



# Canadian Nuclear Society Société Nucléaire Canadienne

*In Cooperation with the*  
**International Atomic Energy Agency**

**15<sup>th</sup> International Conference on CANDU Fuel**

**“Advanced Fuel Manufacturing and SMR Initiatives for a  
Cleaner Energy Future”**

**THE 2022 CONFERENCE IS HOSTED BY CAMECO  
WITH SUPPORT FROM ROYAL MILITARY COLLEGE OF CANADA  
AND ONTARIO TECH UNIVERSITY**

Ajax Convention Centre

Hilton Garden Inn & Homewood Suites by Hilton,

Ajax, Ontario, Canada

August 21-24, 2022



# PROGRAM SESSIONS

The 15<sup>th</sup> International Conference on CANDU Fuel brings together international experts of the nuclear fuel industry involved in design, R&D, fabrication, operation, fuel modelling, safety analysis and regulation from both CANDU and Small Modular Reactors (SMR) fuels.

Conference Program Sessions will cover a wide range of topics including:

**A. Advanced Fuel Manufacturing:**

Fuel manufacturer experience, advances in manufacturing & inspection technologies, additive manufacturing, blending RU and DU, fuel manufacturing challenges and improvements.

**B. SMR Fuel:**

Design, development, modelling, fabrication/synthesis and supply-chain.

**C. Fuel Performance:**

Fuel behaviour (normal operating conditions and extended burnup), station experience and Hot Cell work & capabilities. Common causes of fuel failure from other reactor designs are also welcome.

**D. Fuel Safety:**

Performance improvements, Licensing issues, accident studies, fission gas release, fuel behaviour, LOCA initiatives and experimental simulation, fuel acceptance criteria, fuel deformation and dryout.

**E. Fuel Design & Development:**

Modifications to fuel designs and quality assurance in fuel design and development, MOX, inert matrices, DUPIC, slightly enriched uranium (SEU), recovered uranium (RU), Thoria fuel cycle, Gen IV Fuel Types, economical and societal implications of fuel cycles.

**F. Fuel Code Development:**

Predictive capability on thermal, mechanical, irradiation and fission-gas release behaviour under normal operating and accident conditions and predicting aerosol behaviour. Advanced code/model development, which may include radiation protection/ shielding.

**G. Fuel Management:**

Fuel management schemes, load following, fuel physics analysis and specific operational challenges.

**H. Fuel Bundle Thermal Hydraulics:**

Critical Heat Flux assessment, Computational Fluid Dynamics modelling, reactor aging, pressure tube performance and fuel simulation and testing.

**I. Used Fuel Management:**

Fuel handling technology, spent fuel storage, and in-storage fuel behaviour.

**J. Advanced Fuel Modelling and Code Development:**

Models that are being developed to further support fuel performance and safety assessment. Multi-physics/multi-scale simulation.

## SPONSORS

---

*We would like to acknowledge and thank the organizations listed below which have made outstanding contributions to the success of the CNS 15<sup>th</sup> International Conference on CANDU Fuel and to the enjoyment of the attendees and their guests through their generous sponsorship.*



**HITACHI**

**ONTARIOPOWER**  
GENERATION



**CLEAN CORE  
THORIUM ENERGY**



**NUCLEAR  
INNOVATION  
INSTITUTE**



**Énergie NB Power**



**SNC • LAVALIN**

# TABLE OF CONTENTS

---

Page	Topic
2	<b>Program Sessions</b> A list of Conference Program Plenary and Technical Sessions
3	<b>Sponsors</b> Acknowledgement and thanks to the organizations which have made outstanding and generous contributions to the success of this conference
5	<b>Conference Officials</b> Find the meeting officials for the Organizing Committee and the Technical Program Committee.
6	<b>Conference Information</b> Find additional information regarding accommodations and hotel information, local attractions and activities, conference registration and conference proceedings.
8	<b>Conference Schedule – At a Glance</b> Find a summary of the conference schedule.
11	<b>Schedule of Plenary &amp; Technical Sessions</b> Find comprehensive listing of conference times and paper titles of each day's plenary and technical sessions.
29	<b>Proceedings (Abstracts &amp; Presentations)</b> To be made available online through X-CD
30	<b>Facility Map</b> Ajax Convention Centre Facility Map – Main Floor & Mezzanine Level

# CONFERENCE OFFICIALS

---

## **Conference Chair**

Doug Jensen (Cameco)

## **IAEA Representative**

Ki-Seob Sim (IAEA)

## **Organizing Committee**

Doug Jensen (Cameco) / Paul Chan (RMC) / Mukesh Tayal (CNS)  
Raheel Hameed (Cameco) / Sara Forsey (Cameco)  
Michelle Webb (Cameco) / Markus Piro (Ontario Tech University)

## **Technical Program Committee**

Markus Piro (Ontario Tech University) / Raheel Hameed (Cameco)  
Paul Chan (RMC) / Mingjun Chen (NPP) / Mukesh Tayal (CNS)  
Wei Shen (COG) / Ki Seob Sim (IAEA)

