出國報告（出國類別：其他）

參加 Global 2015 核燃料循環會議

服務機關：核能研究所
姓名職稱：黃尚峯　助理研究員
派赴國家：法國
出國期間：104 年 9 月 19 日~104 年 9 月 26 日
報告日期：104 年 10 月 26 日

摘 要

本屆 GLOBAL 國際核燃料循環會議是由法國核能協會主辦，於法國巴黎舉行，會議的主題是「以核燃料循環尋求低碳的未來」，為了滿足未來的能源需求，同時減少二氧化碳排放量，核燃料循環從可持續核系統部署(sustainable nuclear systems deployment)的角度來看，是一個關鍵的議題，GLOBAL 2015 研討會與 GLOBAL 系列研討會一致，提供全面的角度，旨在解決燃料循環的議題及挑戰，從採礦到回收及最終處置，並從技術及制度上的觀點來看現在與未來。因此，會議內容涵蓋核能之工業展望與前景、燃料循環選項、核燃料循環前端、燃料再生、除役與廢棄物管理、公共及社會因素等六大項，其中公共及社會因素主題內容包括防止核武擴散及保防，與中央計畫「參加國際核子保防及保安相關會議」目標相符，故燃材組黃尚峯奉派前往法國巴黎參加會議蒐集相關資訊，並於會議中發表「Stabilization Technique and Non-destructive Neutron Inspection System of Irradiated Metal Uranium Fuel」論文。

透過參加會議了解了整個核燃料循環現階段的議題，並且透過各國專家之報告，進行技術上的交流。也藉著論文的發表與各國核能相關領域的專家進行交流，並獲得許多計畫執行上的建議。但因會議範圍廣泛，包括核燃料循環之前端及後端，建議本所固定每屆派員參加，且人數應增加以獲取多方面最新資訊，確保未來本所核能研究方向與世界接軌，也應持續培養人才，並透過參與相關的國際會議或實際研究工作，以獲取相關技術及經驗。

目　　次

（頁碼）

一、目　的

第十二次國際核燃料循環會議 GLOBAL 2015 於西元 2015 年 9 月 21 日至 9 月 24 日，假法國巴黎舉行，由法國核能學會(Societe Francaise d' Energie Nucleaire, SFEN)主辦，本系列國際會議自西元 1993 年起每兩年舉辦一次，由歐洲、美國、日本各國核能學會輪流主辦，本所自 2009 年第九次會議起均派員出席會議。

本次會議提供六大主題，邀請世界各國核能相關研究者提供研究成果報告，題目包括：

i. 核能之工業展望與前景(Nuclear Energy: Industry Outlook and Prospects)
ii. 燃料循環選項(Fuel Cycle Options)
iii. 核燃料循環前端(Nuclear Fuel Cycle Front-end)
iv. 燃料再生(Fuel Recycling)
v. 除役與廢棄物管理(Decommissioning and Waste Management)
vi. 公共及社會因素(Institutional and Societal Factors)

其中公共及社會因素主題內容包括防止核武擴散及保防，與中央計畫「參加國際核子保防及保安相關會議」目標相符，且燃材組執行 TRR 用過核燃料計畫已有相當的成果，其執行過程符合第五大主題「除役與廢棄物管理」之精神，因此將其執行成果彙整成題目為「Stabilization Technique and Non-destructive Neutron Inspection System of Irradiated Metal Uranium Fuel」之論文投稿並被接受，由燃材組黃尚峯前往法國巴黎參加會議進行口頭發表，與世界各國之專家討論進行交流，並收集國際核子保防及保安相關資訊。

二、過　程

(一)行程

本次赴法國巴黎參加 GLOBAL 2015 研討會的詳細行程如下：

日 期	地 點	內 容
9 月 19~20 日	台北→維也納	去程
9 月 20 日	維也納→巴黎	去程
9 月 21~24 日	巴黎	參加「GLOBAL 2015 核燃料循環會議」
9 月 25~26 日	巴黎→台北	返程

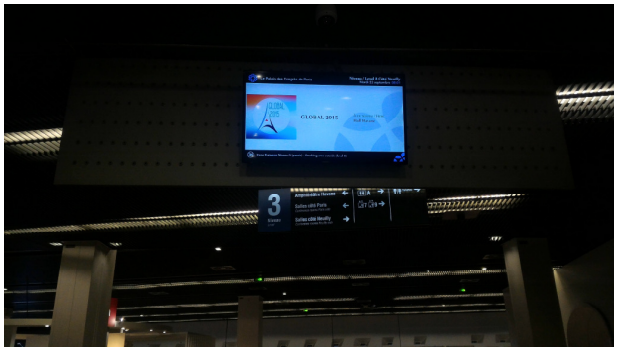
其中去程是搭乘長榮航空經曼谷往維也納班機，在維也納轉奧地利航空後到達巴黎；回程的部分則搭乘長榮航空巴黎直飛台北班機回國。

(二)研討會內容

本屆會議由於參加人數眾多，投稿論文共計有 379 篇，大會又依據會議主題「以核燃料循環尋求低碳的未來(Nuclear Fuel Cycle for a Low-carbon Future)」，安排了三場全體會議(Plenary Session)，以及六場座談會(Panel Session)，因此會議分成四天舉辦，各國專家所投稿之論文則歸類為 Technical Session，並皆以口頭報告的方式發表，利用四天的時間分別舉行，以下就每天參加的研討會內容進行描述。

1.第一天(9/21)

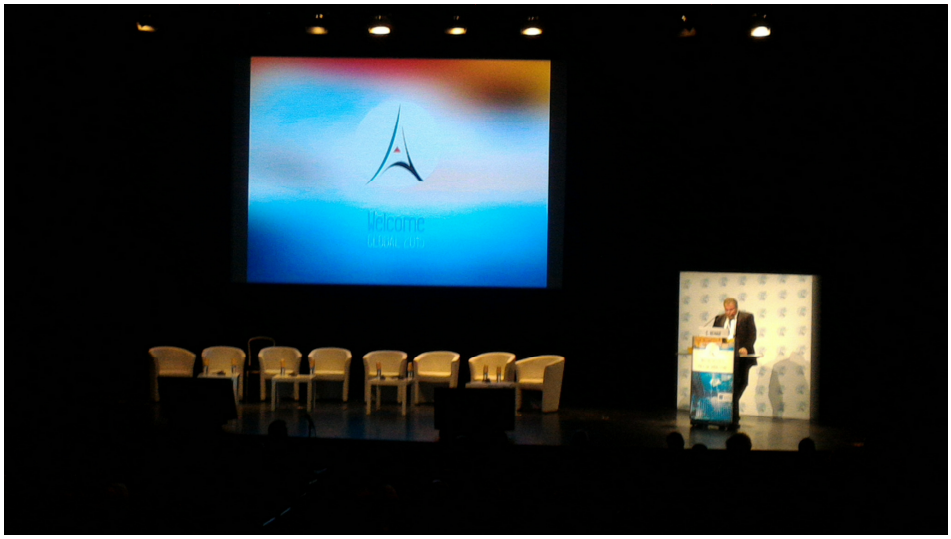
早上八點半進入會場後先註冊，領取會議相關資料後，隨即前往大會會場等待開幕式。



會場入口

Plenary 及 Panel Session 會場

大會主席是由法國 CEA 核能部部長 Christophe Béhar 擔任，簡單致詞後，也擔任第一場 Panel Session 專家演說的主席。



大會主席發表演說

Panel 1 主題: How Can Nuclear Energy Help to Fight Climate Change?

主席: Christophe Béhar, Nuclear Energy Division Director, CEA, France

演講者:

Marco Baroni, Senior Analyst, International Energy Agency

Guillaume Dureau, Member of the Executive Board, Senior Executive Vice President Back-End, AREVA, France

Kirsty Gogan, Director, Energy For Humanity, USA

Takuya Hattori, Senior Adviser, JAIF, Japan

John Kelly, Deputy Assistant Secretary for Nuclear Reactor Technologies, US DOE, USA

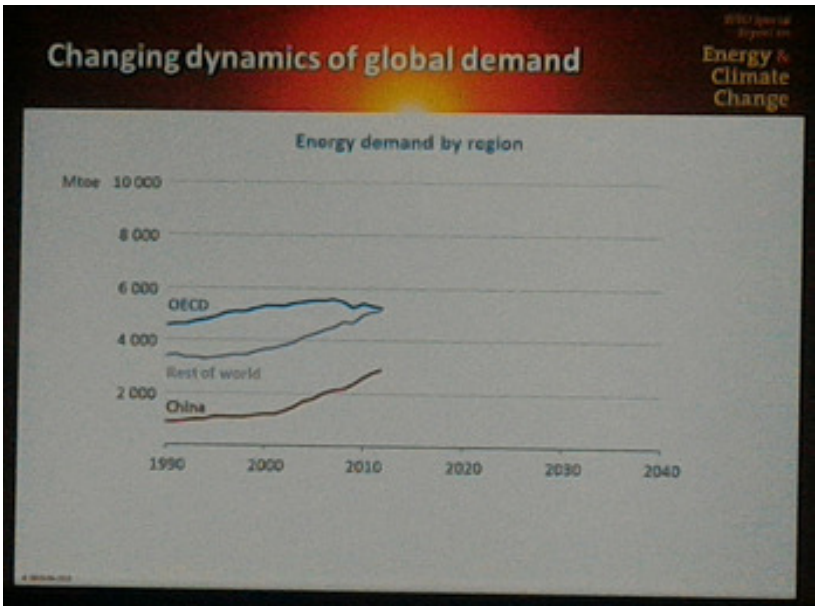
Pan Jianming, Board Secretary, CNNC, China

Daniel Verwaerde, Chairman, CEA, France

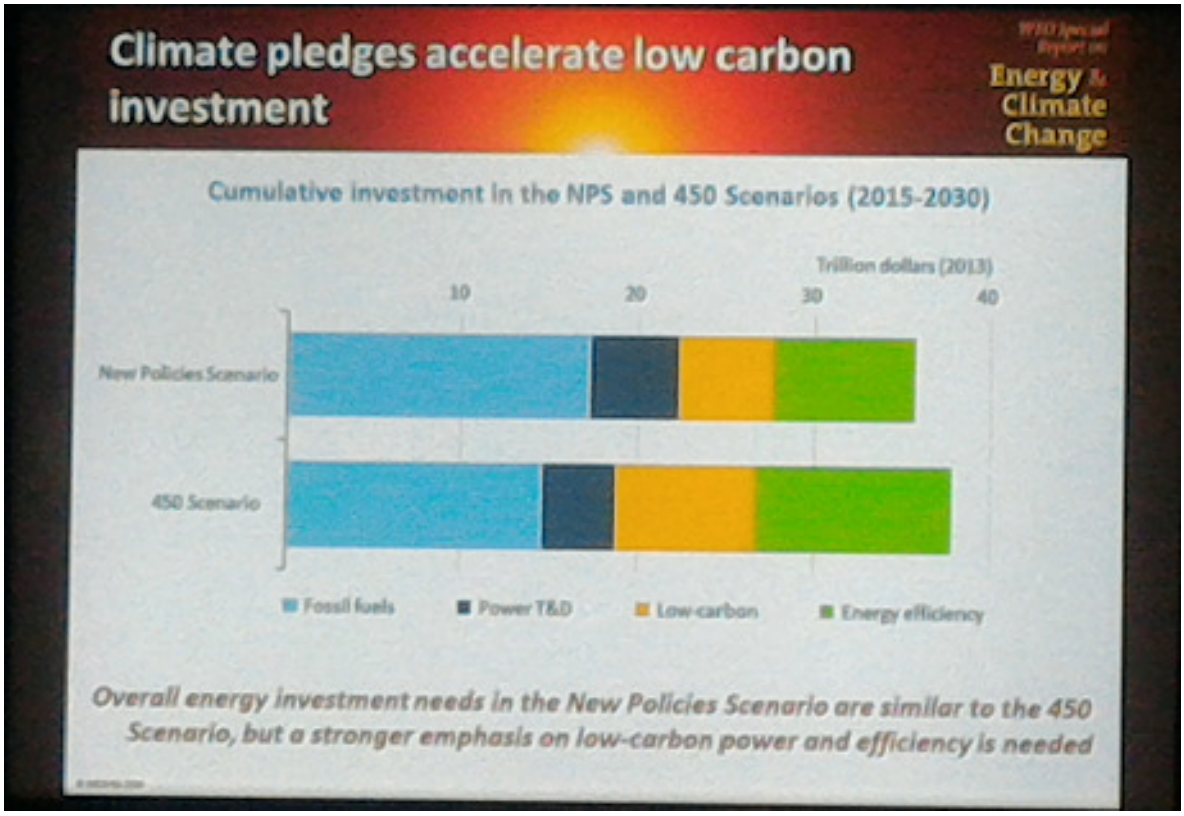
此議程由各國專家針對氣候變化的議題，探討核能工業如何在其中扮演關鍵角色。其中，International Energy Agency 的 Marco Baroni 提出許多統計數據，先從人類對能源的需求逐年增加開始介紹，再從因應氣候變化造成各種低碳投資的加速成長，來說明核能在人類對

