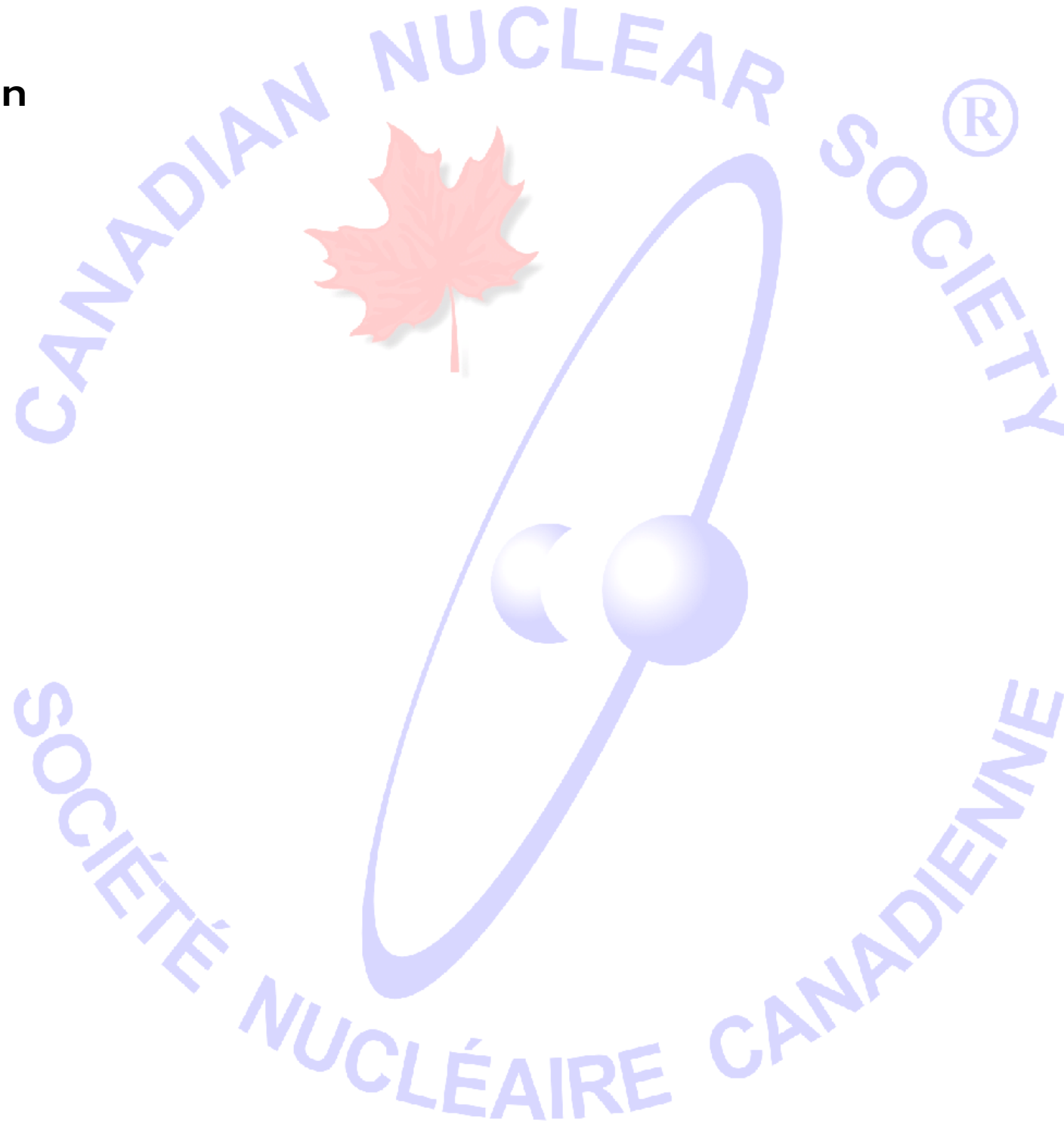


Sunday 2011 March 13th

**16:30-18:00 Registration**

**18:00-20:00 Reception**



Monday 2011 March 14th

## 08:00-10:20 Opening Plenary (Port McNeill Room)

### Chairs:

- Romney Duffey (Atomic Energy of Canada Limited)
- Hideki Matsui (Kyoto University)

## 08:00-08:10 WELCOMING ADDRESS

•

## 08:10-08:35 PLENARY TALK 1

### The Status and Future of the SCWR: Advances, Attributes and Challenges

- Romney Duffey (Atomic Energy of Canada Limited)

## 08:35-09:00 PLENARY TALK 2

### RESEARCH AND DEVELOPMENT OF SUPER LIGHT WATER REACTORS AND SUPER FAST REACTORS IN JAPAN

- Yoshiaki Oka (Waseda University)

## 09:00-09:25 PLENARY TALK 3

### Collaboration on SCWR in the Generation IV International Forum

- Thomas Schulenberg (Karlsruhe Institute of Technology)

## 09:25-09:50 PLENARY TALK 4

### IAEA Initiatives in Thermal-Hydraulics and Heat Transfer for Super Critical Water Cooled Reactors

- Katsumi Yamada (International Atomic Energy Agency)

## 09:50-10:15 PLENARY TALK 5

### MATERIALS AND CHEMISTRY FOR A SUPERCRITICAL WATER-COOLED REACTOR - PROGRESS AND CHALLENGES

- David Guzonas (Atomic Energy of Canada Limited)