## **Awards Committee**

Paul Chan (RMC) / Brent Lewis (Emeritus Professor RMC) / Doug Jensen (Cameco)  
Raheel Hameed (Cameco) / Markus Piro (Ontario Tech University)

## **Registrations**

Elmir Lekovic (CNS) / Michelle Webb (Cameco) / Deborah Northwood-Tink (Cameco)

## **Facilities and Tour Coordinator**

Michelle Webb (Cameco) / Sara Forsey (Cameco)

## **Communication/Invitations, Reception & Administration**

Elmir Lekovic (CNS) / Sara Forsey (Cameco) / Michelle Webb (Cameco)  
Adam McFarland (Cameco) / Deborah Northwood (Cameco) / Maria Modica (Cameco)

## **Sponsorships**

Sara Forsey (Cameco) / Lane Bannerman (Cameco) / Paul Chan (RMC)

## **Venue & Hotel Coordinators**

Sara Forsey (Cameco) / Raheel Hameed (Cameco)

## **Registrations/Technical/IT Services**

Elmir Lekovic (CNS) / Tracy Lambert (Cameco) / Dave Westcott (Cameco)

## **Treasurers**

Mohamed Younis (CNS) / Mohinder Grover (CNS)

# CONFERENCE INFORMATION

---

## **SPECIAL EVENTS:**

### **Sunday, August 21, 2022**

#### ***Registration:***

From: 18:00 to 21:00

Location: Lobby

#### ***Opening Reception:***

From: 18:00 to 21:00

Location: Westney Ballroom

### **Monday, August 22, 2022**

#### ***Registration and Breakfast:***

From: 07:00 to 08:00

Locations: Lobby / Westney Ballroom

#### ***Luncheon:***

From: 12:30 to 14:00

Location: Westney Ballroom

#### ***Technical Tour: (Meet Buses in Parking Lot)***

From: 16:30 to 19:00

Tour Locations:

Cameco Port Hope Conversion / Cameco Fuel Manufacture Port Hope / Cameco Fuel Manufacture Cobourg

### **Tuesday, August 23, 2022**

#### ***Breakfast:***

From: 07:00 to 08:00

Location: Westney Ballroom

#### ***Group Picture:***

From: 12:30 to 12:45

Location: Lobby

#### ***Luncheon:***

From: 12:45 to 14:00

Location: Westney Ballroom

#### ***Conference Banquet and Entertainment:***

From: 18:00 to 21:00

Location: ACC, Westney Ballroom

WiN Student Awards

Fuel Technology Awards

Dinner and Entertainment

### **Wednesday, August 24, 2022**

#### ***Breakfast:***

From: 07:00 to 08:00

Location: Westney Ballroom

#### ***Hotel Check-out:***

From: 12:00 to 12:30

#### ***Luncheon and Closing Remarks:***

From: 12:30 to 13:30

Location: Westney Ballroom



# CONFERENCE INFORMATION

## **CONFERENCE REGISTRATION & PROCEEDINGS:**

Registration is required for all attendees and presenters. Badges are required for admission to all events. The Full Conference Registration fee includes one (1) copy of the Conference Proceedings, conference program, conference souvenir, conference breakfasts, lunches and coffee breaks and one (1) ticket each to the conference banquet and the conference technical tour. The Conference Proceedings will be available after the Conference.

### **NOTES:**

- *Registration desk will be located at the Ajax Convention Centre Lobby:*

*From: Sunday August 21; 18:00*

*To: Wednesday August 24; 14:00*

- *Additional tickets: Additional Banquet Tickets can be purchased (@ \$50.00 each) at the conference. For additional tickets, the conference organizing committee must be notified 1 week in advance before the event.*
- *Hot breakfast: Served each day for all registrants from 07:00 to 08:00 at Westney Ballroom.*
- *Breakfast Speaker Tables with session chairs will be arranged.*
- *Technical Tour: Requests for the preferred tour location site will be accommodated on first come first serve basis. Attendees will be requested to provide their preferred choice of location in advance. Proof of COVID-19 vaccination is required to attend the tours; attendee will be provided a mechanism to provide this proof by Cameco in advance.*

### **SESSION FORMAT:**

- *Plenary and Technical Sessions: 20-minute presentation and 10-minutes for questions.*
- *Please bring the final Paper (PDF or MS Word), Power Point presentations and a brief personal Bio on a flash drive to the conference. All presentations must be loaded during breakfast or lunch periods on the day of presentation.*

### **SESSION FORMAT:**

- *Plenary and Technical Sessions: 20-minute presentation and 10-minutes for questions.*
- *Please bring the final Paper (PDF or MS Word), Power Point presentations and a brief personal Bio on a flash drive to the conference. All presentations must be loaded during breakfast or lunch periods on the day of presentation.*

### **CONTACTS:**

For any conference related enquiries including additional Banquet Tickets, Tour Registrations, please contact:

Doug Jensen: [Doug\\_Jensen@cameco.com](mailto:Doug_Jensen@cameco.com)

Paul Chan: [Paul.Chan@RMC.ca](mailto:Paul.Chan@RMC.ca)

Raheel Hameed: [Raheel\\_Hameed@cameco.com](mailto:Raheel_Hameed@cameco.com)

Michelle Webb: [Michelle\\_Webb@cameco.com](mailto:Michelle_Webb@cameco.com)

Sara Forsey: [Sara\\_Forsey@cameco.com](mailto:Sara_Forsey@cameco.com)

Markus Piro: [Markus.Piro@ontariotechu.ca](mailto:Markus.Piro@ontariotechu.ca)

# CONFERENCE SCHEDULE - AT A GLANCE

**Sunday, August 21, 2022**

Westney Ballroom

**18:00 – 21:00**

Registration and Reception, Conference open

**Monday, August 22, 2022**

Registration and Breakfast

Westney Ballroom

**07:00 – 08:00**

Opening Ceremony & Welcoming Addresses

Westney Ballroom

**08:00 – 08:15**

D. Jensen (Cameco)

Plenary Session #1

Westney Ballroom

**08:15 – 10:15**

International Experience and Program on CANDU Reactors

Coffee Break

Westney Ballroom

**10:15 – 10:30**

Plenary Session #2

Westney Ballroom

**10:30 – 12:30**

International Experience and Program on CANDU Reactors

Lunch & Luncheon Speaker

Westney Ballroom

**12:30 – 14:00**

“Advancing Fuel Manufacturing and SMR Initiatives for a Cleaner Energy Future” - F. Dermarkar, AECL

Parallel Technical Session #T1

Bayly

**14:00 – 16:00**

Manufacturing

Parallel Technical Session #T2

Salem A/B

**14:00 – 16:00**

Fuel Design

Parallel Technical Session #T3

Harwood

**14:00 – 16:00**

Thermal Hydraulics

Preparation for Technical Tour

**16:00 – 16:30**

Technical Tour

Meet Buses in Parking Lot

Buses Depart 16:30

Return to Venue 20:30

**16:30 – 20:30**

Cameco Port Hope Conversion

Cameco Fuel Manufacture Port Hope

Cameco Fuel Manufacture Cobourg



# CONFERENCE SCHEDULE - AT A GLANCE

## Tuesday, August 23, 2022

Registration and Breakfast Westney Ballroom	<b>07:00 – 08:00</b>
Daily Program, & General Announcements Westney Ballroom	<b>08:00 – 08:15</b> D. Jensen (Cameco)
Plenary Session #3 Westney Ballroom	<b>08:15 – 10:15</b> International Experience and Program on SMRs
Coffee Break Westney Ballroom	<b>10:15 - 10:30</b>
Plenary Session #4 Westney Ballroom	<b>10:30 – 12:30</b> International Experience and Program on SMRs
Group Picture Lobby	<b>12:30 – 12:45</b>
Lunch & Luncheon Speaker Westney Ballroom	<b>12:45 – 14:00</b> "SMR Development and Deployment in Canada" P.D. Thompson, NBP
Parallel Technical Session #T4 Bayly	<b>14:00 – 15:30</b> SMR, TRISO
Parallel Technical Session #T5 Salem A/B	<b>14:00 – 15:30</b> SMR, MSR
Parallel Technical Session #T6 Harwood	<b>14:00 – 15:30</b> SMR/Canadian
Coffee Break Westney Ballroom	<b>15:30 – 15:45</b>
Parallel Technical Session #T4 Bayly	<b>15:45 – 17:45</b> SMR, LWR
Parallel Technical Session #T5 Salem A/B	<b>15:45 – 17:45</b> Fuel Performance
Parallel Technical Session #T6 Harwood	<b>15:45 – 17:45</b> Fuel Modelling 1
Conference Banquet, Entertainment, WiN Student and Fuel Technology Awards Westney Ballroom	<b>18:30 – 21:00</b>