第一場 Panel Session

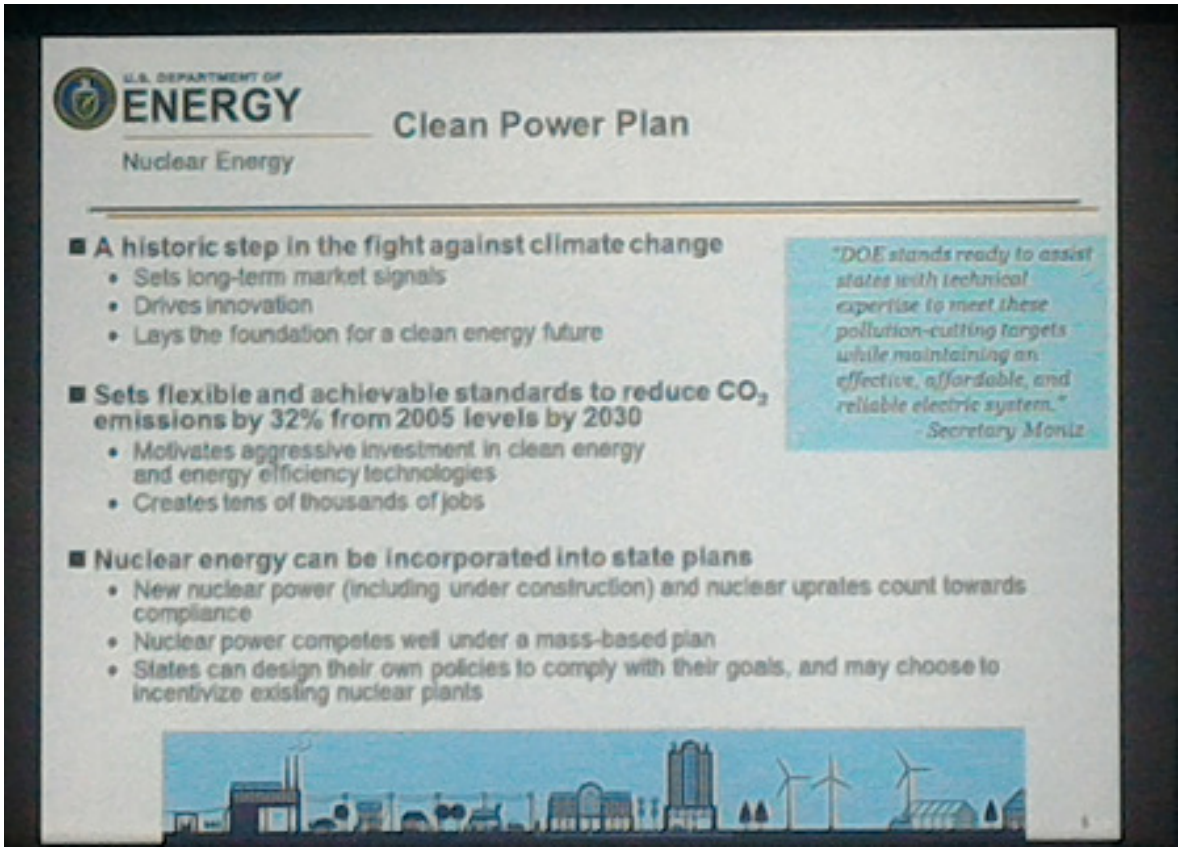
抗氣候變化上，扮演一個相當關鍵的角色。代表美國能源部的 John Kelly 則從美國政府的角度來說明，為了對抗氣候變化，美國政府採取混合式能源的政策(Mixed Energy)，並且不會輕易放棄任何一種乾淨能源，包括核能在內，所以美國能源部正在積極發展新式反應器 SMR (Small Modular Reactor)，以因應日益成長的能源需求。出席會議的中國中核集團及日本原子力產業協會代表，則分別向與會者說明目前中國大陸及日本核電發展狀況。



世界各國能源需求趨勢

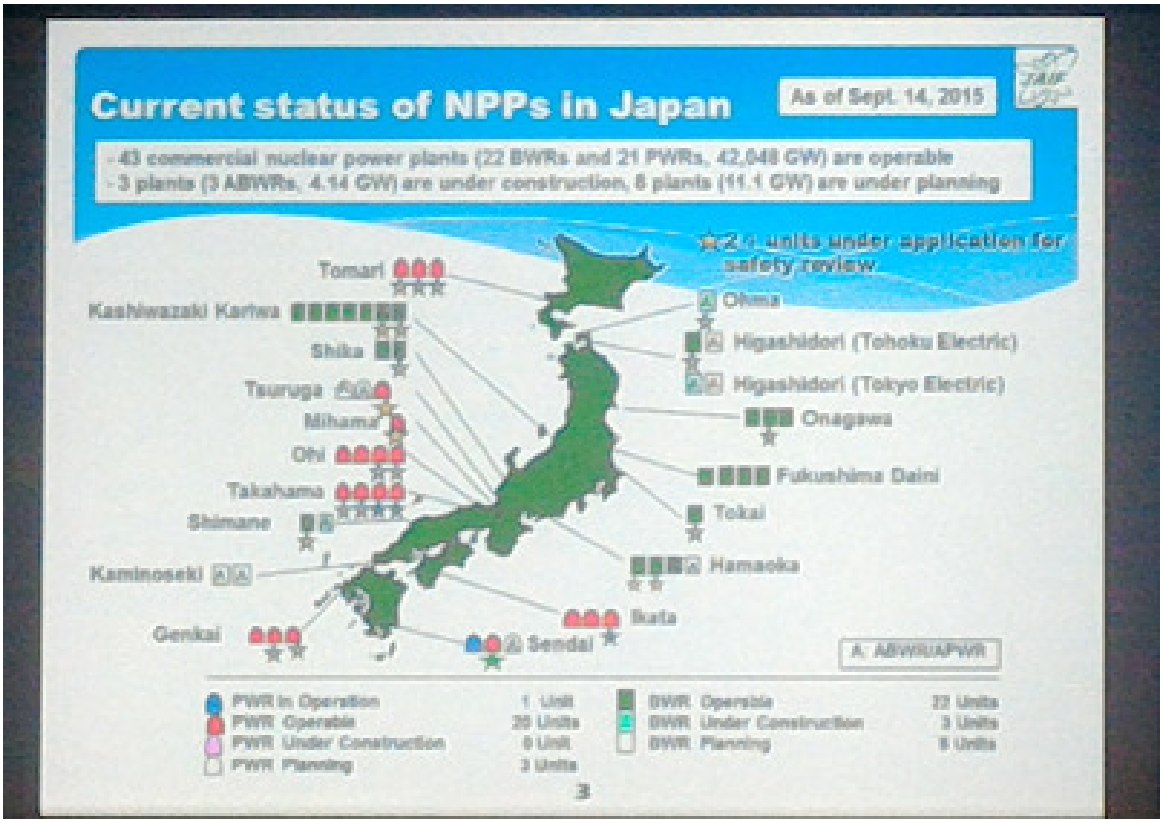


為因應氣候變化需增加低碳投資



美國之乾淨能源計畫

中國大陸秦山核能電廠商轉中的 9 部核能機組



日本核能電廠目前之狀態

下午則緊接著是第二場 Panel Session,

Panel 2 主題: Nuclear Energy Opportunities and Challenges

主席: Jean-Pol Poncelet, Executive Director, FORATOM

演講者:

Soon Heung Chang, President, Handong University, Republic of Korea

Robin Grimes, Chief Scientific Counsellor, Foreign Office, UK

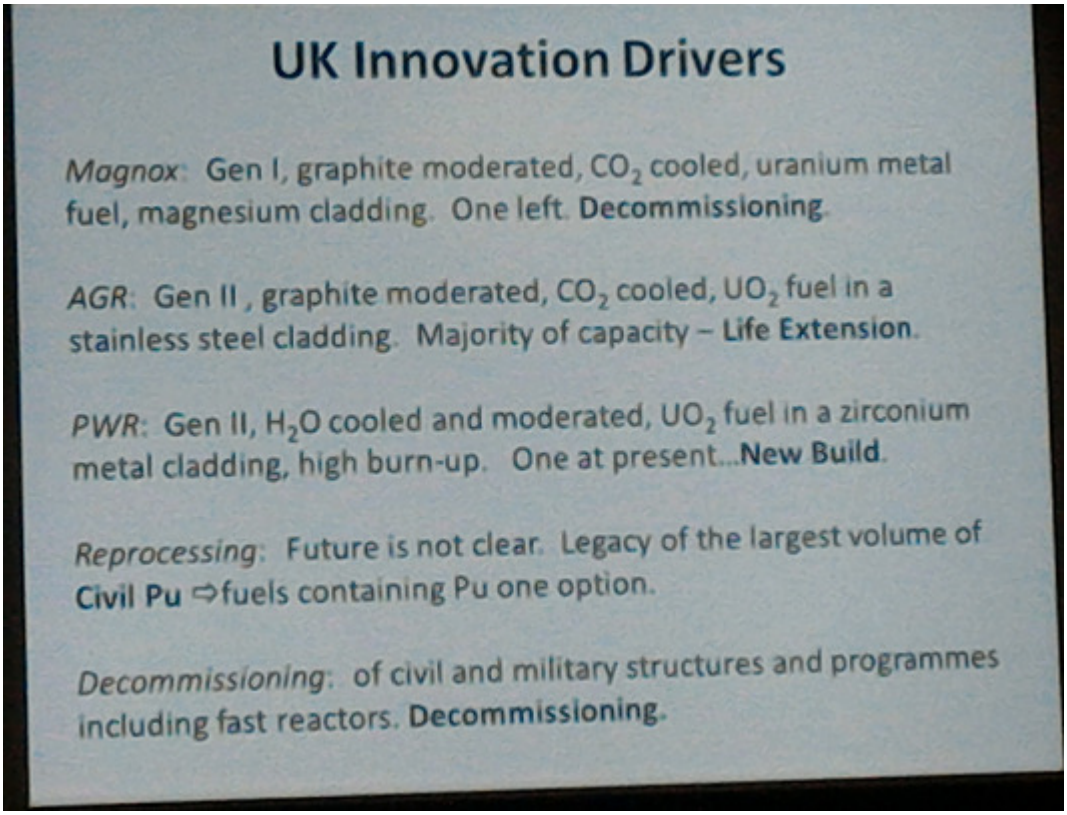
William Magwood, Director General, OECD/NEA

Vyascheslav Pershukov, Deputy Director General, ROSATOM, Russia

Phumzile Tshelane, Chief Executive Officer, NECSA, South Africa

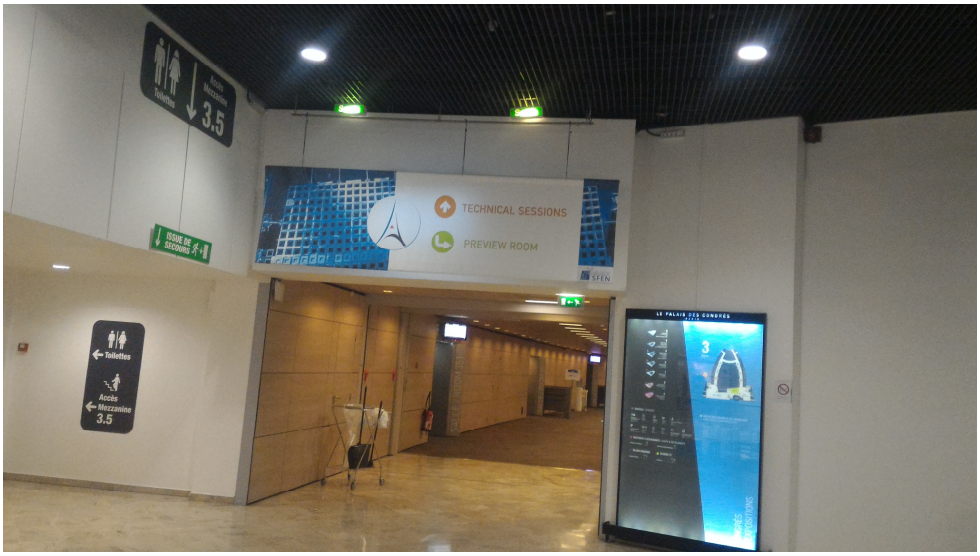
Olivier Wantz, Member of the Executive Board, Senior Executive Vice President Mining and Front End, AREVA, France