## 10:15-10:30 BREAK

Monday 2011 March 14th

10:30-12:10 **Reactor and Core Design**

Room: Port Hardy

Chairs:

10:30-10:55 **CONCEPTUAL MECHANICAL DESIGN FOR A PRESSURE-TUBE TYPE SUPERCRITICAL WATER-COOLED REACTOR**

Metin Yetisir, Bill Diamond, Laurence Leung, Dan Martin and Romney Duffey

10:55-11:20 **OVERVIEW OF THE JAPANESE SCWR CONCEPT DEVELOPED UNDER THE GIF COLLABORATION**

Katsumi Yamada, Shungo Sakurai, Yutaka Asanuma, Ryoichi Hamazaki, Yuki Ishiwatari and Kazuaki Kitoh

11:20-11:45 **DRAFT LAYOUT OF THE HPLWR POWER PLANT**

Christina Koehly, Joerg Starflinger, Thomas Schulenberg, Martin Brandauer, David Lemasson, Remi Velluet and Heiko Herbell

11:45-12:10 **CONCEPT OF A SINGLE-CIRCUIT RP WITH VESSEL TYPE SUPERCRITICAL WATER-COOLED REACTOR**

Sergey Ryzhov, Victor Mokhov, Mihail Nikitenko, Pavel Kirillov, Alexander Chetveriko, Valentin Makhin, Andrey Churkin and Alexander Glebov

12:10-13:10 **LUNCH**

Monday 2011 March 14th

10:30-12:10 **Materials I (General)**

Room: Port Alberni

Chairs:

10:30-10:55 **MATERIAL DEVELOPMENT FOR SUPERCRITICAL WATER-COOLED REACTOR**  
Junya Kaneda, Shigeki Kasahara, Fumihisa Kano, Norihisa Saito, Tatsuo Shikama and Hideki Matsui

10:55-11:20 **SUPERCRITICAL WATER LOOP FOR IN-PILE MATERIALS TESTING**

Mariana Ruzickova, Rudolf Vsolak, Petr Hajek, Marketa Zychova and Rostislav Fukac

11:20-11:45 **SUPERCRITICAL WATER CONVECTION LOOP (NSC KIPT) FOR MATERIALS ASSESSMENT FOR THE NEXT GENERATION REACTORS**

Alexander Bakai, Victor Boriskin, Anatoliy Dovbnya, Sergiy Dyuldya and David Guzonas

11:45-12:10 **SCW FACILITIES INSTALLED IN JRC PETTEN - PAST, PRESENT AND FUTURE**

Radek Novotny, Peter Hähner, Pekka Moilanen, Jan Siegl, Petr Haušild, Juha Piipo, Premysl Janik, Stefan Ripplinger, T. Heftrich and Sami Pentillä

12:10-13:10 **LUNCH**

Monday 2011 March 14th

10:30-12:10 **General Thermalhydraulics & Safety**

Room: Port McNeill

Chairs:

10:30-10:55 **OUTLINE OF RESEARCH AND DEVELOPMENT OF THERMAL-HYDRAULICS AND SAFETY OF JAPANESE SUPERCRITICAL WATER COOLED REACTOR (JSCWR) PROJECT**

Toru Nakatsuka, Hideo Mori, Miyuki Akiba, Koichiro Ezato and Makoto Yasuoka

10:55-11:20 **RESEARCH OF SUPERCRITICAL WATER-COOLED REACTOR IN CGNPC**

Jue Yang, Donghua Lu, Xiangang Fu, Xu Cheng, Hanyang Gu, Xiaojing Liu, Jianqiang Shan, Liangzhi Cao and Yong Zhang

11:20-11:45 **HEAT-TRANSFER ANALYSIS OF SCW TO SCW DOUBLE-PIPE HEAT EXCHANGER FOR INDIRECT-CYCLE SCW NPPS**

Harwinder Thind, Sahil Gupta, Igor Pioro and Glenn Harvel

11:45-12:10 **HEAT LOSS ANALYSIS OF A RE-ENTRANT FUEL CHANNEL FOR SCWR TYPE REACTORS**

Jeffrey Samuel, Glenn Harvel and Igor Pioro

12:10-13:10 **LUNCH**

Monday 2011 March 14th

**13:10-14:50**    **Advanced Fuel Cycle and Reactor Design**  
Room: Port Hardy  
Chairs:

**13:10-13:35**    **ASSESSMENT OF THE HIGH PERFORMANCE LIGHT WATER REACTOR CONCEPT**  
Joerg Starflinger, Thomas Schulenberg, Dietmar Bittermann, Michele Andreani and Csaba Maraczy

**13:35-14:00**    **THORIUM FUEL CYCLES IN THE CANDU SUPERCRITICAL WATER REACTOR**  
Martin Magill, Jeremy Pencer, Russel Pratt, Wade Young, Geoffrey W.R. Edwards and Bronwyn Hyland

**14:00-14:25**    **PRELIMINARY STUDY ON NEUTRONICS CHARACTERISTICS OF THORIUM-BASED SUPERCRITICAL WATER-COOLED FAST REACTOR**  
Peng Zhang, Helin Gong and Kan Wang

**14:25-14:50**    **AN IMPROVED CANDU-SCWR CORE DESIGN WITH VERTICAL CHANNELS IN HEXAGONAL ARRANGEMENT**  
Liangzhi Cao, Ping Yang and Hongchun Wu