# CONFERENCE SCHEDULE - AT A GLANCE

## Wednesday, August 24, 2022

Registration and Breakfast  
Westney Ballroom

**07:00 – 08:00**

Daily Program, & General Announcements  
Westney Ballroom

**08:00 – 08:15**  
D. Jensen (Cameco)

Parallel Technical Session #T7  
Westney Ballroom

**08:15 – 10:15**  
SLOWPOKE 1

Parallel Technical Session #T8  
Westney Ballroom

**08:15 – 10:15**  
Fuel Safety and Fuel Performance 1

Parallel Technical Session #T9  
Westney Ballroom

**08:15 – 10:15**  
Fuel Modelling 2

Coffee Break  
Westney Ballroom

**10:15 - 10:30**

Parallel Technical Session #T7  
Westney Ballroom

**10:30 – 12:00**  
SLOWPOKE 2

Parallel Technical Session #T8  
Westney Ballroom

**10:30 – 12:30**  
Fuel Safety & Fuel Performance 2

Hotel Check-Out

**12:00 – 12:30**

Lunch and Closing Remarks  
Westney Ballroom

**12:30 – 13:30**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 1

Monday, August 22, 2022

08:15 – 10:15

Westney Ballroom

### PLENARY SESSION #1

### INTERNATIONAL EXPERIENCE AND PROGRAM ON CANDU REACTORS

*SESSION CHAIRS: F. Dermarkar (AECL)  
P. Thompson (NBP)*

08:15 - 08:45

P1-A

**"LICENSING AND REACTOR FUEL IN CANADA"**

**R. Rulko, CNSC**

08:45 - 09:15

P1-B

**"RECENT CANDU INDUSTRY R&D ON THE CANDU  
FUEL"**

**W. Shen, COG**

09:15 - 09:45

P1-C

**"CLEAN CORE'S THORIUM AND HALEU FUEL FOR  
PHWR/CANDU"**

**M. Shah, CCTE**

09:45 – 10:15

P1-D

**"APPLICATION OF MODIFIED 37 ELEMENT FUEL  
BUNDLE IN WOLSONG NPP"**

**D.H. Park, KHNP**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 1

Monday, August 22, 2022

10:30 – 12:30  
Westney Ballroom

**PLENARY SESSION #2**  
**INTERNATIONAL EXPERIENCE AND PROGRAM**  
**ON CANDU REACTORS (CONT'D)**

*SESSION CHAIRS: F. Dermarkar (AECL)*  
*P. Thompson (NBP)*

10:30 - 11:00

P2-A

**"MANUFACTURING AND PERFORMANCE OF  
CANDU-6 NUCLEAR FUEL BUNDLES PRODUCED  
IN ROMANIA"**

**A.B. Musetoiu, SNN**

11:00 - 11:30

P2-B

**"NUCLEAR FUEL ACTIVITIES IN ARGENTINA –  
PERIOD 2019-2021"**

**A. R. Minetti, CNEA**

11:30 - 12:00

P2-C

**"IAEA ACTIVITIES TO SUPPORT PHWR FUEL  
TECHNOLOGY"**

**K.S. Sim, IAEA**

12:00 – 12:30

P2-D

**"CANDU FUEL DEVELOPMENT IN CHINA"**

**M.J. Chen, CNRP**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 1

Monday, August 22, 2022

14:00 – 16:00  
Bayly

### PARALLEL TECHNICAL SESSION T1 MANUFACTURING

*SESSION CHAIRS: W. Labbe (ARC Energy)  
S. Abrol (BWXT NEC)*

14:00 – 14:30

T1-1

**"RESISTANCE WELDING AS AN ALTERNATIVE TO  
REPLACE THE USE OF BERYLLIUM FOR  
APPENDAGES ATTACHMENT ON CANDU FUEL  
ELEMENT IN ARGENTINA"**

**A. R. Minetti, CNEA**

14:30 – 15:00

T1-2

**"PORT HOPE CONVERSION FACILITY  
PERFORMANCE"**

**T. Kennedy, Cameco**

15:00 – 15:30

T1-3

**"BONDERITE L-GP 154N (DAG) CONTAMINATION –  
RESPONSE AND PROPOSED SPECIFICATION  
REVISIONS"**

**J. Studzinski, Cameco**

15:30 – 16:00

T1-4

**"COMPOSITE AND KERNEL FUELS FOR ENHANCED  
SAFETY AND PERFORMANCE"**

**S. Middleburgh, Bangor UK**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 1

Monday, August 22, 2022

**14:00 – 16:00**

**Salem A/B**

### **PARALLEL TECHNICAL SESSION T2**

#### **FUEL DESIGN**

*SESSION CHAIRS: M. Murchie (Cameco)  
M. Couture (CNSC-Ret)*

**14:00 – 14:30**

**T2-1**

**"STAINLESS STEEL AS A REPLACEMENT FOR  
BERYLLIUM AS BRAZE MATERIAL"**

**I. Dimayuga, CNL**

**14:30 – 15:00**

**T2-2**

**"THE PROCESS TO MANUFACTURE A CANDU FUEL  
BUNDLE - FROM DESIGN REVIEW TO PRODUCT  
REALIZATION"**

**J. Hughes, Cameco**

**15:00 – 15:30**

**T2-3**

**"ON ADVANCED FUEL DESIGN FEATURES WITH  
ATF AND AFC FOR OPERATING CANDU REACTORS"**

**C. Suk, CNSC**

**15:30 – 16:00**

**T2-4**

**"STUDYING THE EFFECTS OF END PLATE  
PHENOMENA ON THE DEFORMATION OF 37-  
ELEMENT CANDU® FUEL BUNDLES USING FINITE  
ELEMENT ANALYSIS"**