此議程則是由各國專家提出該國目前在核能工業的發展，其中英國的 Robin Grimes 介紹了英國各種反應器，及其未來的處理方式。



英國現存各式反應器

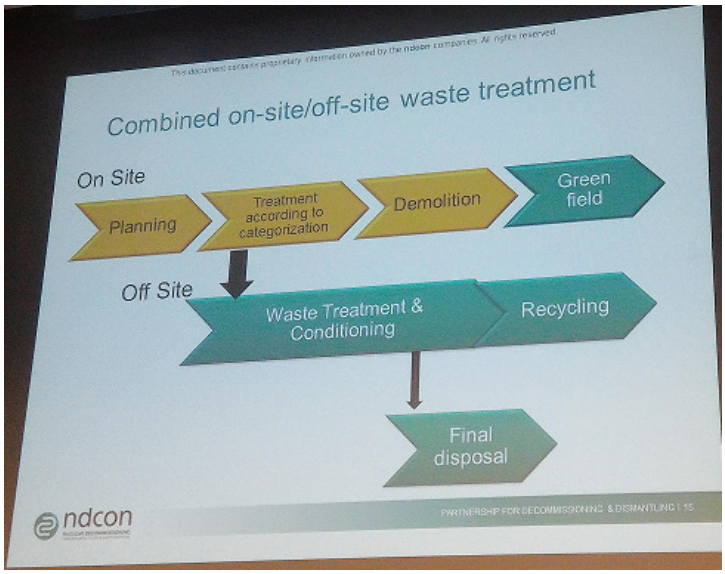
第一天最後登場的則是兩場 Technical Session，由於大會總共提供 9 個小會議室，讓各個主題同時舉行，因此會議參加者只能挑選與自己研究內容相關或感興趣的題目，與本次參加會議較相關的題目為廢棄物管理及核子保防部分，以下就簡單敘述其中幾篇與執行業務較相關之報告:



Technical Session 之會場

(1) Optimisation of Waste Management in Decommissioning, Hedin, Gunnar et al.,

這篇報告針對核設施除役後的廢棄物管理提出一個概念，除了安全、快速、經濟效益高，並且是一種適應環境的除役後廢棄物管理方法，內涵包括：風險基礎的廢棄物處理流程分類、”拆和運”優化後的廢棄物管理及場外中期貯存、聚焦於材料回收及廢棄處最終處置最小化、工業化驗證之流程、具廢棄物貯存與處理緩衝容量場外專責設施、所有相關團體緊密合作以達到所有廢棄物管理流程之優化、加強廢棄物管理處理與最終處置設施之計畫、縮短計畫時程並及早行動。



廢棄物管理程序

(2) A Permanent Disposal Solution for Temporary or Failed Radioactive Waste Treatment Methods, Keith Witwer et al.,

Kurion 是一家乾淨能源的公司，專門製造或使用專利技術可以減少或安定化核廢料、有毒或其混合廢料，以達成安全及永久處置。Kurion 的 GeoMelt 技術已經在一個先期授權測試中被委託要測試其處理三種有毒放射性廢棄物之能力，包括有機水溶液材料、尿素甲醛封裝母材及石綿廢棄物，這三種廢棄物常常由商用核能電廠或其他失敗的封裝方式所產生。 三種廢棄物的仿造替代品經過配製，其化學與物理性質均與實際的廢棄物相當接近。後續利用 GeoMelt®1 In-Container Vitrification (ICV)™2 設備對廢棄物的仿造替代品進行玻璃固化，並成功在 2013 三月及四月於 Kurion 的科技發展中心完成。當固化冷卻後，從固化體的核心處取樣並進行後續固化體的耐久性分析。國際標準的耐久性測試方法包括耐壓測試、熱循環、ANSI/ANS 16.1 (American National Standards Institute & American Nuclear Society)可溶出性測試、產品堅固測試及蒸汽水化腐蝕測試。測試結果所有的固化產品試樣都通過標準，且大部分都超過標準許多，說明 GeoMelt 程序處理這三種問題廢棄物的能力。完成廢棄物仿造替代品的測試之後，目前 Kurion 正積極在測試小規模或完整規模的實際放射性廢棄物固化處理，並預定應用於義大利核能電廠貯存的問題廢棄物。

Acceptance Test	Requirement	Test 1 Result	Test 2 Result	Test 3 Result
Compression	>/=5 MPa	124	377	307
Thermal Cycle & Compression	>75% of pre-test compression	532	535	363
Leachability	>6.0 Index	15.8	16.1	16.7
PCT	<2.0 g/m^2	Na = 0.393 Si = 0.083 B = 0.391	Na = 0.697 Si = 0.223 B = 0.392	Na = 0.174 Si = 0.057 B = 0.113
VHT	<50 g/m^2*day	9.54	22.09	15.07

玻璃固化體之耐久性測試結果

2.第二天(9/22)

第二天早上首先舉行第一場的 Plenary Session，題目是 Sustainable Nuclear Energy Systems，由日本 JAEA 的 Yutaka Sagayama 及比利時 Nuclear-21_Net 的 Luc Van Den Durpel 共同主持，並邀請以下演講者針對主題進行討論

演講者:

Christophe Behar, GLOBAL General Chairman, Nuclear Energy Division Director, CEA, France

John Kelly, Deputy Assistant Secretary for Nuclear Reactor Technologies, US DOE, USA

Michel Pays, Strategy and Risks Manager, EDF, France

Yutaka Sagayama, Assistant to the President, JAEA, Japan

Andrew Sowder, Principal Technical Leader, EPRI, USA

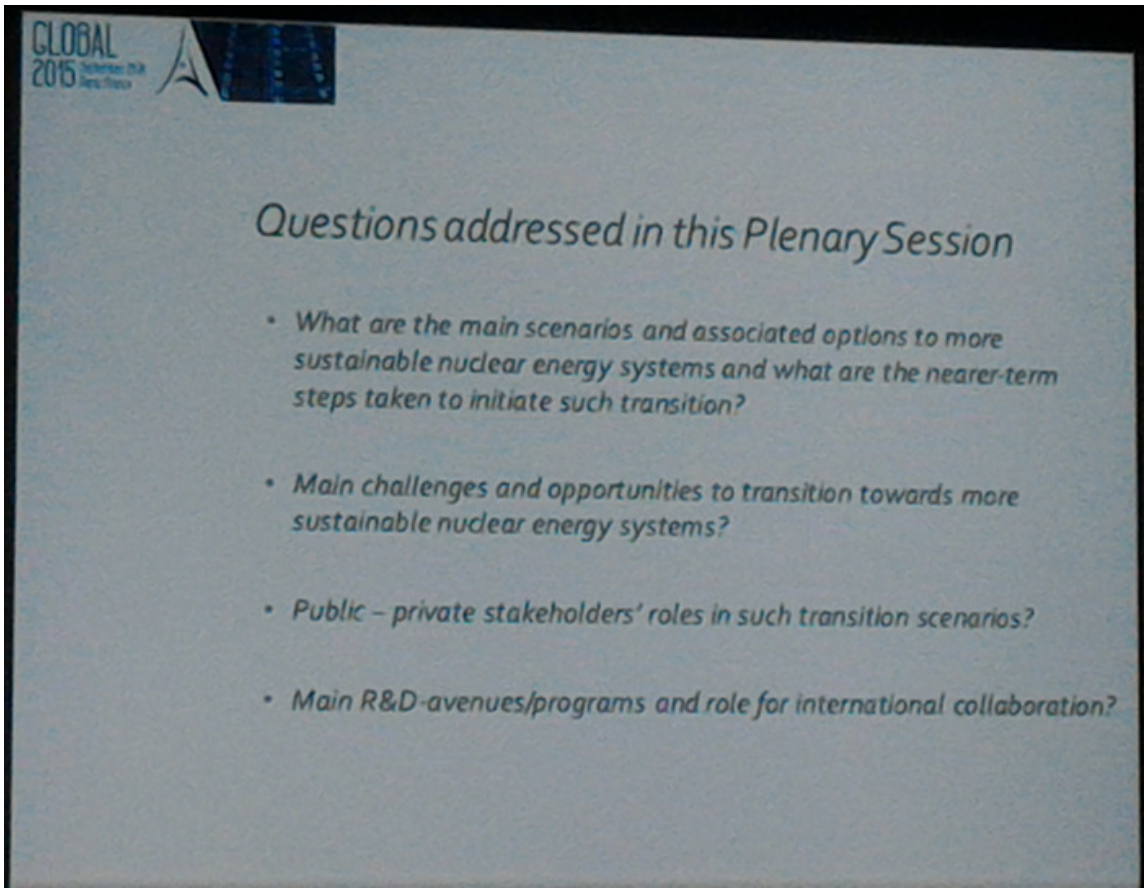
Richard Stainsby, Chief Technologist Fuel Cycle Solutions, NNL, UK

Vladimir Usanov, Chief Researcher, IPPE-Obninsk, Russia

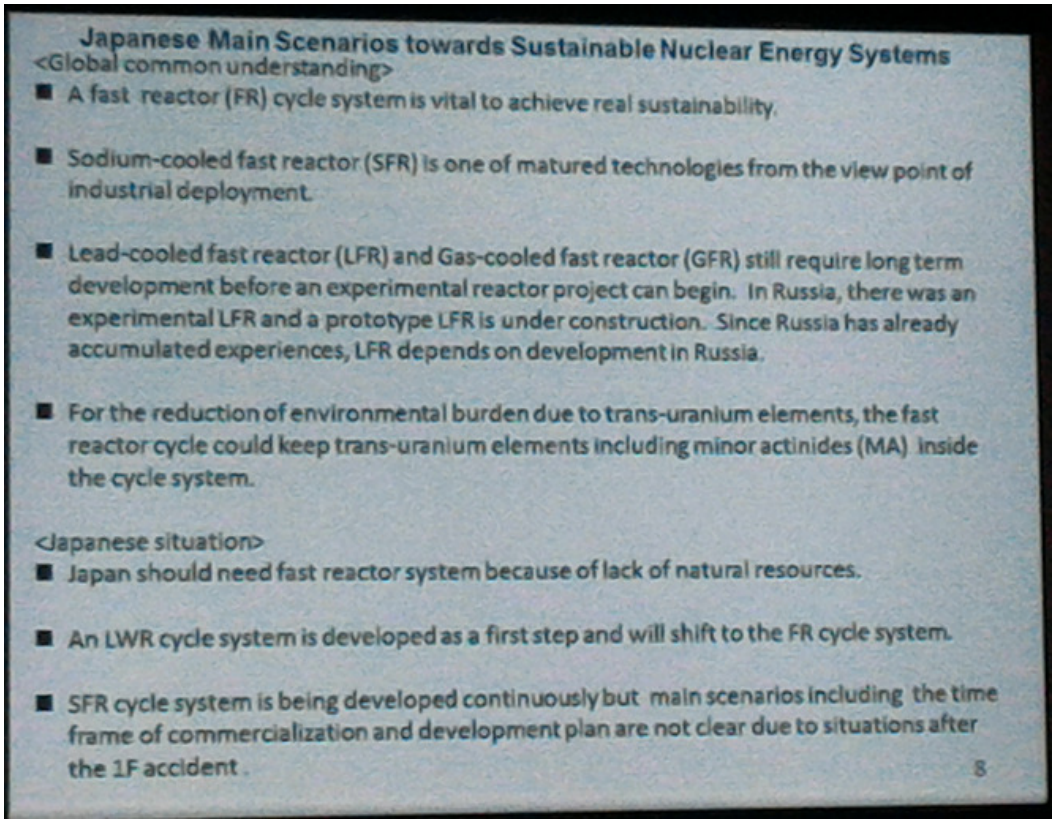
Guoan Ye, Vice President, CIAE, China

此 Plenary Session 的目的是探討如何才能讓核能成為一種更永續發展的能源，以及應該採取什麼步驟才能達到此一目標。參加討論的各國專家同樣是以各國經驗分享給與會者，其