**14:50-15:10**    **BREAK**

Monday 2011 March 14th

**13:10-14:50**    **Chemistry I (Corrosion Product Transport)**  
Room: Port Alberni  
Chairs:

**13:10-13:35**    **IMPACT OF CORROSION PRODUCT DEPOSITION ON CANDU-SCWR REACTOR PHYSICS**  
Jeremy Pencer, Matthew K. Edwards, David Guzonas, Geoffrey W.R. Edwards and Bronwyn Hyland

**13:35-14:00**    **AN IN-SITU INVESTIGATION OF THE SOLUBILITY OF MOLYBDENUM TRIOXIDE IN OXYGENATED WATER AT SUPERCRITICAL CONDITIONS**  
Peter R. Meredith, Alan J. Anderson and Robert A. Mayanovic

**14:00-14:25**    **ION PAIR FORMATION IN STRONTIUM CHLORIDE AND STRONTIUM HYDROXIDE SOLUTIONS UNDER SUPERCRITICAL WATER REACTOR OPERATING CONDITIONS**  
Greg Zimmerman, Hugues Arcis and Peter Tremaine

**14:25-14:50**    **PREDICTION OF CRUD DEPOSITION IN A CANDU-SCWR CORE THROUGH CORROSION PRODUCT SOLUBILITY AND TRANSPORT MODELLING**  
William Cook and Robert Olive

**14:50-15:10**    **BREAK**

Monday 2011 March 14th

**13:10-14:50**    **Heat-Transfer Experiment (I)**  
Room: Port McNeill  
Chairs:

**13:10-13:35**    **EXPERIMENTAL INVESTIGATION ON HEAT TRANSFER OF SUPERCRITICAL PRESSURE WATER IN ANNULAR FLOW GEOMETRY**  
Wu Gang, Qincheng Bi, Xiaojing Zhu, Zhendong Yang and Han Wang

**13:35-14:00**    **COMPARISON BETWEEN THE HEAT TRANSFER CHARACTERISTICS OF SUPERCRITICAL PRESSURE WATER IN HORIZONTAL TUBES AND INCLINED TUBES**  
Shuiqing Yu, Huixiong Li, Xianliang Lei, Yifan Zhang and Tingkuan Chen

**14:00-14:25**    **EXPERIMENTAL STUDY ON A NATURAL CIRCULATION DRIVEN HPLWR**  
Christophe T'Joen and Martin Rohde

**14:25-14:50**    **HEAT TRANSFER STUDIES FOR SUPERCRITICAL FLUIDS UNDER NATURAL CIRCULATION CONDITIONS**  
Manish Sharma, D.S. Pilkhwal, P.K. Vijayan and D. Saha

**14:50-15:10**    **BREAK**

Monday 2011 March 14th

15:10-16:50 **Core Design**

Room: Port Hardy

Chairs:

15:10-15:35 **HPLWR EQUILIBRIUM CORE DESIGN WITH THE KARATE CODE SYSTEM**  
Csaba Maráczy, György Hegyi, Gábor Hordósy and Emese Temesvári

15:35-16:00 **ASSESSMENT OF THE HPLWR THERMAL CORE DESIGN**  
Thomas Schulenberg, Joerg Starflinger, Csaba Maraczy and Wolfgang Bernnat

16:00-16:25 **JAPANESE SCWR FUEL AND CORE DESIGN STUDY**  
Shungo Sakurai, Katsumi Yamada, Shinichi Higuchi, Yuki Ishiwatari, Zhenqin Xiong And Kazuaki Kito

16:25-16:50 **A NEW DESIGN OF A VERTICAL PRESSURE-TUBE TYPE SCWR**  
Donghua Lu, Jue Yang, Xiangang Fu, Qianhua Su, Fan Peng, Jun Xing and Yong Zhang

16:50 **END OF DAY 1**

Monday 2011 March 14<sup>th</sup>

15:10-16:50 **Materials II (Corrosion and Mechanisms)**

Room: Port Alberni

Chairs:

15:10-15:35 **EFFECT OF SURFACE PREPARATION ON CORROSION RESISTANCE OF NiCr, NiAl AND NiCrAl ALLOYS IN SUPERCRITICAL WATER**  
Yunfen Qian, Xiao Huang and David Guzonas

15:35-16:00 **CORROSION RESISTANCE OF EXPERIMENTAL ALLOYS AND COATINGS UNDER SCW CONDITIONS**  
Jian Li, Wenyue Zheng, S. Kuyucak, Jamie Miles, William Cook, On-Ting Woo, Zhangjian Zhou, Changchun Ge

16:00-16:25 **EFFECT OF SURFACE MODIFICATION ON THE CORROSION RESISTIVITY IN SUPERCRITICAL WATER**  
Sami Penttila, Akos Horvath, Aki Toivonen and Zsolt Zolnai

16:25-16:50 **OXIDATION RESISTANCE AND NANOSCALE OXIDATION MECHANISMS IN MODEL BINARY AND TERNARY ALLOYS EXPOSED TO SCW**  
D.M. Artymowicz, C. Andrei, J. Huang, J. Miles, W. Cook, G.A. Botton and R.C. Newman

