uncertainty, reliability and propagation of uncertainty in the field of codes used for Severe Accident application: thermodynamic calculation, integral codes. Communication on use of thermodynamic databases with Gibbs Minimizer and evaluation of their uncertainties is possible. Sensitivity studies can be also presented coming from integral or mechanistic codes for in or ex-vessel Severe Accident configuration.

A special poster session including the five topics above is planned during the TCOFF workshop.

2- Technical Content of the Workshop

Wednesday 10 July

- Welcome
- Introduction, keynote speech, updated information on Fukushima-Daiichi decommissioning
- Session 1: Severe accidents codes and Materials Sciences- Fukushima-Daiichi Accident Progression Analyses
- Session 2: Experimental thermodynamic data, construction of thermodynamic data-bases
- Reception: (Details, including fees, will be provided soon)

Thursday 11 July

- Tour of the Fukushima Daiichi NPS (9:30-13:00, no fees, reservation needed)
- Session 2 (cont.): Experimental thermodynamic data, construction of thermodynamic data-bases
- Session 3: Thermodynamic modeling for SA conditions – Decommissioning-Leaching
- Poster session

Friday 12 July

- Session 4: Accident Tolerant Fuel modeling for SA conditions
- Session 5: Improvement for the use of Thermodynamic in SA codes
- Panel discussion and conclusion

3-Participation

Participation in the Seminar is mainly intended for organizations from countries signatories of the TCOFF project. TCOFF Project participating organizations are encouraged to distribute this announcement to other organizations from their countries.

The TCOFF Project Management Board has also approved the extension of the invitation to other countries involved in NEA activities. Participation will be approved by the Organizing Committee.

The workshop is free of charge except for the lunches and beverages.

TCOFF Project participants are encouraged to submit presentations for the various sessions. Authors are requested to send to the secretariat a one-page abstract (200 words) of their proposed presentation before.

Grants can be propose for students.

More detailed information are provided through the following address

<http://www.oecd-nea.org/confdb/confdb/conf?id=357>

4- Organizing Committee (OC)

An Organizing Committee has been nominated to prepare the technical content of the seminar on the basis of abstracts received, organize the seminar and prepare the summary record. The OC members are:

Dr Masaki Kurata (JAEA) kurata.masaki@jaea.go.jp

Dr Pascal Piluso (CEA) pascal.piluso@cea.fr

Prof. Sevostian Bechta (KTH): bechta@safety.sci.kth.se

Dr Sergii Nichenko (PSI): sergii.nichenko@psi.ch

Prof. Yoshinao Kobayashi (TITECH) : kobayashi.y.at@m.titech.ac.jp

Dr Stéphane Gossé (CEA): stephane.gosse@cea.fr

5- Registration, Hotel, Meal, Transportation, Reception, Technical tour, Others

- **Registration:** Registration fee of workshop is free. Participants are requested to pay hotel, meal, transportation and reception fees, respectively, for themselves.
- **Hotels:** For the night of 9th of July, your stay in hotels in Iwaki is recommended (You have many choices at ~JPY10,000/night, inc. breakfast). For the night of 10th and 11th of July, 70 single rooms were tentatively reserved in J-village (~JPY8,000/night, inc. breakfast). The participants are requested to pay for themselves at the desk or preliminary. If you will cancel your participation, please inform contact persons as soon as possible. If not, you are requested to pay cancel fee later.
- **Meals:** As for the dinner of 9th of July, you have many choices in Iwaki (please ask to your hotels). As for the dinner of 10th of July, your participation to reception is welcome. If not, you can eat at a restaurant in J-village. As for the dinner of 11th of July, the restaurant (buffet) in J-village is available. As for lunch during the workshop, Japanese style lunch box will be prepared and you will be requested to pay preliminary at registration (by cash, ~JPY1,000/lunch).
- **Transportation:** From Tokyo, the use of JR-Joban line is recommended. It takes ~2h15min from Tokyo to Iwaki.
- **(Reception)** In 10th of July, reception will be held in «Joban Hawaiian Center». The fee will be ~JPY8,000 including Hawaiian dance show. Your participation will be preliminary asked from a local committee and you will be requested to pay at registration.
- **(Technical tour)** In 11th of July (before lunch), a technical bus tour to Fukushima-Daiichi Nuclear Power Plant is scheduled. 30 seats are available. If you are interested in the tour, you are preliminary requested to contact the local committee. The tour is free.
- **(Others)** For your convenient stay in Japan, to bring a small amount of cash (10,000~20,000JPY) is recommended. You can rent a wifi-terminal at the airport (~JPY15,000/week). It is very convenient for your stay in Japan.

If you need any assistance, please, feel free to ask contact persons

6- Contact persons

Dr Davide Costa (NEA): davide.costa@oecd-nea.org (Tel.: +33 (0)1 45 24 10 89)

Dr Masaki Kurata (JAEA, local coordinator): kurata.masaki@jaea.go.jp

7- Venue J-Village, Fukushima, Japan

Flight Access

Airport Information

Access from Fukushima Airport
to J-VILLAGE About 60min by taxi.

Access from Sendai Airport
to J-VILLAGE by south of Joban Expressway about 110km
about One and half hours.
This airport serves as an International airport.

Access from Ibaraki Airport
to J-VILLAGE About 1.5km via road.
This airport serves as an International airport.



Traffic Access

Traffic information

Access by JR Joban Line Hitachi.

Required time

From Tokyo to Hitachi: two hours and 20 minutes.
18 trains available per day.
From Hitachi to Hitachi: 12 minutes.
17 trains available per day.

Access by

Joban Expressway Distance

From Tokyo (Hokusai) to Hitachi interchange: 230km
From Hitachi interchange to J-Village about 2km.
Parking capacity about 750 in J-VILLAGE.



Teams who have held training camps at J-Village in

Argentina national team for FIFA World Cup 2002
 Ghana national team for Africa Cup of Nations (2007 and 2010)
 Japan national team for FIFA World Cup (Japan times from 1997 to 2002)
 Japan national team for FIFA World Cup (China times from 2002 to 2009)
 United States national team for FIFA World Cup (USA times from 2002 to 2006)
 South Korea national team for FIFA World Cup (Korea times from 2002 to 2006)
 Brazil national team for FIFA World Cup (Brazil times from 2002 to 2006)
 Thailand national team for AFC Asian Cup (Thailand times from 2004 to 2007)
 Thailand national team for AFC Asian Cup (Thailand times from 2004 to 2007)