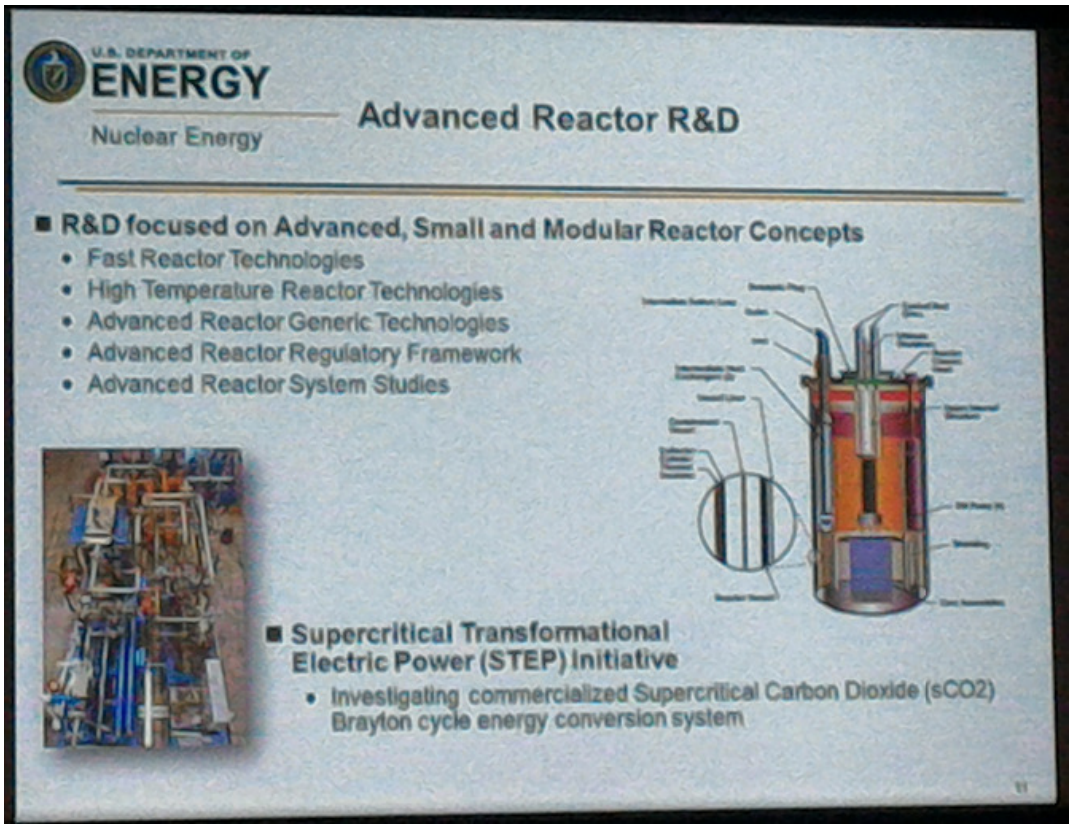
中日本 JAEA 的 Yutaka Sagayama 說明日本是預定採取快速反應器(Fast Reactor, FR)的方案，以維持核能的競爭力，美國能源部的 John Kelly 則說明小模組反應器(Small Modular Reactor, SMR)是目前積極發展中的新式反應器，法國則是發展快中子反應器(Fast Neutron Reactor)，中國則同樣選擇可以高度利用鈾資源的快速反應器，以維持核能的永續發展。



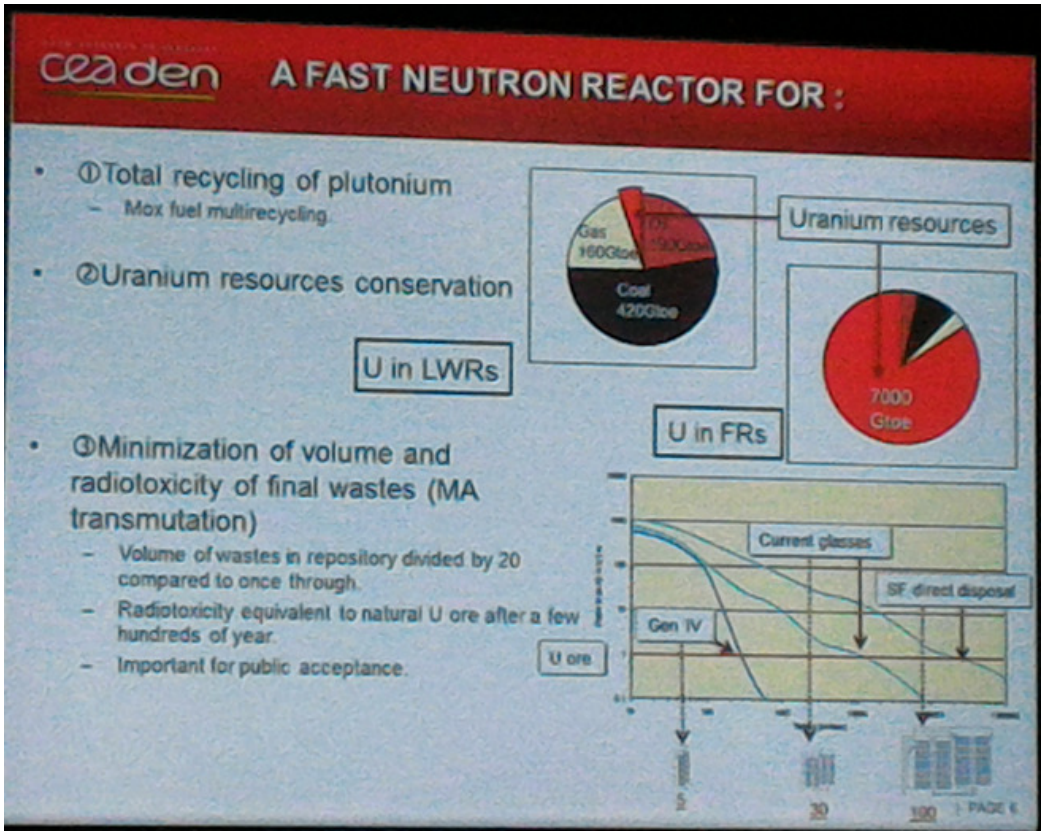
Plenary Session 的討論方向



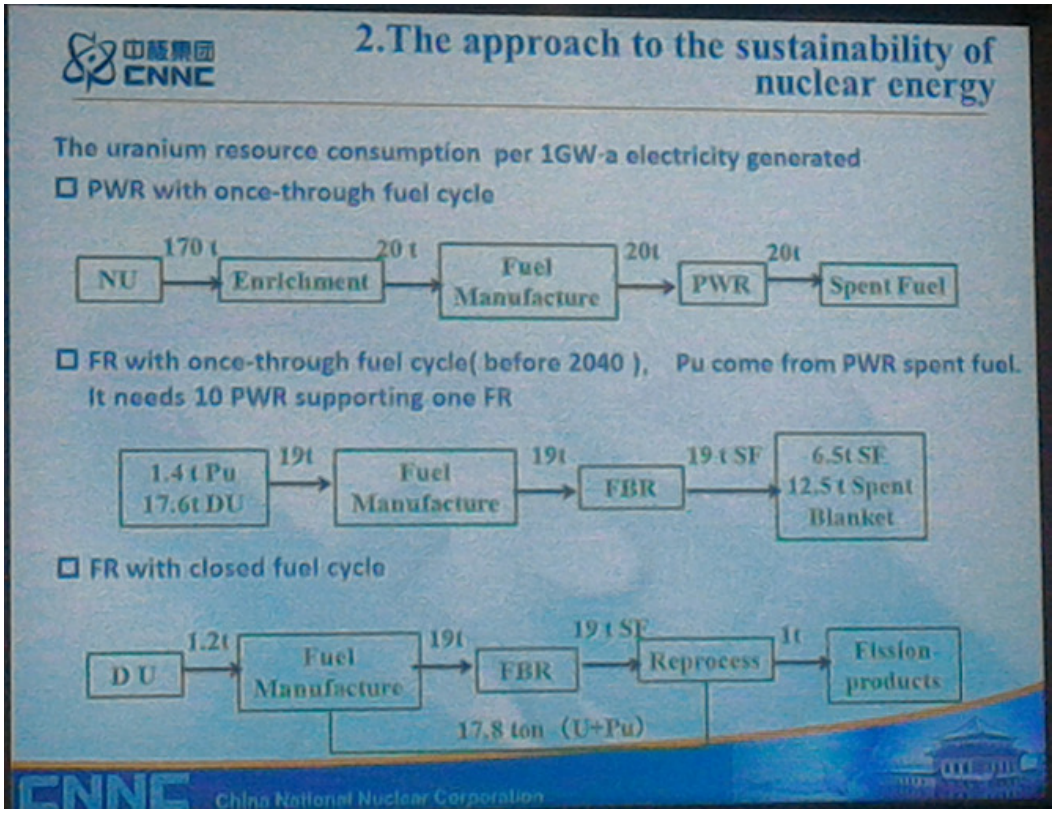
日本核能永續發展之方案



美國發展中之小模組反應器



法國代表介紹快中子反應器之優勢



中核集團在永續核能發展上之研究

接下來主席介紹兩年後的 GLOBAL 2017 將在亞洲的韓國舉辦，主辦的 KRS(Korean Radioactive Waste Society)並播放了一段介紹影片，邀請現場與會人員一起參加 GLOBAL 2017。

GLOBAL 2017 之介紹

短暫休息過後，早上最後的議程是 Technical Session，因為核子保防專題在第九會議室舉行，因此前往參加，以下簡述各國專家所提出之報告：

(1) Light Water Small Modular Reactors: Non-proliferation and Security Aspects, Matt BOWEN et al.,

負責美國能源政策走向的能源部，在核能發電的部分，除了持續以往支持第三、四代核子反應器的研發及應用之外，目前正大力推動小型模組化的反應器(Light Water Small Modular Reactor, LW-SMR)，此篇報告分析未來 SMR 商轉後，防止核武擴散及核子保防與現行大型輕水式反應器(Large LWRs)之差異。報告中首先分析 LW-SMR 和 LWRs 的主要特性，包括發電功率、燃料束數量及每燃料束之發電量等，再從兩者使用的燃料特性分析比較，最後由反應器本身的安全性及技術散佈的角度加以分析，作者從這些研究分析中得到以下結論：基本上 LW-SMRs 和傳統 LWRs 的擴散路徑都相同，防止破壞、核材料遭竊或散佈的堅固性也相似，但 LW-SMRs 的某些技術上的特性可能可以提供較

高的保安優勢，例如地面下設置、被動式安全防護特性、縮減大型冷卻管路及較小的核物料來源，但相反的，較多的模組則會提高保安及保防的成本。綜觀來說，SMRs 和 LWRs 在核子保防的議題上差異極小，可以合理預期可能的保防和安全問題。最後指出，整體的核系統，包括反應器和核燃料循環，都應該列入風險分析考量。

	Large LWR	LW SMR	Ratio / Comparison
Unit power	1 GW_e	0.15 GW_e	*x 0.15*
Number of FA	160	60	*x 0.375*
FA per GW_e	160	400	*x 2.5*
NM inventory (Mt)	90	17	*x 0.19*
NM inventory (Mt) per unit power	90	113.3	*x 1.26*
Fuel type and U enrichment	Pins and assemblies LEU (5%)	Pins and assemblies LEU (5%)	*same*
FA length	4m	2m	*x 0.5*

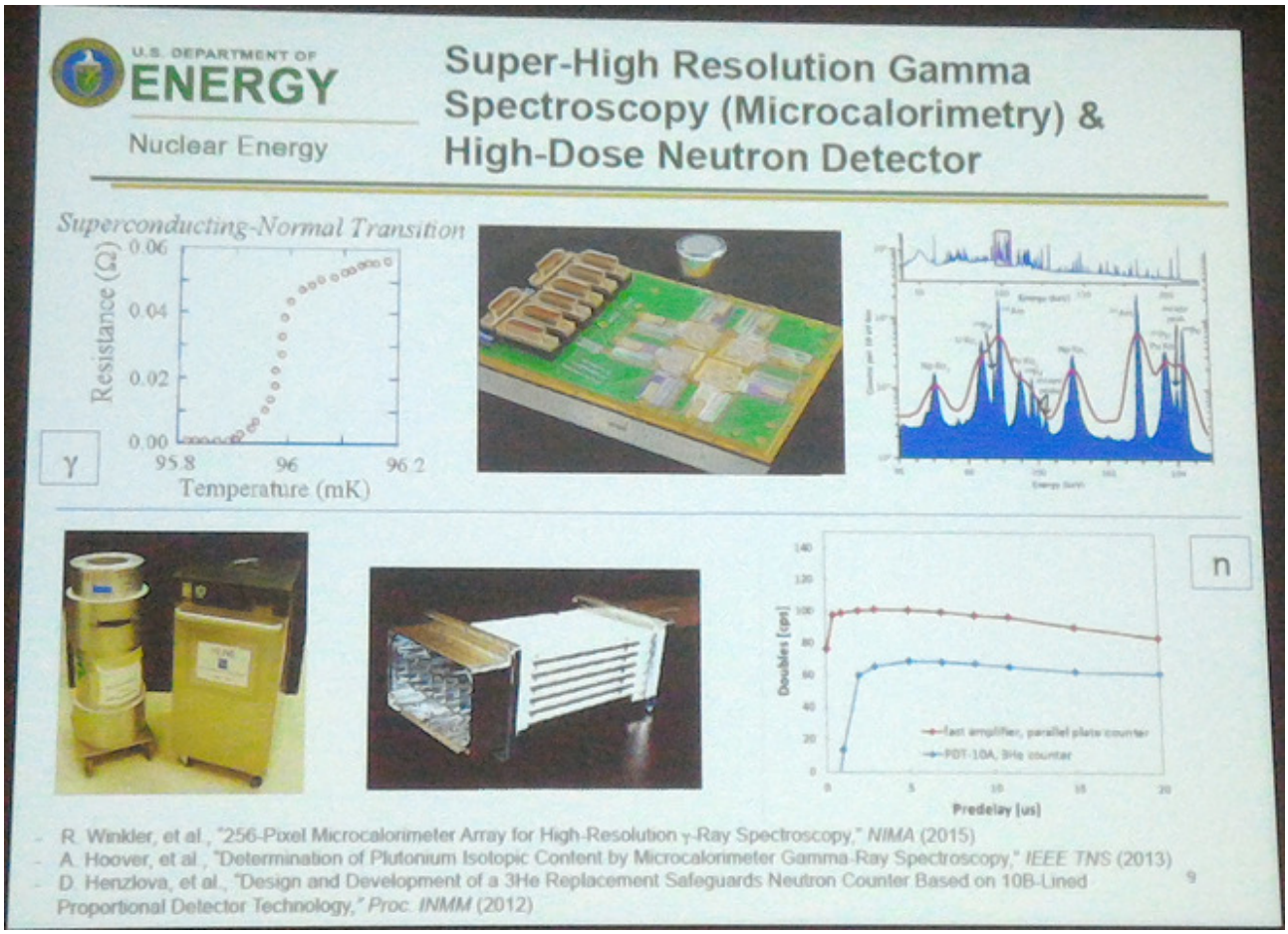
Large LWRs 和 LW SMR 主要特性比較

(2) Concepts and Approaches for Advanced Safeguards and Security, Michael Miller et al.,