16:50 **END OF DAY 1**

Monday 2011 March 14<sup>th</sup>

15:10-16:50 **Heat-Transfer Experiment (II)**

Room: Port McNeill

Chairs:

15:10-15:35 **EXPERIMENTAL STUDY ON THE DEPRESSURIZATION OF FREON AT SUPERCRITICAL PRESSURE**  
Ge Zhang, Najji Al-Hawshabi and Yanhua Yang

15:35-16:00 **AN EXPERIMENTAL STUDY OF CRITICAL HEAT FLUX IN A TUBE FOR NEAR-CRITICAL PRESSURES**  
Yuzhou Chen, Chunsheng Yang, Minfu Zhao, Keming Bi, Kaiwen Du and Shuming Zhang

16:00-16:25 **DESIGN AND THERMAL/STRUCTURAL ANALYSIS OF A SUPERCRITICAL WATER THERMOHYDRAULICS LOOP**  
Masih Balouch, Rubicel Alena, Anne Mason, John Goldak and Metin I. Yaras

16:25-16:50 **EXPERIMENTAL RESEARCH ON HEAT TRANSFER OF SUPERCRITICAL WATER UPFLOWING IN VERTICAL TUBE**  
Yongliang Li, Zhigang Huang, Xiaokang Zeng, Xiao Yan, Yanping Huang and Zejun Xiao

16:50 **END OF DAY 1**

Tuesday 2011 March 15<sup>th</sup>

**08:30-10:10 Safety System Design**  
Room: Port Hardy  
Chairs:

**8:30-8:55 PROJECTING REGULATORY EXPECTATIONS FOR ADVANCED REACTOR DESIGNS**  
Alexandre Viktorov

**8:55-9:20 ASSESSING THE APPLICABILITY OF CANADIAN REGULATIONS TO THE SUPERCRITICAL WATER REACTOR**  
Ima Ituen and Dave Novog

**9:20-9:45 EVALUATION OF A PRELIMINARY SAFETY CONCEPT FOR THE HPLWR**  
Michele Andreani, Dietmar Bittermann, Philippe Marsault, Olivier Antoni, Andras Kereszturi, Marc Schlagenhauser, Annalisa Manera, Malla Seppälä and Joona Kurki

**9:45-10:10**

**10:10-10:30 BREAK**

Tuesday 2011 March 15<sup>th</sup>

**08:30-10:10 Materials III (ODS & Microstructure Modeling)**  
Room: Port Alberni  
Chairs:

**8:30-8:55 TEMPERATURE DEPENDENCE OF DEFECT PRODUCTION EFFICIENCY IN A-FE**  
Kevin P. Boyle and Ishraq Shabib

**8:55-9:20 PERFORMANCE EVALUATION OF THE CORROSION PERFORMANCE OF SEVERAL ODS STEELS EXPOSED TO SUPERCRITICAL WATER**  
William Cook, Jamie Miles, Wenyue Zhang, Jian Li, Z. Zhou and C. Ge

**9:20-9:45 HIGH TEMPERATURE OXIDATION AND CORROSION BEHAVIOR OF SEVERAL OXIDE DISPERSION STRENGTHENED FERRITIC ALLOYS**  
Zhangjian Zhou, Jian Wang, Ming Li, Lu Liao, Shuangquan Guo and Changchun Ge

**9:45-10:10**

**10:10-10:30 BREAK**

Tuesday 2011 March 15<sup>th</sup>

**08:30-10:10 Thermalhydraulics Assessment**  
Room: Port McNeill  
Chairs:

**8:30-8:55 ASSESSMENT OF SUPERCRITICAL HEAT TRANSFER PREDICTION METHODS**  
Hussam Zahlan, De Groeneveld, Stavros Tavoularis, Sarah Mokry and Igor Piro

**8:55-9:20 ASSESSMENT OF MIXED CONVECTION HEAT TRANSFER CORRELATIONS AT SUPERCRITICAL PRESSURES**  
Yoon Yeong Bae, Sung Deok Hong and Yong Wan Kim

**9:20-9:45 HEAT-TRANSFER ANALYSIS OF SUPERCRITICAL-WATER- AND SUPERHEATED-STEAM-COOLED CHANNELS OF SCWR**  
Eugene Saltanov, Wargha Peiman, Shona Draper and Igor Piro

**9:45-10:10 COUPLED ANALYSIS OF HEAT TRANSFER AND FLOW OF SUPERCRITICAL WATER IN VERTICAL TUBES**  
Xiaokang Zeng, Xiao Yan, Yongliang Li, Yanping Huang and Zejun Xiao

**10:10-10:30 BREAK**

Tuesday 2011 March 15th

10:30-12:10 **Fuel Design (I)**  
Room: Port Hardy  
Chairs:

10:30-10:55 **FEASIBILITY STUDY FOR DESIGN OF FUEL ROD IN JSCWR**  
Shinichi Higuchi, Shungo Sakurai, Katsumi Yamada and Yuki Ishiwatari

10:55-11:20 **ON THE POTENTIAL USE OF HIGH THERMAL-CONDUCTIVITY FUELS IN SUPERCRITICAL WATER-COOLED REACTORS (SCWRs)**  
Wargha Peiman, Igor Pioro, Kamiel Gabriel and Mohammad Hosseiny

11:20-11:45 **THERMAL-HYDRAULICS ANALYSIS OF ANNULAR FUEL APPLICATION IN SCWR**  
Yuanbing Zhu, Jianqiang Shan and Bo Zhang