**W. Payton-Stewart, RMC**



# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 1

Monday, August 22, 2022

14:00 – 16:00

Harwood

### PARALLEL TECHNICAL SESSION T3

#### THERMAL HYDRAULICS

*SESSION CHAIRS: J. Spencer (CNL)*

*W. Grant (CNSC)*

14:00 – 14:30

T3-1

**"COMPUTATIONAL FLUID DYNAMIC INVESTIGATIONS OF THE IMPACT OF CANDU PRESSURE TUBE DEFORMATION ON COOLANT FLOW BYPASS"**

**Z. Lu, Ontario Tech**

14:30 – 15:00

T3-2

**"CFD MODELLING SLOWPOKE-2 AND NEUTRON FLUX ANALYSIS"**

**M. Di Giovanni, RMC**

15:00 – 15:30

T3-3

**"PRESSURE DROP MODEL FOR CANDU FUEL BUNDLES IN CREPT FLOW CHANNELS"**

**R. Fortman, Stern**

15:30 – 16:00

T3-4

**"APPLYING CFD TO INVESTIGATE THE IMPACT OF FORMER 28-ELEMENT CANDU FUEL BUNDLE DESIGN WITH MID-PLANE DOWNWARD DEFLECTION ON THE FLOW FIELD PARAMETERS"**

**F. Abbasian, Stern**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 2

Tuesday, August 23, 2022

**08:15 – 10:15**

**Westney Ballroom**

### **PLENARY SESSION #3**

### **INTERNATIONAL EXPERIENCE AND PROGRAM ON SMRs**

*SESSION CHAIRS: B. Fehrenbach (OCNI)  
C. Lorencez (COG)*

**08:15 - 08:45**

**P3-A**

### **"SMR FUEL S&T AT CANADIAN NUCLEAR LABORATORIES"**

**R. Ham-Su, CNL**

**08:45 - 09:15**

**P3-B**

### **"WESTINGHOUSE INITIATIVES FOR A CLEAN ENERGY FUTURE"**

**Z. Karoutas, Westinghouse**

**09:15 - 09:45**

**P3-C**

### **"OVERVIEW OF USNC'S FCM FUEL MANUFACTURING FOR MICRO MODULAR REACTOR"**

**K. Terrani, USNC**

**09:45 – 10:15**

**P3-D**

### **"THE GEH BWRX-300 SMALL MODULAR REACTOR CORE AND FUEL DESCRIPTION"**

**R.M. Fawcett, GEH**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 2

Tuesday, August 23, 2022

10:30 – 12:30  
Westney Ballroom

**PLENARY SESSION #4**  
**INTERNATIONAL EXPERIENCE AND PROGRAM**  
**ON CANDU REACTORS (CONT'D)**

*SESSION CHAIRS: B. Fehrenbach (OCNI)*  
*C. Lorencez (COG)*

10:30 - 11:00

P4-A

**"RECYCLED CANDU FUEL AS FUEL FOR THE  
SSR- W"**

**P. Reid, Moltex Energy**

11:00 - 11:30

P4-B

**"IMSR FUEL SALT QUALIFICATION"**

**W.F. Smith, Terrestrial Energy**

11:30 - 12:00

P4-C

**"INTRODUCTION OF U-10ZR METAL FUEL TO  
CANADA FOR THE ARC-100 SODIUM COOLED FAST  
REACTOR"**

**B. Labbe, Arc-Energy**

12:00 – 12:30

P4-D

**"UPDATE ON TRISO-X FUEL DEVELOPMENT AND  
PRODUCTION"**

**P. Pappano, X-Energy**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 2

Tuesday, August 23, 2022

14:00 – 15:30

Bayly

### PARALLEL TECHNICAL SESSION T4

#### SMR, TRISO

*SESSION CHAIRS: S. Middleburgh (Bangor University)  
S. Corbett (CNL)*

14:00 – 14:30

T4-1

**"SEPARATE EFFECTS TESTING OF TRISO FUEL PARTICLES USING THE MINIFUEL IRRADIATION VEHICLE"**  
**T. Gerczak, ORNL**

14:30 – 15:00

T4-2

**"EVALUATING AGR PROGRAM TRISO FUEL PARTICLE PERFORMANCE VARIATION AND ASSESSING PARTICLE FAILURE CAUSES"**  
**T. Gerczak, ORNL**