作者代表美國 Los Alamos National Laboratory 核能源的燃料循環技術項目辦公室進行報告。該小組正在推展一項名為核物料保護，統計與控制技術（Materials Protection, Accounting and Control Technologies, MPACT）的運動，其目的是尋求先進的監控儀器、分析工具和整合方法，促進次世代核物料的管理，以支持未來的核能產業。MPACT 的中心議題是核子保防和安全之設計，即完全整合先進的監控技術和分析功能，並提早於燃料循環設施的設計時應用。此先進的保防和安全體系已成功應用於實驗室規模，這對 MPACT 活動來說是一個重要里程碑。

目前正在開發的技術包括先進的 γ 射線光譜（超高分辨率和多同位素相關性），高劑量中子計數，以及各種製程監控技術結合數學演算法，以優化其使用。先進的模型建置

和模擬工作包括利用輻射傳輸支援識別標誌的發展，風險的安全評估，以及滿足整體保障和安全設施的性能評價的靜態和動態質量平衡模型。利用框架設計的方法，將這些獨立的技術結合在一起，形成一個先進的保防和安全系統，以達成次世代核物料的管理方法。在報告中，作者描述了個別技術的開發和分析工具到目前為止的進展，以及一個虛擬的，分佈式測試平台的實驗室規模示範的概念。最新的資訊技術結合先進的模型建置和模擬方法，可以增加特定的感應器演示數據，以實現虛擬測試平台。這種方法允許對實驗室能力（包括在適當的國際合作）進行整合，從而模擬在一個先進的綜合保防和保安系統多設施核燃料循環的分佈式網絡。其他研究正在開發中的技術和評估方法將有助於了解虛擬測試平台的詳細信息（例如，先進燃料，再生過程及貯存和處置策略）。預期可以從實驗室規模的示範吸取經驗，並進一步應用於未來新的燃料循環設施發展上。



超高分辨率γ射線光譜儀及高劑量中子偵檢器之介紹

(3) Generic Quantitative Process Monitoring and Accountability Methodology for Fuel Cycle Facilities, Benjamin B. Cipiti et al.,

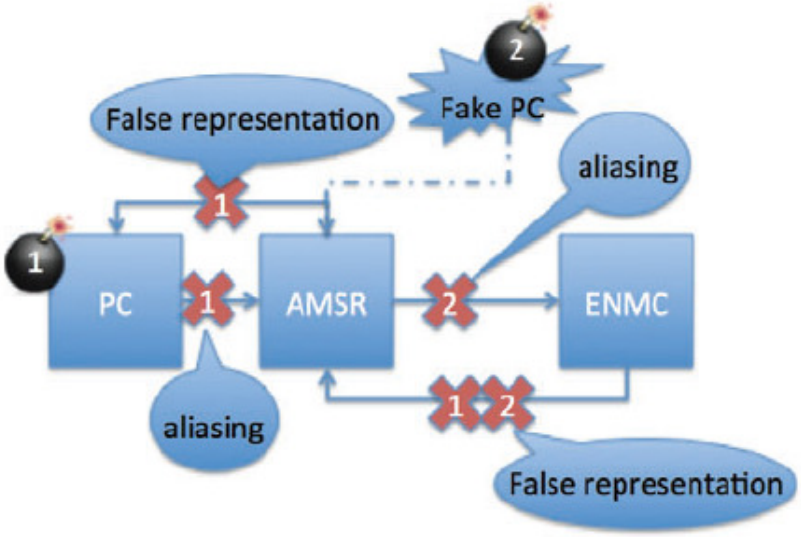
核燃料循環設施的核物料計算通常是根據採樣和處理狀態測量，來估計投入、產出以及在製品庫存的物料。這些測量可以包括製程樣品破壞性或非破壞性分析。但是進行高精度分析所需要的時間，常導致核物料的實際測量的次數遭限制，造成物料平衡週期拉長和阻礙電廠異常現象的及時發現。傳統的核物料平衡方法已經被明確定義，但新製程監控技術的可用性則建議重新審視其平衡方法。製程監控技術可能包括整體測量，如流量，質量，密度，溫度，電壓等，或利用光譜如紫外 - 可見光 - 近紅外（UV-VIS-NIR）或 γ 分析的化學組成分析方法。積累的數據也可以反饋到製程模型，提供在製品庫存利用樣品分析的最終確認前更好的評估。由於製程監控測量可以更頻繁地進行（或連續），以確保最小的製程影響，他們制定切實可行的近臨場統計（near-real-time accountancy, NRTA）。這種方式面臨的挑戰之一是如何在不產生更多的操作員負擔情況下，確定數據可以使用。這項工作的目的是利用傳統的統計核算方法，開發通用性量化方法，整合製程監控測量和先進的製程模型，以確定製程控制和保防監測潛在的改善。這包括開發一個方案，用於定義適當 NRTA 平衡期間，基於製程監視執行，以及使用所收集的數據，以在定量環境下作出定性決定。在 Savannah River National Laboratory H-Canyon 再處理設施的實驗工作，包括製程監控技術的測試驗試點工作，可作為此方法之驗證。然而，更大的目標是創建一個通用的方法，這將適用於任何燃料循環設施，或有類似需求的其他化學加工設施。

下午首先參加第二場的 Plenary Session，題目是 Uranium: Needs and Resources，主要是邀請專家討論鈾礦的需求與資源，因為這部分與本所研究方向差距較大，在此不進行贅述。

緊接著則參加第四場 Technical Session，其中第 9 會議室探討的主題為 Proliferation Resistance and Technical Aspects of Safeguards，是本次公差主要目的之一，摘錄重點如下：(1)LANL 的 Pilat Joseph 博士以口述的方式報告兩個題目，第一篇報告在日本福島事變

後，防止核武擴散及物理保健方面應做如何的調整。其敘述在日本福島事變發生前，整個核能產業都利用氣候議題想要大展身手，因此忽略了防止核武擴散及物理保健的重要性，所以在事變發生之後，正是時機可以重新檢視防止核武擴散及物理保健方面，是否有不完善之處。第二篇報告則是針對防止核武擴散議題提出一個新的決策框架，包括發展新的輸出方式，以促進核電發展，但又可保持最小的核武擴散方法。

(2)名古屋大學的 MASARU TANAKA 提出報告，要驗證目前核不擴散檢測裝置中，信息通信子系統和電力供應子系統的威脅和脆弱性，如設備手冊，並探討通過網路攻擊，造成防止核武擴散檢測系統的功能下降，和檢查輸出的效果。最後，作者還檢視了一種藉由監測子系統的狀態，偵測惡意軟件的方法，並討論如何擺脫依賴於防毒軟體的網路攻擊檢測方法。



網路攻擊安全系統

3.第三天(9/23)

由於大會將筆者之口頭報告安排在本日早上的第五場 Technical Session，因此早上在飯店內準備報告內容，並無參加任何會議。本次發表論文的主題是「Stabilization Technique and Non-destructive Neutron Inspection System of Irradiated Metal Uranium Fuel」，內容主要是將本所執行 TRR 用過燃料安定化之成果，與世界各國分享，報告完後，來自德國 NUKEM

Technologies GmbH 的 Sokcic-Kostic Marina 博士也有對報告內容提出問題。

結束口頭報告後，下午繼續參加本日其它會議，首先參加第四場 Panel Session，題目是「Back-end: What Are the Possible Breakthroughs?」，由來自 JRC-ITU 的 Jean-Paul Glatz，與會者還有：

Il Soon Hwang, Professor, Seoul National University, Republic of Korea

Christophe Poinssot, Head of Radiochemistry and Processes Department, Nuclear Energy Division, CEA, France

Terry Todd, National Director, Material Recovery and Waste Forms Development, INL, USA

Guoan Ye, Vice President, CIAE, China

Panel Session 結束後是接連兩場的 Technical Session，由於防止核武擴散與核子保防的題目在前兩天已經全部結束，因此後面只挑選筆者自己有興趣之題目參加，參與的會議內容並無發現與本所研究方向有特別相關之處，因此不再詳加敘述。

4.第四天(9/24)

會議的最後一天早上，大會仍安排了一場 Plenary Session 及一場 Technical Session，Plenary Session 的題目是「High Level Waste Final Disposal」，由法國 ANDRA 執行長 Pierre-Marie Abadie 主持，其他與會者有：

Pierre-Marie Abadie, Chief Executive Officer, ANDRA, France

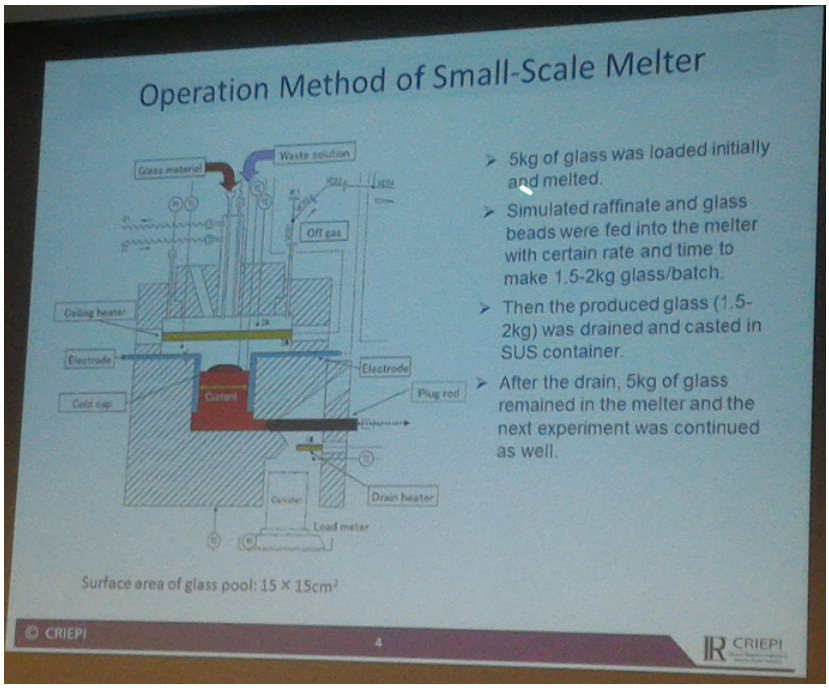
Monica Hammarström, Chair of the IGD-TP, SKB, Sweden

Mikhail Siemann, Head of Division Radiological Protection and Radioactive Waste Management, OECD/ NEA

Myung-Jae Song, President, KRS, Republic of Korea

Piet Zuidema, Director Science and Technology, NAGRA, Switzerland

Technical Session 則參加了玻璃固化相關的研討會，其中日本 CRIEPI 的 Uruga Kazuyoshi 發表了題目為「Study for Generation of Yellow Phase Using Small-Scale Joule Heating Melter」的報告，他們利用小型熔爐進行玻璃固化實驗，要觀察 Yellow Phase(YP)產生的條件和機制。根據實驗結果，YP 在冷卻的蓋子上形成可能有兩種原因，一是玻璃液滴和殘留液無法均勻混和，二是 $NaNO_3$ 和 $CaMoO_4$ 之間的反應，造成 $NaMoO_4$ 液體的析出，但因為此實驗只進行過一次，後續還需要驗證其再現性如何。



實驗用的小型熔爐及實驗條件

下午則是最後兩場的 Panel Session，題目分別是「Challenges for Education and Public Confidence」及「Fukushima, 4 Years Later」，由於研討內容與本所業務關聯不大，在此不再詳加敘述。