11:45-12:10 **DEVELOPMENT AND THERMALHYDRAULIC CALCULATIONS OF A SCWR 64-ELEMENT FUEL BUNDLE**  
Shona Draper, Arif Qureshi, Ayman Abdalla, Igor Pioro, Kamiel Gabriel and Jon Joel

12:10-13:10 **LUNCH**

Tuesday 2011 March 15th

10:30-12:10 **Chemistry II (Radiolysis and Structure)**  
Room: Port Alberni  
Chairs:

10:30-10:55 **KINETICS OF THE REACTION BETWEEN H• AND SUPERHEATED WATER PROBED WITH MUONIUM**  
Christopher Alcorn, Jean-Claude Brodovitch, Khashayar Ghandi, Andrew Kennedy, Paul Percival, and Marisa Smith

10:55-11:20 **MONTE-CARLO SIMULATION OF THE LOW-LET RADIOLYSIS OF LIQUID WATER OVER THE RANGE 25 TO 350°C**  
Sunuchakan Sanguanmith, Yusa Muroya, Jintana Meesungnoen, Mingzhang Lin, Yosuke Katsumura, Leila Mirsaleh Kohan, David A. Guzonas, Craig R. Stuart, and Jean-Paul Jay-Gerin,

11:20-11:45 **KINETICS OF REACTION BETWEEN MU AND Ni<sup>2+</sup> IN SUPERHEATED WATER**  
Gwen Legate, Christopher Alcorn, Jean Claude Brodovitch, Khashayar Ghandi, and Paul Percival

11:45-12:10 **USING MUONIUM TO PROBE THE KINETICS OF THE REACTION BETWEEN THE H ATOM AND OH• IN SUPERHEATED WATER**  
Khashayar Ghandi, Christopher Alcorn, Jean Claude Brodovitch, Emma Driedger, M. Mozafari, Paul W. Percival, Palak Satija

12:10-13:10 **LUNCH**

Tuesday 2011 March 15th

10:30-12:10 **Thermalhydraulics Prediction Methods**  
Room: Port McNeill  
Chairs:

10:30-10:55 **LOOK-UP TABLE ESTABLISHMENT OF SUPERCRITICAL WATER HEAT TRANSFER IN VERTICAL UPWARD FLOW AND TUBE-SIZE EFFECT INVESTIGATION**  
Xin Liu, Bo Kuang, C. Ni and Xu Cheng

10:55-11:20 **UPDATED HEAT-TRANSFER CORRELATIONS FOR SUPERCRITICAL WATER-COOLED REACTOR APPLICATIONS**  
Sarah Mokry, Amjad Farah, Krysten King and Igor Pioro

11:20-11:45 **INTERPRETING AND CATEGORISING EXPERIMENTAL DATA ON FORCED AND MIXED CONVECTION HEAT TRANSFER TO SUPERCRITICAL PRESSURE FLUIDS USING PHYSICALLY-BASED MODELS**  
J D Jackson, P.X. Jiang, B. Liu and C.R. Zhao

11:45-12:10 **A MODEL OF DEVELOPING MIXED CONVECTION HEAT TRANSFER IN VERTICAL TUBES TO FLUIDS AT SUPERCRITICAL PRESSURE**  
J D Jackson

12:10-13:10 **LUNCH**

Tuesday 2011 March 15th

**13:10-14:50 Fuel Design (II)**  
**Room: Port Hardy**  
**Chairs:**

**13:10-13:35 CONCEPTUAL DESIGN OF THE TWO-ROW HEXAGONAL FUEL ASSEMBLY FOR SCWR**  
Lianjie Wang, Dong Qin and Qing Li

**13:35-14:00 PRE-CONCEPTUAL FUEL DESIGNS FOR THE CANADIAN SUPERCRITICAL WATER-COOLED REACTOR**  
Michael McDonald, Bronwyn Hyland, Holly Hamilton, Laurence Leung, Nihan Onder, Jeremy Pencer and Rui Xu

**14:00-14:25 SUBCHANNEL AND RADIATION HEAT TRANSFER ANALYSIS OF 54-ELEMENT CANDU-SCWR BUNDLE**  
Jianqiang Shan, Yang Jiang and Laurence Leung

**14:25-14:50 COMPARISON OF UOX AND MOX FOR SUPER CRITICAL LWR**  
Wolfgang Bernnat

**14:50-15:10 BREAK**

Tuesday 2011 March 15th

**13:10-14:50 Materials IV (Coatings)**  
**Room: Port Alberni**  
**Chairs:**

**13:10-13:35 CORROSION BEHAVIOUR OF POROUS CHROMIUM CARBIDE/OXIDE BASED CERAMICS IN SUPERCRITICAL WATER**  
Ziqiang Dong, Tingyong Xin, Weixing Chen, Wenyue Zheng and David Guzonas

**13:35-14:00 CERAMIC COATINGS FOR METALLIC COMPONENTS IN SUPERCRITICAL WATER-COOLED REACTORS**  
Francesco P. Orfino, Baisheng Yao, Yongsong Xie, Sing Yick, Jamie Miles, William Cook and Rob Hui

**14:00-14:25 REDUCING THERMAL CONDUCTIVITY OF THERMAL BARRIER COATING MATERIALS WITH DOPING**  
Dongmei Wang and Xiao Huang