15:00 – 15:30

T4-3

**"DIFFUSION FRAMEWORK FOR TRISO FUEL USING BISON NUCLEAR FUEL CODE COUPLED TO THERMOCHIMICA"**

**B. Fitzpatrick, Ontario Tech**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 2

Tuesday, August 23, 2022

15:45 – 17:45

Bayly

### PARALLEL TECHNICAL SESSION T4

#### SMR, LWR

*SESSION CHAIRS: S. Middleburgh (Bangor University)  
S. Corbett (CNL)*

15:45 – 16:15

T4-1

#### **"THE THERMAL HYDRAULICS OF THE BWRX-300 SMALL MODULAR REACTOR"**

**R. Fawcett, GEH**

16:15 – 16:45

T4-2

#### **"GNF FUEL RELIABILITY AND EXPERIENCE: 2022 UPDATE AND BWRX-300 EXPECTATIONS"**

**R. Fawcett, GEH**

16:45 – 17:15

T4-3

#### **"WESTINGHOUSE ACCIDENT TOLERANT FUEL AND ADDITIVE MANUFACTURING SOLUTIONS FOR THE SMR MARKET"**

**Z. Karoutas, Westinghouse**

17:15 – 17:45

T4-4

#### **"RECENT DEVELOPMENTS IN THE EVALUATION AND CHARACTERIZATION OF NUCLEAR FUEL FOR ADVANCED REACTORS"**

**G. Burton, CNL**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 2

Tuesday, August 23, 2022

14:00 – 15:30

Salem A/B

### PARALLEL TECHNICAL SESSION T5

#### SMR, MSR

*SESSION CHAIRS: P. Gillespie (KINETRICS)*

*E. Geiger (Ontario Tech)*

14:00 – 14:30

T5-1

**"PURIFICATION OF ACTINOID FLUORIDES FOR  
PREPARATION OF SIMULATED IRRADIATED FUEL  
SALT"**

**B. Fitzpatrick, Ontario Tech**

14:30 – 15:00

T5-2

**"RADIATION DECELERATED CORROSION IN  
SIMULATED MOLTEN FLUORIDE SALT FUEL"**

**M. Short, MIT**

15:00 – 15:30

T5-3

**"YELLOWJACKET GIBBS ENERGY MINIMISER:  
COMPUTING THERMOCHEMICAL EQUILIBRIUM  
FOR MULTIPHYSICS SIMULATIONS OF MOLTEN  
SALT REACTORS"**

**P. Bajpai, Ontario Tech**



# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 2

Tuesday, August 23, 2022

15:45 – 17:45

Salem A/B

### **PARALLEL TECHNICAL SESSION T5**

#### **FUEL PERFORMANCE**

*SESSION CHAIRS: P. Gillespie (KINETRICS)*

*E. Geiger (Ontario Tech)*

15:45 – 16:15

T5-4

**"POST-IRRADIATION EXAMINATION OF BRUCE  
NUCLEAR GENERATING STATION FUEL AT  
CANADIAN NUCLEAR LABORATORIES (CNL) FROM  
2018 - 2021"**

**J. Armstrong, CNL**

16:15 – 16:45

T5-5

**"37-ELEMENT CANDU FUEL RELIABILITY"  
P. Chan, RMC**

16:45 – 17:15

T5-6

**"A REVIEW AND CASE STUDY OF THE  
SUSCEPTIBILITY OF ZIRCALOY-4 SHEATHING AS A  
FUNCTION OF THEIR METALLURGICAL HISTORY  
IN FABRICATION"**

**K. Farahani, RMC**

17:15 – 17:45

T5-7

**"KEY PARAMETER RANKING FOR CANDU FUEL  
PERFORMANCE ASSESSMENT USING GRS  
UNCERTAINTY METHOD"**

**H. Fan, CEI**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 2

Tuesday, August 23, 2022

14:00 – 15:30

Harwood

### PARALLEL TECHNICAL SESSION T6

#### SMR, CANADIAN

*SESSION CHAIRS: A. Prudil (CNL)*

*H. Fan (CEI)*

14:00 – 14:30

T6-1

**"USED CANDU FUEL: ENERGY INDEPENDENCE AND  
\$ 3 BILLION CARBON-FREE ELECTRICITY PER  
TONNE"**

**P. Ottensmeyer, Retired**

14:30 – 15:00

T6-2

**"MICROSTRUCTURAL AND THERMAL PROPERTIES  
OF URANIUM BASED ACCIDENT TOLERANT FUEL  
FOR SMR AND CANDU REACTORS"**

**M.K. Tummalapalli, U. Sask**

15:00 – 15:30

T6-3

**"COMPARISON OF ELECTRONIC PROPERTIES OF  
UN AND THN VERSUS THC"**

**B. Szpunar, Retired**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 2

Tuesday, August 23, 2022

15:45 – 17:45

Harwood

### PARALLEL TECHNICAL SESSION T6 FUEL MODELLING 1

*SESSION CHAIRS: A. Prudil (CNL)  
H. Fan (CEI)*

15:45 – 16:15

T6-4

**"BISON ANALYSES OF FUEL FORMS USED IN SMALL  
MODULAR REACTORS"**

**K. Gamble, INL**

16:15 – 16:45

T6-5

**"MODELLING OF DEFECTIVE FUEL PHENOMENA"**

**B.J. Lewis, Retired**

16:45 – 17:15

T6-6

**"USING THERMOCHEMICAL MODELLING  
CAPABILITIES TO AID IN SIMULATING BWR  
SEVERE ACCIDENTS IN MELCOR"**

**B. Breeden, Ontario Tech**

17:15 – 17:45

T6-7

**"MELCOR ACCIDENT ANALYSIS CODE FOR NON-  
LWR APPLICATIONS" D. Luxat, SNL**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 3