三、心　得

本次參加 GLOBAL 2015 國際研討會議之心得敘述如下：

(一) GLOBAL 系列的會議探討議題的廣度及深度，一直是核燃料循環相關會議中數一數二，這點由本次會議的主題「以核燃料循環尋求低碳的未來(Nuclear Fuel Cycle for a Low-carbon Future)」可以看出，大會並以此主題安排了三場全體會議(Plenary Session)，以及六場座談會(Panel Session)，讓整個會議過程討論的議題相當多元，也可以讓與會者了解整個核燃料循環現階段的議題，並且透過各國專家之報告，進行技術上的交流。

(二)本次除了參加研討會中各國專家所提出的相關研究報告之外，也將本所執行 TRR 用過核燃料安定化之成果整理，透過論文的發表與各國核能相關領域的專家進行交流，不但將本所的研究成果向外界分享，也獲得許多計畫執行上的建議，對目前正在執行的其他相關研究有相當大的幫助。

(三) 針對防止核武擴散及核子保防議題，由於國際間目前對於小型模組化反應器之研究仍持續進行中，並有將其視為取代現行大型輕水式反應器之傾向，因此各核能先進國家已經開始著手研究未來小型模組化反應器應用時，防止核武擴散及核子保防如何應對；另外對於日本 311 福島事故後的核子保防，也是本屆會議的討論重點之一，其中有許多值得我國借鏡之處。

四、建　議　事　項

(一) Global 可以當作全球解釋，也可以當作總體解釋，代表 Global 系列研討會是邀請全球的核能專家學者提供燃料循環總體的現況評估、探討最新的發展或應用以及交流各國政策走向。本會議每兩年舉辦一次，內容包含世界各國專家及專業廠商在近兩年內的研究成果，範圍含括核燃料循環之前端及後端，建議本所固定每屆派員參加，且人數應增加以獲取多方面最新資訊，確保未來本所核能研究方向與世界接軌。

(二) 參加會議以來，發現各國發展之研究，大多都由多個不同團體共同合作開發，或官方或專業廠商；綜觀我國核能發展因政府政策導向，造成專業人力斷層及短缺之現象，尤其我國核能電廠目前已面臨延役或除役階段，相關技術仍應向國外取經，應積極規劃與國內學術研究單位合作，建立人才培訓計畫，並透過參與國際組織的實際研究工作，以獲取相關技術及經驗。

(三) 本次會議對於小型模組化反應器及先進式用過核子燃料循環討論的篇幅相當大，可見目前世界各國對於核能發展仍相當樂觀，惟我國礙於政策，對於核能發電之發展有相當疑慮，但如果考慮用過核子燃料管理，建議對於反應器及再處理技術之相關發展仍應持續追蹤。

五、附　錄

GLOBAL 2015技術口頭報告詳細議程

Monday, September 21, 2015 · 15:30-1710

1a-1 Nuclear Energy Outlook-I
Monday, September 21, 2015 · 15:30-1710 (Room 1)
Session Chairs: KEPPLER Jan Horst (*OECD NEA*), DEVEZEAUX DE LAVERGNE Jean-guy (*SFEN « Economic » Technical Expert Group*)
15:30-15:50 [5007]-**World Nuclear Association Nuclear Fuel Outlook to 2035**, EMSLEY Ian (*World Nuclear Association - GB*)
15:50-16:10 [5044]-**Nuclear Power Fleet Replacement: An Opportunity for the French Energy Mix?**, CANY Camille (*CEA - FR*)
16:10-16:30 [5129]-**The Future of Nuclear Power in China: Long-Term Scenarios**, PALTSEV Sergey (*MIT - US*)
16:30-16:50 [5115]-**Medium-term Nuclear Industry Prospects Associated with Synergistic LWR/SFR System and Related Closed Nuclear Fuel Cycle**, USANOV Vladimir (*Rosatom - RU*)

2a-1 Current Industrial Practices in Water-cooled Reactors
Monday, September 21, 2015 · 15:30-1710 (Room 3)
Session Chairs: REMPE Joy (*Rempe and Associates*)? LECARPENTIER David (*EDF*)
15:30-15:50 [5302]-**On the Issues of Uranium Reprocessed from High Burnup Fuels**, ARTISIUK Vladimir (*Rosatom - RU*)
15:50-16:10 [5425]-**Susquehanna Unit 1 EOC 16 Fuel Deposit Analysis/Characterization**, POP Mike (*AREVA - US*)
16:10-16:30 [5483]-**AREVA "Sustainable Cycle Solutions"**, DREVON Caroline (*AREVA - FR*)
16:30-16:50 [5417]-**Impact of Burnable Poison in Fuel Element PWR with Zircaloy and Silicon Carbide Claddings**, VELASQUEZ CABRERA Carlos Eduardo (*Universidade Federal de Minas Gerais - BZ*)
16:50-17:10 [5507]-**Recycling LWR RepU in PHWR : A Promising Solution**, SENENTZ Gerald (*AREVA - FR*)

2d-1 Sodium-Cooled Fast Reactors-I
Monday, September 21, 2015 · 15:30-1710 (Room 2)
Session Chairs: YONG Yang (*CIEA*), GROUILLER Jean-Paul (*CEA*)
15:30-15:50 [5247]-**Flop Casting of Nuclear Materials for Advanced Fuel Cycle Research**, SWIFT Andrew (*University of Nevada, Las Vegas - US*)
15:50-16:10 [5038]-**Gas Tungsten Arc Welding Technique Developed for SFR Fuel Rod Fabrication**, LEE Jung Won (*KAERI - KR*)

16:10-16:30 [5342]-**Analysis of Rare Earth Element Effect on Core Physics of KALIMER-600 TRU Burner**, KIM Sang Ji (*KAERI - KR*)
16:30-16:50 [5454]-**Analytical Developments for High Precision Isotopic Measurements on Transmutation Targets in the Phenix Fast Neutron Reactor**, VERCOUTER Thomas (*CEA - FR*)

2g-1 Nuclear Fuel Cycle Simulation Codes
Monday, September 21, 2015 · 15:30-1710 (Room 7)
Session Chairs: TAIWO Temitope (*ANL*), CHABERT Christine (*CEA*)
15:30-15:50 [5232]-**COSI6: A Tool for Nuclear Transition Scenarios Studies**, ESCHBACH Romain (*CEA - FR*)
15:50-16:10 [5229]-**Cross Checking of the New Capabilities of the Fuel Cycle Scenario Code TR_EVOL**, ALVAREZ-VELARDE Francisco (*CIEMAT - ES*)
16:10-16:30 [5061]-**The Application of CYCLUS to Fuel Cycle Transition Analysis**, FENG Bo (*ANL - US*)
16:30-16:50 [5493]-**Advanced Codes & Methods Supporting Improved Fuel Cycle Economy**, THAREAU Sebastien (*AREVA - FR*)
16:50-17:10 [5505]-**Dynamic Analysis of Nuclear Energy System Strategies: DANESS v7**, VAN DEN DURPEL Luc (*Nuclear-21.Net - BE*)

4e-1 Prototype and Industrial Plants: Industrial Feedback
Monday, September 21, 2015 · 15:30-1710 (Room 6)
Session Chairs: RAYMENT Fiona E. (*National Nuclear Laboratory*), DINH Binh (*CEA*)
15:30-15:50 [5393]-**EDF Utility Experience Feedback in Used Fuel Reprocessing**, PAUVERT Olivier (*EDF - FR*)
15:50-16:10 [5440]-**Overview on RRSF Reprocessing, from Spent Fuel Transportation to Vitrified Residues Storage**, DOMINGO Xavier (*AREVA - FR*)
16:10-16:30 [5439]-**Status on Silicide Fuel Reprocessing at AREVA La Hague Plant (2015)**, VALERY Jean-François (*AREVA - FR*)
16:30-16:50 [5492]-**The La Hague Used Fuel Reprocessing Performance in 2014**, GILLET Philippe (*AREVA - FR*)

4f.1-1 Partitioning and Transmutation: Fuels and Recycling Processes: FP Separation-I
Monday, September 21, 2015 · 15:30-1710 (Room 5)
Session Chairs: EKBERG Christian (*Chalmers University of Technology*), BOURG Stéphane (*CEA*)
15:30-15:50 [5062]-**A Study on Adsorption Properties of Ion-exchange Resins Bearing N,N,N-trimethylglycine to Rh(III), Ru(III) and Pd(II) for Developing Separation Techniques from High-level Liquid Waste**, SUZUKI Tomoya (*JAEA - JP*)
15:50-16:10 [5195]-**Extraction of Molybdenum from CERMET Target Dissolution Solutions**

Using CYANEX® 600, GEIST Andreas (*Karlsruhe Institute of Technology - DE*)
16:10-16:30 [5338]-**Proposal and Feasibility of Liquid-Liquid Extraction with Polyethylene Glycol for Partitioning of Molybdenum and Ruthenium**, ENOKIDA Youichi (*Nagoya University - JP*)
16:30-16:50 [5387]-**Development of Separation Process of PGMs and Mo from High-level Liquid Waste for the Stable Operation of Vitrification Process**, TAKESHITA Kenji (*Tokyo Institute of Technology - JP*) 7

5c.1 Strategic and Technical Development in D&D: D&D Programs & Regulatory Frameworks
Monday, September 21, 2015 · 15:30-1710 (Room 8)
Session Chairs: BOUCAU Joseph (*Westinghouse*), PIKETTY Laurence (*CEA*)
15:30-15:50 [5072]-**Current Status of Decommissioning Activities in JAEA (Second Midterm Plan from FY2010 to FY2014)**, TACHIBANA Mitsuo (*JAEA - JP*)
15:50-16:10 [5109]-**Development of Experimental Irradiation Capabilities to Address a Variety of Challenges in Decommissioning and Disposal**, LEAY Laura (*The University of Manchester - GB*)
16:10-16:30 [5258]-**The Challenge of Information Management during Decommissioning**, LIDAR Per (*Studsvik - SE*)
16:30-16:50 [5310]-**Costs and Funding of Decommissioning Nuclear Power Reactors**, ROTHWELL Geoffrey (*OECD/NEA - FR*)

5d-1 Experience in VLLW and LILW Disposal-I
Monday, September 21, 2015 · 15:30-1710 (Room 9)
Session Chair: DUTZER Michel (*ANDRA*)
15:30-15:50 [5353]-**Optimization of Waste Management in Decommissioning**, HEDIN Gunnar (*Westinghouse - SE*)
15:50-16:10 [5377]-**Advances in the Design and Licensing Process of the National Repository for LILW Waste in Bulgaria**, GONZALEZ Emliano (*Westinghouse - ES*)
16:10-16:30 [5379]-**Treatment of LLW Metals for Waste Minimization and Recycling**, LARSSON Arne (*Studsvik - SE*)
16:30-16:50 [5455]-**Why Do Nuclear Waste Characterizations Require Intercomparisons Tests and New Standards?**, FICHET Pascal (*CEA - FR*)
16:50-17:10 [5467]-**Challenges for the Long Term Management of Low Level and Very Low Level Wastes in France**, DUTZER Michel (*Andra - FR*)

Monday, September 21, 2015 · 17:20-19:00

1a-2 Nuclear Energy Outlook-II
Monday, September 21, 2015 · 17:20-19:00 (Room 1)

Session Chairs: KEPPLER Jan Horst (*OECD NEA*), DEVEZEAUX DE LAVERGNE Jean-guy (*SFEN « Economic » Technical Expert Group*)
17:20-17:40 [5301]-**Overview of the OECD Nuclear Energy Agengy Scientific Activities on the Nuclear Fuel Cycle**, CORNET Stéphanie (*OECD/NEA - FR*)
17:40-18:00 [5347]-**Deployable Nuclear Fleet Based on Available Quantities of Uranium and Reactor Types – The Case of Fast Reactors Started up with Enriched Uranium**, BASCHWITZ Anne (*CEA - FR*)
18:00-18:20 [5404]-**Nuclear Power in the WEC Partitions: Jazz and Symphony**, MONCOMBLE Jean Eudes (*Conseil Français de l'Energie - FR*)
18:20-18:40 [5409]-**Realising the Full Contribution of Nuclear Power to Combat Climate Change**, KEPPLER Jan Horst (*OECD/NEA - FR*)

2a-2 Advanced Fuel Cycle Options for Thermal Neutron Reactor Systems
Monday, September 21, 2015 · 17:20-19:00 (Room 3)
Session Chairs: MATHERS Dan (*National Nuclear Laboratory*), WESTLÉN Daniel (*Vattenfall*)
17:20-17:40 [5205]-**Assessment of the Economics of SiC Clad Fuel in the EPR**, GROVE Christopher (*NNL - GB*)
17:40-18:00 [5374]-**An Engineering Solution for Accident Tolerant LWR Fuel Assemblies**, WELLS Alan (*NEUCON TECHNOLOGY - US*)
18:00-18:20 [5048]-**PWR Fuel Pin Diameter Optimisation Studies and Economic Analyses for Uranium Nitride Fuel**, MATHERS Daniel (*NNL - GB*)
18:20-18:40 [5218]-**Core Design of Zero-Release LWR Using Coated Particle Fuel**, SUZUKI Takaya (*Tokyo City University - JP*)