**14:25-14:50**

**14:50-15:10 BREAK**

Tuesday 2011 March 15th

**13:10-14:50 CFD Modelling of Heat Transfer**  
**Room: Port McNeill**  
**Chairs:**

**13:10-13:35 LESSONS LEARNED FROM THE APPLICATION OF CFD MODELS IN THE PREDICTION OF HEAT TRANSFER TO FLUIDS AT SUPERCRITICAL PRESSURE**  
Mattia De Rosa, Gabriele Guetta, Walter Ambrosini, Nicola Forgiione, Shuisheng He and John Derek Jackson

**13:35-14:00 MODELLING OF HEAT TRANSFER BETWEEN TWO FUEL SUBCHANNELS IN SUPERCRITICAL WATER CONDITIONS USING COMPUTATIONAL FLUID DYNAMICS**  
Maxim Kinakin, Adepoju Adenariwo, Glenn Harvel and Igor Pioro

**14:00-14:25 DEVELOPMENT OF A HEAT TRANSFER CORRELATION FOR THE HPLWR FUEL ASSEMBLY BY MEANS OF CFD ANALYSES**  
Jan-Aiso Lycklama à Nijeholt, Dirk Visser, Eckart Laurien, Henryk Anglart, and Laltu Chandra

**14:25-14:50 NUMERICAL STUDY OF SUPERCRITICAL WATER HEAT TRANSFER IN VERTICAL BARE TUBES USING FLUENT CFD CODE**  
Amjad Farah, Maxim Kinakin, Igor Shevchuk, Glenn Harvel and Igor Pioro

**14:50-15:10 BREAK**

Tuesday 2011 March 15th

15:10-16:50 Hydrogen Production  
Room: Port Hardy  
Chairs:

•  
15:10-15:35 HYDROGEN PRODUCTION USING PROCESS HEAT FROM AN SCW NPP VIA A DOUBLE-PIPE HEAT EXCHANGER  
Andrew Lukomski, Igor Pioro and Kamiel Gabriel

15:35-16:00 RECENT PROGRESS IN THE DEVELOPMENT OF THE CUCL/HCL ELECTROLYSIS REACTION FOR NUCLEAR HYDROGEN PRODUCTION  
Lorne Stolberg, Kyly Pilatzke, Alexi Shkarupin and Sam Suppiah

16:00-16:25 DEGRADATION OF MATERIALS UNDER CONDITIONS OF THERMOCHEMICAL CYCLES FOR HYDROGEN PRODUCTION - PART III  
Stan J. Klimas, Henry Searle and Fabrice Guerout

16:25-16:50

16:50 END OF DAY 2

18:00-18:30 PRE-BANQUET GATHERING

18:30-21:00 SYMPOSIUM BANQUET

- Speaker:

Tuesday 2011 March 15th

15:10-16:50 Chemistry III ( Chemistry Control)  
Room: Port Alberni  
Chairs:

•  
15:10-15:35 SCWR CHEMISTRY ISSUES: HYDROTHERMAL STABILITY OF HYDRAZINE  
Andriy Plugatyr, Tina Hayward and Igor Svishchev

15:35-16:00 FEASIBILITY OF MATERIALS FOR ULTRAFILTRATION SYSTEM IN A SCWR  
Gaelle Dupouy, Peter E. Schalm, Pascal Mertins, Ian S. Butler, Dominic H. Ryan, Sikun G. Xu and Janusz A. Kozinski

16:00-16:25 WATER COOLANT TECHNOLOGY AND CHEMISTRY FOR SUPERCRITICAL WATER COOLED REACTORS  
Jan Kysela and Marketa Zychova

16:25-16:50 ASSOCIATION OF LiOH AND pH CONTROL AT SCWR OPERATING CONDITIONS  
Andriy Plugatyr, Ruth A. Carvajal-Ortiz and Igor Svishchev

16:50 END OF DAY 2

18:00-18:30 PRE-BANQUET GATHERING

18:30-21:00 SYMPOSIUM BANQUET

- Speaker:

Tuesday 2011 March 15th

15:10-16:50 Numerical Modelling  
Room: Port McNeill  
Chairs:

•  
15:10-15:35 NUMERICAL INVESTIGATIONS OF COOLING HEAT TRANSFER OF SUPERCRITICAL WATER  
Heiko Herbell, Jörg Starflinger and Thomas Schulenberg

15:35-16:00 NUMERICAL EXPERIMENT ON DIFFERENT VALIDATION CASES OF WATER COOLANT FLOW IN SUPERCRITICAL PRESSURE TEST SECTIONS ASSISTED BY DISCRIMINATED DIMENSIONAL ANALYSIS. PART I: THE DIMENSIONAL ANALYSIS  
Attila Kiss and Attila Aszódi

16:00-16:25 NUMERICAL SIMULATIONS ON THE ROTATING FLOW OF WRAPPED WIRED HPLWR FUEL ASSEMBLY  
Attila Kiss, Eckart Laurien, Attila Aszódi and Yu Zhu

16:25-16:50

16:50 END OF DAY 2

18:00-18:30 PRE-BANQUET GATHERING

18:30-21:00 SYMPOSIUM BANQUET

- Speaker:

Wednesday 2011 March 16th

**08:30-10:10 Safety Analysis**  
**Room: Port Hardy**  
**Chairs:**

**8:30-8:55 ANALYSING SUPERCRITICAL WATER REACTOR'S (SCWR'S) SPECIAL SAFETY SYSTEMS USING PROBABILISTIC TOOLS**  
Ima Ituen and Dave Novog

**8:55-9:20 SAFETY ANALYSIS OF JSCWR**  
Yuki Ishiwatari, Kampanart Silva, Zhenqin Xiong, Shungo Sakurai and Ryoichi Hamazaki

**9:20-9:45 ANALYSES OF HOT CHANNEL FUEL CONDITIONS AND LOSS OF REGULATION ACCIDENT FOR CANDU-SCWR FUEL CHANNELS**  
Michael McDonald and David Novog

**9:45-10:10 RESEARCH OF SCWR-M CHARACTER DURING LOSS OF FLOW TRANSIENT**  
Zhihong Xu, Shengwei Fu, Xiaojing Liu and Yanhua Yang

**10:10-10:30 BREAK**

Wednesday 2011 March 16th

**08:30-10:10 Materials V (General II)**  
**Room: Port Alberni**  
**Chairs:**

**8:30-8:55 PROGRESS ON THE CORROSION SCREENING TESTS AND MATERIALS SELECTION FOR SUPERCRITICAL WATER COOLED REACTORS**  
Lefu Zhang, Yichen Bao, Li Li and Rui Tang

**8:55-9:20 IMPACT OF MATERIALS ON CANDU-SCWR LATTICE PHYSICS**  
Jeremy Pencer, David Guzonas, Geoffrey W.R. Edwards and Bronwyn Hyland

**9:20-9:45 CORROSION TESTING OF NiCrAl(Y) COATING ALLOYS IN HIGH-TEMPERATURE AND SUPERCRITICAL WATER**  
Stephan Biljan, Xiao Huang, Yunfen Qian and Dave Guzonas

**9:45-10:10 RESEARCH ON CANDIDATE MATERIALS FOR FUEL CLADDING IN SUPERCRITICAL WATER-COOLED REACTOR**  
Ya-feng Yang, Rong Ma, Ying Yang, Qing-zhi Yan, Le-fu Zhang and Chang-chun Ge

**10:10-10:30 BREAK**

Wednesday 2011 March 16th

**08:30-10:10 Non-Aqueous Fluid Heat Transfer**  
**Room: Port McNeill**  
**Chairs:**

**8:30-8:55 PRELIMINARY TESTS AT THE UNIVERSITY OF OTTAWA SUPERCRITICAL CO<sub>2</sub> HEAT TRANSFER FACILITY**  
Loubna Jeddi, Kai Jiang, Stavros Tavoularis and De Groeneveld

**8:55-9:20 ASSESSMENT OF HEAT TRANSFER CORRELATIONS AGAINST SURROGATE FLUID HEAT TRANSFER DATA**  
Nihan Onder, Laurence K.H. Leung and ShuJun Wang

**9:20-9:45 HEAT TRANSFER TO SUPERCRITICAL PRESSURE FLUIDS FLOWING IN TUBES IN SUPERHEATED VAPOR REGION**  
Takenobu Kaida, Hideo Mori, Keishi Kariya, Masaki Ohno and Yoshinori Hamamoto

**9:45-10:10 EVALUATION OF FLUID-TO-FLUID SCALING METHOD FOR WATER AND CARBON DIOXIDE AT SUPERCRITICAL PRESSURE**  
Stephanie Zwolinski, Mark Anderson, Michael Corradini and Jeremy Licht

**10:10-10:30 BREAK**

Wednesday 2011 March 16th

10:30-12:10 Thermalhydraulics Code Applications

Room: Port Hardy

Chairs:

10:30-10:55 **MODIFICATION AND APPLICATION OF THE ATHLET-SC CODE TO TRANSCRITICAL SIMULATIONS**

Shengwei Fu, Chong Zhou, Zhihong Xu, Xiaojing Liu, Yanhua Yang and Xu Cheng

10:55-11:20 **RESULTS OF CALCULATIONS OF THE IAEA BENCHMARK EXERCISE ON STEADY-STATE FLOW OF SUPERCRITICAL WATER IN A HEATED PIPE**

Andrey Churkin, Sama Bilbao y León and Katsumi Yamada

11:20-11:45 **DEVELOPMENT OF MCATHAS SYSTEM OF COUPLED NEUTRONICS/THERMAL-HYDRAULICS IN SUPERCRITICAL WATER REACTOR**

Ping An and Dong Yao

11:45-12:10

12:10-13:10 LUNCH

Wednesday 2011 March 16th

10:30-12:10 Chemistry IV (SCW Structure and Modeling)

Room: Port Alberni

Chairs:

10:30-10:55 **COMPARISON OF THE SPECIAL PROPERTIES OF SUPERCRITICAL WATER BY THERMAL – AND COLD DYNAMIC NEUTRON RADIOGRAPHY**

Márton Balaskó, László Horváth, Ákos Horváth, Péter Tóth, Burkhard Schillinger and M. Muhlbauer

10:55-11:20 **MOLECULAR DYNAMICS SIMULATION OF SUB-CRITICAL AND SUPERCRITICAL WATER AT DIFFERENT DENSITIES**

Noureddine Metatla, Jean-Paul Jay-Gerin and Armand Soldera

11:20-11:45 **THEORY OF THE HETEROPHASE FLUCTUATIONS IN THE VICINITY OF THE GAS-LIQUID CRITICAL POINT**

Alexander Bakai

11:45-12:10

12:10-13:10 LUNCH

Wednesday 2011 March 16th

10:30-12:10 Instability Analyses (I)