Wednesday, August 24, 2022

08:15 – 10:15

Bayly

### PARALLEL TECHNICAL SESSION T7

#### SLOWPOKE 1

*SESSION CHAIRS: L. Posada (CNSC)*

*B. Fitzpatrick (Ontario Tech)*

08:15 – 08:45

T7-1

#### **"RMC SLOWPOKE REACTOR REFUELING PROJECT OVERVIEW"**

**J. Spencer, CNL**

08:45 – 09:15

T7-2

#### **"FUEL CORE FABRICATION FOR THE ROYAL MILITARY COLLEGE OF CANADA SLOWPOKE-2 REACTOR"**

**C. Thiriet, CNL**

09:15 – 09:45

T7-3

#### **"RMC SLOWPOKE-2 REACTOR - CORE RELOAD AND COMMISSIONING TESTS"**

**J. Atfield, CNL**

09:45 – 10:15

T7-4

#### **"ANALYSIS OF DECOMMISSIONED RMC SLOWPOKE-2 NUCLEAR REACTOR CORE AND COMPARISON TO MNCP SIMULATIONS"**

**B. Casper, RMC**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 3

Wednesday, August 24, 2022

10:30 – 12:00

Bayly

### PARALLEL TECHNICAL SESSION T7

#### SLOWPOKE 2

*SESSION CHAIRS: L. Posada (CNSC)*

*B. Fitzpatrick (Ontario Tech)*

10:30 – 11:00

T7-5

**"HAZARD IDENTIFICATION STUDY TO SUPPORT  
ROYAL MILITARY COLLEGE SLOWPOKE-2  
REACTOR REFUEL"**

**M. Karam, CNL**

11:00 – 11:30

T7-6

**"FORECAST OF WASTE MANAGEMENT  
REQUIREMENTS OF SMR CORES USING A MCNP 6.2  
MODELIZED SLOWPOKE-2 LEU CORE AT  
DECOMMISSIONING"**

**S. Parent, RMC**

11:30 – 12:00

T7-7

**"LESSONS FOR VERY SMALL MODULAR REACTORS  
(vSMRs) FROM SLOWPOKE 2 FLEET DEPLOYMENT,  
OPERATIONS, MAINTENANCE, REFUELING, AND  
DECOMMISSIONING"**

**J. Spencer, CNL**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 3

Wednesday, August 24, 2022

08:15 – 10:15

Salem A/B

### PARALLEL TECHNICAL SESSION T8

#### FUEL SAFETY & FUEL PERFORMANCE 1

*SESSION CHAIRS: A. Rodriguez Minetti (CNEA)  
M. Mattucci (CNL)*

08:15 – 08:45

T8-1

#### **"REVIEW AND UPDATE OF FUEL DEFECT SECONDARY HYDRIDING THRESHOLDS"**

**P. Gillespie, Kinectrics**

08:45 – 09:15

T8-2

#### **"FUEL DEPOSIT CHARACTERIZATION DURING IN- BAY FUEL INSPECTION"**

**F. Abbasian, Stern**

09:15 – 09:45

T8-3

#### **"EXPERIMENTAL AND THERMODYNAMIC INVESTIGATION OF MOLTEN UO<sub>2</sub>-CORIUM CHEMICAL BEHAVIOUR"**

**E. Geiger, Ontario Tech**

09:45 – 10:15

T8-4

#### **"A COMPARISON OF THERMO-OXIDATION KINETIC MEASUREMENTS OF ZIRCALOY-4 IN LIGHT AND HEAVY WATER STEAM"**

**G. Francolini, Ontario Tech**



# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 3

Wednesday, August 24, 2022

10:30 – 12:00

Salem A/B

### **PARALLEL TECHNICAL SESSION T8** **FUEL SAFETY & FUEL PERFORMANCE 2**

*SESSION CHAIRS: A. Rodriguez Minetti (CNEA)  
M. Mattucci (CNL)*

10:30 – 11:00

T8-5

**"CNSC DRAFT REGDOC 2.4.5 NUCLEAR FUEL SAFETY"**

**W. Grant, CNSC**

11:00 – 11:30

T8-6

**"WELDING SHUT SPENT FUEL CONTAINER LID, NEXT TO FUEL PELLETS SAFELY"**

**P. Cheng, FuseRing**

11:30 – 12:00

T8-7

**"PRELIMINARY STUDY OF THE IMPLEMENTATION OF ACCIDENT TOLERANT FUEL ALLOYS IN CANDU FUEL RODS"**

**K. Ruiz, CNEA**

# SCHEDULE OF PLENARY & TECHNICAL SESSIONS

## DAILY PROGRAM – Day 3

Wednesday, August 24, 2022

08:15 – 10:15

Harwood

### **PARALLEL TECHNICAL SESSION T9** **FUEL MODELLING 2**

*SESSION CHAIRS: K. Gamble (INL)*

*M. Poschmann (Ontario Tech)*

08:15 – 08:45

T9-1

#### **"THERMOCHIMICA APPLICATIONS FOR NUCLEAR FUELS"**

**M. Poschmann, Ontario Tech**

08:45 – 09:15

T9-2

#### **"THERMAL PROPERTIES OF U<sub>3</sub>O<sub>8</sub> AND U<sub>3</sub>O<sub>8</sub>-MO: AN EXPERIMENTAL AND FIRST-PRINCIPLES INVESTIGATION"**