2d-2 Sodium-Cooled Fast Reactors-II
Monday, September 21, 2015 · 17:20-19:00 (Room 2)
Session Chairs: YONG Yang (*CIEA*), TAKEDA Toshikazu (*University of Fukui*)
17:20-17:40 [5178]-**Core Design Study on Actinide Burning Fast Reactors**, OHKI Shigeo (*JAEA - JP*)
17:40-18:00 [5084]-**Modeling Lanthanide Transport in Metal Fuels with BISON**, UNAL Cetin (*LANL - US*)
18:00-18:20 [5162]-**Asymptotic Analysis for FCMI Problem of Sodium Cooled Fast Reactor Fuels**, KIM Hyung-Kyu (*KAERI - KR*)
18:20-18:40 [5127]-**Relevance of Passive Safety Testing at the Fast Flux Test Facility to Advanced Liquid Metal Reactors**, WOOTAN David (*PNNL - US*)
18:40-19:00 [5458]-**Visualization Study of Ex-Pin Phenomena for SFR with Metal Fuel under Severe Accidents**, HEO Hyo (*UNIST - KR*)
2g-2 Nuclear Reactor Physics and Fuel Cycle Analysis-I
Monday, September 21, 2015 · 17:20-19:00 (Room 7)
Session Chairs: MASSARA Simone (*OECD NEA*), VAN DEN DURPEL Luc (*Nuclear-21.Net*)

17:20-17:40 [5220]-**Analysis of Uncertainty Propagation in Scenario Studies: Surrogate Models Application to the French Historical PWR Fleet**, KRIVTCHIK Guillaume (*CEA - FR*) 8
17:40-18:00 [5307]-**A Method for Hedging Against Uncertainties in Nuclear Futures**, PHATHANAPIROM Urairisa (*University of Texas at Austin - US*)
18:00-18:20 [5187]-**Multiobjective Optimization for Nuclear Fleet Evolution Scenarios Using COSI**, FREYNET David (*CEA - FR*)
18:20-18:40 [5160]-**Integration of "Balance Model" into Software Package and Dynamic Modeling of Closed Nuclear Fuel Cycle Technologies Material Balance**, TRETYAKOVA Svetlana (*Bochvar Institute - RU*)

4a-1 LWR Used Fuel Processing: Monitoring
Monday, September 21, 2015 · 17:20-19:00 (Room 4)
Session Chair: ROUDIL Danièle (*CEA*)
17:20-17:40 [5146]-**In-Line Near Real Time Monitoring of Fluid Streams in Separation Processes for Used Nuclear Fuel**, NILSSON Mikael (*University of California, Irvine - US*)
17:40-18:00 [5320]-**A Preliminary Evaluation of Rotational Vol-oxidizer for Hot Cell Operation**, KIM Young Hwan (*KAERI - KR*)
18:00-18:20 [5364]-**Radiological and Chemical Analysis of Medium and High Activity Samples: The Example of LAMM Laboratory in the ATALANTE Facility**, RIVIER Cedric (*CEA - FR*)
18:20-18:40 [5501]-**Advances in Online Monitoring for Measurement within Nuclear Fuel Reprocessing Streams**, BRYAN Samuel (*PNNL - US*)

4e-2 Prototype and Industrial Plants: Future Projects
Monday, September 21, 2015 · 17:20-19:00 (Room 6)
Session Chairs: GUOAN Ye (*CIAE*), SENENTZ Gérald (*AREVA*)
17:20-17:40 [5078]-**Experimental-Demonstration Centre as a Key Element of Creation of an Integrated Centre for NPP Spent Fuel Reprocessing at MCC (Zheleznogorsk, Russia)**, FEDOROV Yuriy (*Khlopin Radium Institute - RU*)
17:40-18:00 [5386]-**A Mock-up Test of Effectiveness of Combustibility for Organic Solvents and Electric Cables, and of the Fire Extinction at Early Stage in the Reprocessing Plant**, TAIRA Masaharu (*JNFL - JP*)
18:00-18:20 [5411]-**From R&D to Industrialization: AREVA's Experience Illustrated through TCP Project**, GOLLES Nicolas (*AREVA - FR*)
18:20-18:40 [5438]-**Update on the Polyvalent Fuel Treatment Facility (TCP): Shearing and Dissolution of Used Fuel at La Hague Facility**, GILLET Philippe (*AREVA - FR*)
18:40-19:00 [5448]-**AFC, Facilities for the Future**, FAVET Dominique (*AREVA - FR*)

4f.1-2 Partitioning and Transmutation: Fuels and Recycling Processes: FP Separation-II
Monday, September 21, 2015 · 17:20-19:00 (Room 5)
Session Chairs: TAKESHITA Kenji (*Tokyo Institute of Technology*), BARRÉ Yves (CEA)

17:20-17:40 [5134]-**Smart Hydrogel Microspheres Using Calixcrown Molecules as Cross-linking Units for Selective Uptake and Thermo-triggered Release of Cesium**, YE Gang (*Tsinghua University - CN*)
17:40-18:00 [5144]-**1,3-Alternate Calix[4]arene-crown-6 Functionalized Core-Shell-Shell Magnetic Composite Microspheres for the Removal of Cesium from Strong HNO3 Media**, YI Rong (*Tsinghua University - CN*)
18:00-18:20 [5170]-**Investigation on Selective Separation of Sr(II) from High Level Liquid Waste Using a Macroporous Silica-based Absorbent**, KIM Seong-Yun (*Tohoku University - KR*)
18:20-18:40 [5282]-**Separation of Cs-137 and Sr-90 from Acidic Radioactive Wastes Using Liquid Membrane Based Eeparation Methods**, MOHAPATRA Prasanta (*Bhabha Atomic Research Centre - IN*)

5c.2-1 Strategic and Technical Development in D&D: Techniques and Processes – Characterization-I
Monday, September 21, 2015 · 17:20-19:00 (Room 8)
Session Chair: IVANOV Oleg (*Kurchatov Institute*)
17:20-17:40 [5091]-**Mobile Platform for Radiological Investigations of Soils under PETRUS Hot Cell in Fontenay-aux-Roses (Building 18)**, GOUDEAU Vincent (*CEA - FR*)
17:40-18:00 [5102]-**Radiological Mapping of Nuclear Facilities under Dismantlement Drawn up by Digital Autoradiography Technique**, HAUDEBOURG Raphael (*CEA - FR*)
18:00-18:20 [5120]-**Development of Different Analytical Techniques to Investigate Radionuclides Difficult to Measure and to Improve Detection Limits**, FICHET Pascal (*CEA - FR*)
18:20-18:40 [5151]-**Underwater Spectrometric Systems for Characterization of Radioactive Contamination**, IVANOV Oleg (*NRC Kurchatov Institute - RU*)
18:40-19:00 [5496]-**Chooz-A Steam Generators Characterization**, AITAMMAR Laurie (*EDF - FR*)

5d-2 Experience in VLLW and LILW Disposal-II
Monday, September 21, 2015 · 17:20-19:00 (Room 9)
Session Chair: WITWER Keith Sheldon (*Kurion*)
17:20-17:40 [5266]-**A Permanent Disposal Solution for Temporary or Failed Radioactive Waste Treatment Methods**, WITWER Keith (*Kurion - US*)
17:40-18:00 [5450]-**Corrosion Monitoring in Mixture Cement Paste – Bentonite**, BATAILLON Christian (*CEA - FR*)
18:00-18:20 [5476]-**Study the Adsorption Parameters of Buffer/Backfill Materials for Radioactive Waste Disposal Sites**, TU Yu Lin (*National Cheng Kung University - TW*) 9
18:20-18:40 [5479]-**Sorption and Diffusion Studies for Cs in Crushed Argillite and Granite via Through-Diffusion Experiments**, LEE Chuan-Pin (*National Cheng Kung University - TW*)

Tuesday, September 22, 2015 · 11:00-13:00
1c New Applications of Nuclear Energy
Tuesday, September 22, 2015 · 11:00-13:00 (Room 1)
Session Chairs: GOLAY Michael (*MIT*), SAFA Henri (*I2EN*)
11:00-11:20 [5023]-**DEMOCRITOS: Preparing Demonstrators for High Power Nuclear Electric Space Propulsion**, TINSLEY Tim (*NNL - GB*)
11:20-11:40 [5276]-**The US Nuclear Science User Facilities**, KENNEDY Rory (*INL - US*)
11:40-12:00 [5392]-**Initial Economical Appraisal of Nuclear District Heating in France**, JASSERAND Frédéric (*CEA - FR*)
12:00-12:20 [5431]-**Energetic and Economic Cost of Nuclear Heat - Impact on the Cost of Desalination**, DARDOUR Saied (*CEA - FR*)
12:20-12:40 [5474]-**Developing Timely, Desirable Future Low- Carbon Energy Economies**, GOLAY Michael (*MIT - US*)

2b-1 Transient Scenario Analysis towards Sustainable Nuclear Energy Systems-I
Tuesday, September 22, 2015 · 11:00-13:00 (Room 3)
Session Chairs: WIGELAND Roald (*INL*), GARZENNE Claude (*EDF*)
11:00-11:20 [5012]-**Moving from Closed to Open Fuel Cycle within the UK while Keeping Future Fuel Cycle Options Open**, RAYMENT Fiona Elizabeth (*NNL - GB*)
11:20-11:40 [5351]-**Considerations on Industrial Feasibility for Scenarios with Progressive Deployment of Pu Multirecycling in SFR in the French Nuclear Power Fleet**, CHABERT Christine (*CEA - FR*)
11:40-12:00 [5503]-**Globally Sustainable Nuclear Energy System with Regional Competitiveness**, VAN DEN DURPEL Luc (*Nuclear-21.Net - BE*)
12:00-12:20 [5114]-**Transition Analysis of Promising U.S. Future Fuel Cycles Using ORION**, SUNNY Eva (*ORNL - US*)
12:20-12:40 [5060]-**Analysis of Transition to Fuel Cycle Systems with Continuous Recycling in Fast and Thermal Reactors**, FENG Bo (*ANL - US*)

3f Front-end Markets - Updates, Prospects, Uranium Exploration and Mining
Tuesday, September 22, 2015 · 11:00-13:00 (Room 7)
Session Chair: DURANTE Pierre (*AREVA*)
11:00-11:20 [5077]-**Greenland, Denmark and the Pathway to Supplier Status**, VESTERGAARD Cindy (*Danish Institute for International Studies - DK*)
11:20-11:40 [5358]-**EDF Nuclear Fuel Division - Supplier to the French and the English Nuclear Fleet**, COSTES Philippe (*EDF - FR*)
11:40-12:00 [5443]-**AREVA TN Experience with U3O8 Shipments to China**, TEXIER Guillaume (*AREVA - FR*)
12:00-12:20 [5506]-**Uranium Exploration in Mongolia: a Major Discovery in the Gobi Desert**, LE GOUX Florent (*AREVA - FR*)

12:20-12:40 [5210]-**Fractal Dynamics of Granites Hydrothermal Uranium Metallogenesis from South China**, LI Chunguang (*University of South China - CN*)
12:40-13:00 [5215]-**Geotectonic Characteristics of Meso-Cenozoic Sandstone Uranium Deposits in China**, WANYU Tan (*University of South China - CN*)

4a-2 LWR Used Fuel Processing: Separation Processes-I
Tuesday, September 22, 2015 · 11:00-13:00 (Room 4)
Session Chairs: LUMETTA Gregg J. (*PNNL*), BARON Pascal (*CEA*)
11:00-11:20 [5145]-**Study on Performance of an Annular Centrifugal Contactor Using a Liquid-Fast-Separation Method**, DUAN Wuhua (*Tsinghua University - CN*)
11:20-11:40 [5150]-**Investigation into the Radiolysis of PUREX Solvent Systems**, HORNE Gregory (*The University of Manchester - GB*)
11:40-12:00 [5464]-**Recovery and Purification of Irradiated Uranium Using Selective Leaching and Ion Exchange in a Carbonate Medium**, STASSEN Elizabeth (*Necsa - ZA*)
12:00-12:20 [5026]-**Extraction Behavior of Uranium(VI) by TBP Extractant in Room Temperature Ionic Liquid**, KIM Ik-Soo (*KAERI - KR*)