Room: Port McNeill

Chairs:

10:30-10:55 **RESULTS OF THE IAEA BENCHMARK EXERCISE ON FLOW STABILITY IN HEATED CHANNELS WITH SUPERCRITICAL FLUIDS**

Walter Ambrosini, Sama Bilbao y León and Katsumi Yamada

10:55-11:20 **THERMAL AND STABILITY CONSIDERATIONS OF CANDU-SCWR SLIDING PRESSURE STARTUP**

Junjie Pan and Jianqiang Shan

11:20-11:45 **MODELLING OF FLOW INSTABILITIES UNDER SUPERCRITICAL CONDITIONS**

Kenneth Leung, Stephanie Langton, David Hummel and David Novog

11:45-12:10 **APPLICATION OF SIMILARITY PRINCIPLES FOR HEAT TRANSFER AND FLUID-DYNAMICS TO DIFFERENT FLUIDS AT SUPERCRITICAL PRESSURE**

Walter Ambrosini and Mattia De Rosa

12:10-13:10 LUNCH

Wednesday 2011 March 16th

**13:10-14:50 Critical Flow and Turbulent Mixing**

**Room: Port Hardy**

**Chairs:**

**13:10-13:35 TURBULENT MIXING MODEL APPLICABLE TO SUPERCRITICAL CONDITION**

Bo Zhang, Jianqiang Shan and Jing Jiang

**13:35-14:00 CFD STUDY OF THE SINGLE-PHASE SUBCHANNEL TURBULENT MIXING IN TIGHT LATTICE GEOMETRY WITH IMPROVED WALL TREATMENT**

Maolong Liu and Yuki Ishiwatari

**14:00-14:25 COMPARATIVE STUDY OF DIFFERENT FLOW MODELS USED TO PREDICT CRITICAL FLOW CONDITIONS OF SUPERCRITICAL FLUIDS**

Akila Hidouche, Altan Muftuoglu and Alberto Teysseidou

**14:25-14:50**

**END OF ISSCWR-5 (See everyone in 2 years)**

**14:50**

Wednesday 2011 March 16th

**13:10-14:50 Materials VI (SCC)**

**Room: Port Alberni**

**Chairs:**

**13:10-13:35 STRESS CORROSION CRACKING TESTING IN SCW – RESULTS OF SSRT TESTS**

Radek Novotny, Peter Hähner, Premysl Janik, Jan Siegl, Petr Haušild and Stefan Ripplinger

**13:35-14:00 STRESS CORROSION CRACKING OF SCWR CANDIDATE ALLOYS: A REVIEW OF PUBLISHED RESULTS**

Wenyue Zheng, Jingli Luo, Ming Li, David Guzonas, William Cook

**14:00-14:25 CORROSION AND STRESS CORROSION CRACKING OF 310 STAINLESS STEEL IN SUPERCRITICAL WATER**

Yashar Behnamian, Jingli Luo, Weixing Chen, Wenyue Zheng, David Guzonas, Zhangjian Zhou, XueHai Tan and David Mitlin

**14:25-14:50**

**END OF ISSCWR-5 (See everyone in 2 years)**

**14:50**

Wednesday 2011 March 16th

**13:10-14:50 Instability Analyses (II)**

**Room: Port McNeill**

**Chairs:**

**13:10-13:35 PRELIMINARY STABILITY MAPS CREATED USING CATHENA FOR HEATED CHANNELS WITH SUPERCRITICAL FLUIDS**

Kate Heckman and David Novog

**13:35-14:00 ASSESSMENT OF NON-DIMENSIONAL PARAMETERS FOR STATIC INSTABILITY IN SUPERCRITICAL DOWN-FLOW CHANNELS**

Shahab Yeylaghi, Vijay Chatoorgoon and Laurence Leung

**14:00-14:25 INSTABILITIES IN A PASSIVE MODERATOR COOLING SYSTEM OF SCWR CANDU**

Sun-Kyu Yang

**14:25-14:50**

**14:50 END OF ISSCWR-5 (See everyone in 2 years)**

SOCIÉTÉ NUCLÉAIRE CANADIENNE

Thursday 2011 March 17th

**09:00- DEPARTURE FROM SHERATON WALL CENTRE HOTEL (SHUTTLE BUS)**

**10:00**

**10:00- ISSCWR-5 Technical Tour of the TRIUMF facility (Registered Participants Only)**

**12:00** TRIUMF is one of the world's leading subatomic physics laboratories. It brings together dedicated physicists and interdisciplinary talent, sophisticated technical resources, and commercial partners in a way that has established the laboratory as a global model of success. Its large user community is composed of international teams of scientists, post-doctoral fellows, and graduate and undergraduate students. The advances ensuing from TRIUMF's research will enhance the health and quality of life of millions of Canadians, launch new high-tech companies, create new high specificity drugs, help us to understand the environment, enable the development of new materials, and spur the imaginations of our children who want to know their place in the universe. TRIUMF is one of the team members in chemistry study for the SCWR.

**12:00- RETURN TO SHERATON WALL CENTRE HOTEL (SHUTTLE BUS)**

**13:00**