**J. Ranasinghe, U. Sask**

09:15 – 09:45

T9-3

#### **"SOURCE IST 2.0 MODEL UNCERTAINTY"**

**A. Popescu, Kinectrics**

09:45 – 10:15

T9-4

#### **"EVOLUTION OF INTERGRANULAR FISSION GAS BUBBLES BY PLANAR IPM"**

**A. Prudil, CNL**

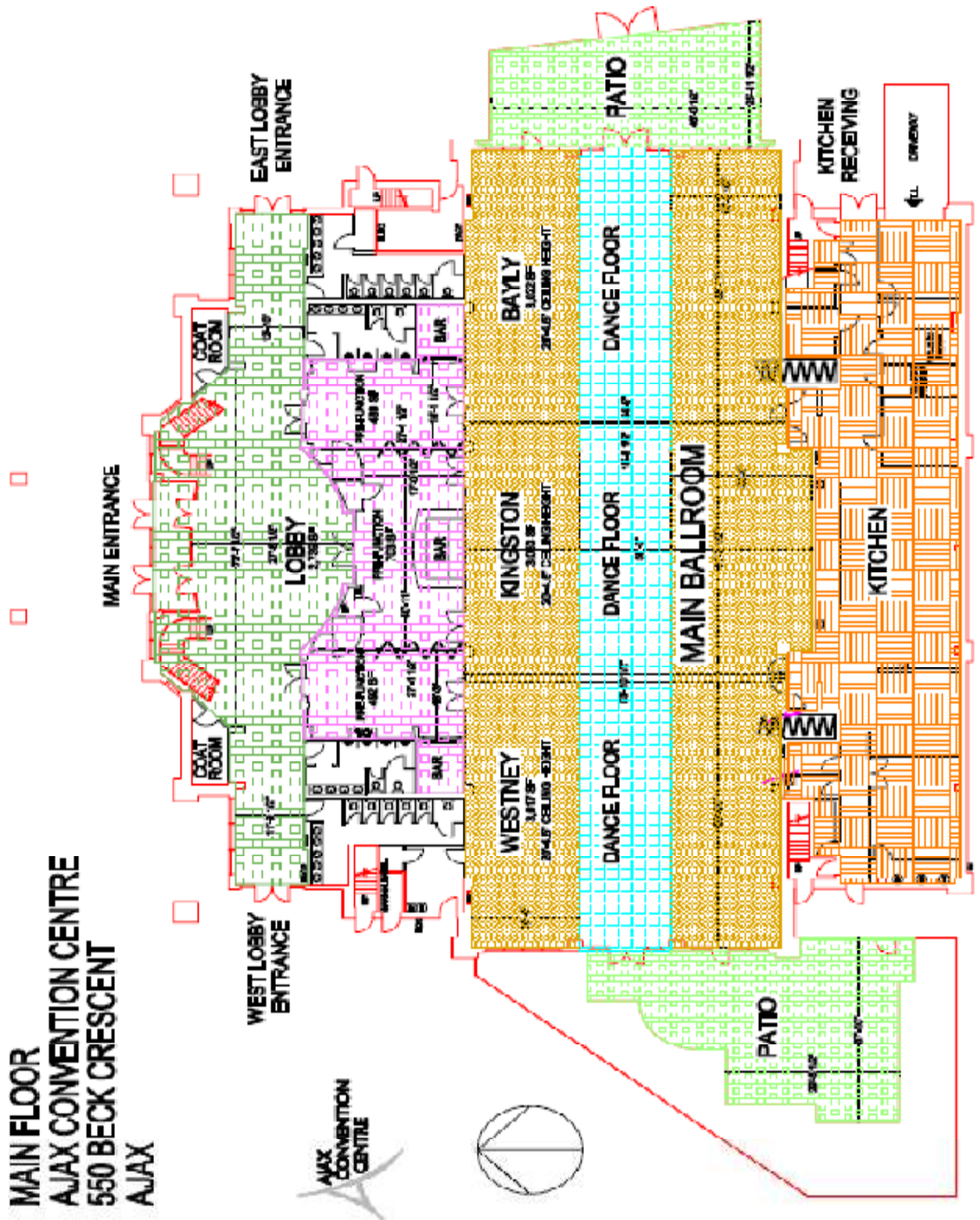
# PROCEEDINGS (ABSTRACTS & PRESENTATIONS)

---

Available Online Through X-CD

---

# Facility Map – Main Floor



## Facility Map – Mezzanine Level

### MEZZANINE LEVEL AJAX CONVENTION CENTRE 550 BECK CRESCENT AJAX