4f.1-3 Partitioning and Transmutation: Fuels and Recycling Processes: Separation-I
Tuesday, September 22, 2015 · 11:00-13:00 (Room 5)
Session Chairs: PAVIET Patricia (*DOE*), BERTRAND Murielle (*CEA*)
11:00-11:20 [5034]-**Adsorbents Bearing Acidic/neutral Organophosphorus Ligands for the Adsorption of Some Actinides**, CHEN Jing (*Tsinghua University - CN*)
11:20-11:40 [5173]-**Discussion on Applicability of Macroporous Silica-based Adsorbents to Multistep Partitioning Process of High Level Liquid Waste**, ITO Tatsuya (*Tohoku University - JP*)
11:40-12:00 [5219]-**Separation of Americium and Curium by using Anion Exchange Resin supported in High Porous Silica Beads in Alcoholic Nitric Acid System**, SUZUKI Tatsuya (*Nagaoka University of Technology - JP*) 10
12:00-12:20 [5283]-**Studies on Actinide Ion Uptake and Transport Using Polymer Inclusion Membranes Containing Multiple Diglycolamide-functionalized Extractants**, MOHAPATRA Prasanta (*Bhabha Atomic Research Centre - IN*)

4f.2-1 Partitioning and Transmutation: Fuels and Recycling Processes: Transmutation - Metallic Fuels
Tuesday, September 22, 2015 · 11:00-13:00 (Room 6)
Session Chairs: D'AGATA Elio (*European Commission*), CHAUVIN Nathalie (*CEA*)
11:00-11:20 [5024]-**Advances on Metallic Fuel Fabrication Modeling and Simulation**, UNAL Cetin (*LANL - US*)
11:20-11:40 [5216]-**Demonstration of Minor Actinide Recycling with Metal Fuel (IV): Analyses of Post-Irradiation Examination Data of Minor Actinide-Bearing Metal Fuel**,

OGATA Takanari (*CRIEPI - JP*)
11:40-12:00 [5239]-**Demonstration of Minor Actinide Recycling with Metal Fuel (II): Post-Irradiation Examination Data of Minor Actinide-Bearing Metal Fuel**, RONDINELLA Vincenzo (*JRC-ITU - DE*)
12:00-12:20 [5241]-**Development of Metallic Fuels for Actinide Transmutation**, HAYES Steven (*INL - US*)
12:20-12:40 [5242]-**Demonstration of Minor Actinide Recycling with Metal Fuel (I): Overview of the METAPHIX – PYRO Project**, GLATZ Jean-Paul (*JRC-ITU - DE*)
12:40-13:00 [5305]-**Metal Fuel Development for Sodium-cooled Fast Reactor**, LEE Chan Bock (*KAERI - KR*)

5b-1 Storage of Used Nuclear Fuel and Waste-I
Tuesday, September 22, 2015 · 11:00-13:00 (Room 8)
Session Chair: MOLINA Mariano (*ENRESA*)
11:00-11:20 [5100]-**Interim Storage of Thermal Reactor Fuels - Implications for the Back End of the Fuel Cycle in the UK**, HAMBLEY David (*NNL - GB*)
11:20-11:40 [5188]-**Absorber Contents and Wall Thickness for Efficient Used Nuclear Fuel Storage**, KIM Mijin (*UNIST - KR*)
11:40-12:00 [5328]-**Innovative Method Improving Used Fuel Storage and Transport Cask Performances**, LÉGER Vincent (*AREVA - FR*)
12:00-12:20 [5357]-**Aging Management Solutions to Ensures Safety of Extended Dry Fuel Storage**, SHELTON Catherine (*AREVA - US*)
12:20-12:40 [5405]-**Responsible Management for NPP Radioactive Waste from Production to Storage**, PAGÈS Claude (*EDF - FR*)

5c.2-2 Strategic and Technical Development in D&D: Techniques and Processes – Characterization-II
Tuesday, September 22, 2015 · 11:00-13:00 (Room 2)
Session Chair: PLYS Martin G. (*Fauske & Associates, LLC*)
11:00-11:20 [5154]-**Analytical Needs & Strategies Dedicated to Support Decommissioning Operators**, GOUTELARD Florence (*CEA - FR*)
11:20-11:40 [5190]-**Mobile Laboratories: An Innovative and Efficient Solution for Radiological Characterization of Sites under or after Decommissioning**, LETESSIER Patrice, GOUDEAU Vincent (*EICHROM Laboratories - FR*)
11:40-12:00 [5231]-**Validation of Activity Determination Codes and Nuclide Vectors by Using Results from Physical Waste Treatment and Laboratory Investigations**, RUNEVALL Odd (*Studsvik - SE*)
12:00-12:20 [5257]-**Strategies for Optimisation of a Nuclear Facility Characterisation in a Waste and Materials End-state Perspective**, LARSSON Arne (*Studsvik - SE*)
12:20-12:40 [5428]-**A Geostatistical Approach to Calculate Volumes of Contaminated Soil and**

Groundwater at Sellafield, DESNOYERS Yvon (*Geovariances - FR*)
12:40-13:00 [5485]-**Novel Real-time 3D Radiological Mapping Solution for ALARA Maximization, D&D Assessments and Radiological Management**, MORICHI Massimo (*AREVA - FR*)

6a-3 Safeguards
Tuesday, September 22, 2015 · 11:00-13:00 (Room 9)
Session Chair: DELAUNE Philippe (*CEA*)
11:00-11:20 [5293]-**Light Water Small Modular Reactors: Non-proliferation and Security Aspects**, DELPECH Marc (*CEA - FR*)
11:20-11:40 [5442]-**Concepts and Approaches for Advanced Safeguards and Security**, MILLER Michael (*LANL - US*)
11:40-12:00 [5459]-**Safeguards Considerations for the Design of a Future Fast Neutron Sodium Cooled Reactor and Associated Fuel Cycle**, CAZALET Jean (*CEA - FR*)
12:00-12:20 [5460]-**Status of the Gen-IV Proliferation Resistance and Physical Protection (PR&PP) Evaluation Methodology**, CAZALET Jean (*CEA - FR*)
12:20-12:40 [5089]-**Generic Quantitative Process Monitoring and Accountability Methodology for Fuel Cycle Facilities**, CIPITI Benjamin B (*SNL - US*)

Tuesday, September 22, 2015 · 15:45-18:35

1b Nuclear Energy and Energy Market Dynamics
Tuesday, September 22, 2015 · 15:45-18:35 (Room 1)
Session Chairs: EMSLEY Ian Stewart (*World Nuclear Association*), JANNET Emeric (*AREVA*)
15:45-16:05 [5006]-**The International Trade of Nuclear Power Plants: The Supply Side**, LÉVÊQUE François (*Mines-ParisTech - FR*) 11 16:05-16:25 [5042]-**Promoting Nuclear Energy: Market Pricing or Regulated Tariffs?**, PERCEBOIS Jacques (*University of Montpellier (CREDEN) - FR*)
16:25-16:45 [5200]-**Uranium Resources, Scenarios, Nuclear and Energy Dynamics**, BIDAUD Adrien (*Grenoble Institute of Technology - FR*)
16:45-17:05 [5256]-**Potential Benefits of Energy Storage Using Texas as Case Study**, MORNEAU Rachel (*University of Texas at Austin - US*)
--------10 minute break--------
17:15-17:35 [5403]-**The Market for Small Modular Reactors: An OECD/NEA Study**, SOZONIUK Vladislav (*OECD/NEA - FR*)
17:35-17:55 [5468]-**Investigation of Economics of Nuclear Fuel Cycle Options in the Republic of Korea Based on Once-through**, CHO Seokki (*KAIST - KR*)

2b-2 Transient Scenario Analysis towards Sustainable Nuclear Energy Systems-II
Tuesday, September 22, 2015 · 15:45-18:35 (Room 3)

Session Chairs: MOHAPATRA Prasanta Kumar (*BARC*), FAVET Dominique (*AREVA*)
15:45-16:05 [5182]-**Progress and Status of the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO)**, PONOMAREV Anton (*IAEA - RU*)
16:05-16:25 [5212]-**Quantitative and Economic Assessments of Nuclear Fuel Cycle Transition in China**, GAO Ruxing (*KAERI - KR*)
16:25-16:45 [5504]-**Transition Scenarios towards Sustained Pu-management in China**, EVANS Cécile (*AREVA - FR*)
16:45-17:05 [5238]-**Investigation of Benefits from U/TRU Recycle - Quantification and Comparison to U/Pu Recycle**, WIGELAND Roald (*INL - US*)
--------10 minute break--------
17:15-17:35 [5327]-**Sodium Fast Reactor: An Asset for a PWR UOX/MOX Fleet**, TIPHINE Marion (*CEA - FR*)
17:35-17:55 [5267]-**An Approach for Assessing Development and Deployment Risks in the DOE Fuel Cycle Options Evaluation and Screening Study**, WORRALL Andrew (*ORNL - US*)

4a-3 LWR Used Fuel Processing: Waste & Contaminants
Tuesday, September 22, 2015 · 15:45-18:35 (Room 4)
Session Chair: RABBE Catherine (*CEA*)
15:45-16:05 [5055]-**Silver-mordenite for Radiologic Gas Capture from Complex Streams: Dual Catalytic CH3-I Decomposition and Iodine Confinement**, NENOFF Tina (*SNL - US*)
16:05-16:25 [5073]-**Experimental Study on Boiling Accident of High Active Liquid Waste in Reprocessing**, UCHIYAMA Gunzo (*JAEA - JP*)
16:25-16:45 [5080]-**Advanced Methods of Ammonium Nitrate and Complexing Agents Decomposition for Radioactive Process Waste Treatment**, SHADRIN Andrey (*Khlopin Radium Institute - RU*)
16:45-17:05 [5164]-**Study on Radioactive Material Transport Behavior from Boiling/drying out High Level Liquid Waste**, ISHIO Takahiro (*JNFL - JP*)
--------10 minute break--------
17:15-17:35 [5165]-**Influence of Contaminants from Spent Fuel Pools at the Fukushima Daiichi Nuclear Power Station on the Reprocessing Process**, AIHARA Haruka (*JAEA - JP*)
17:35-17:55 [5197]-**Investigation on Treatment for Fuel Debris after a Severe Accident Using Molybdate Melt**, TAKAHASHI Yuya (*Toshiba - JP*)
17:55-18:15 [5373]-**Reaction Behavior of Uranium Oxides and Structural Materials at High Temperatures**, AKIYAMA Daisuke (*Tohoku University - JP*)
18:15-18:35 [5223]-**Performance of Silver-Exchanged Mordenite for Iodine Capture under Vessel Off-Gas Conditions**, JUBIN Robert (*ORNL - US*)

4b-1 Fuel Pyroprocessing: Processes
Tuesday, September 22, 2015 · 15:45-18:35 (Room 7)
Session Chairs: MIGUIRDITCHIAN Manuel (*CEA*), HWANG Il Soon (*Seoul National*

University)
15:45-16:05 [5172]-**Demonstration of Minor Actinide Recycling with Metal Fuel: (V): Recovery of Minor Actinides from Irradiated Metal Fuels by Pyrometallurgical Process**, IIZUKA Masatoshi (*CRIEPI - JP*)
16:05-16:25 [5273]-**Demonstration of Minor Actinide Recycling with Metal Fuel (VI): Electrorefining using Al cathode**, SOUCEK Pavel (*JRC-ITU - DE*)
16:25-16:45 [5274]-**Potential Applications of the Pyrochemical DOS Process for the Recovery of Actinides, Developed by the CEA, within Reprocessing of Transmutation Fuel Targets**, MENDES Eric (*CEA - FR*)
16:45-17:05 [5388]-**Assessment of Lab-scale High-throughput Electrorefiner with Respect to the Anode Surface Area and UCl3 Concentration in LiCl-KCl Eutectic Salt**, PARK Sungbin (*KAERI - KR*)
--------10 minute break--------
17:15-17:35 [5446]-**Recent Research Progress of Actinide and Lanthanide Chemistry in Molten Salt at Nuclear Chemistry Research Division, KAERI**, BAE Sang-Eun (*KAERI - KR*)
17:35-17:55 [5014]-**Recovery of Uranium and Thorium from Molten Salts by Electrochemical Techniques**, LONG Dewu (*Shanghai Institute of Applied Physics - CN*) 12

4f.1-4 Partitioning and Transmutation: Fuels and Recycling Processes: Separation-II
Tuesday, September 22, 2015 · 15:45-18:35 (Room 5)
Session Chairs: MODOLO Giuseppe (Forschungszentrum Jülich GmbH), MARIE Cecile (*CEA*)
15:45-16:05 [5083]-**Oxidation and Extraction of Americium(VI) from Lanthanides**, TODD Terry (*INL - US*)
16:05-16:25 [5123]-**New Mixed-Donor Extractants for Minor-Actinide Separation**, MOYER Bruce (*ORNL - US*)
16:25-16:45 [5139]-**Separation of Americium from Lanthanides in a Formate Buffer Solution Using Purified Cyanex 301**, XU Chao (*Tsinghua University - CN*)
16:45-17:05 [5281]-**Novel Extractants for the Separations Relevant in the Back End of Nuclear Fuel Cycle**, MOHAPATRA Prasanta (*Bhabha Atomic Research Centre - IN*)
17:05-17:25 [5400]-**TODGA Degradation Compounds: Properties and Effects on Extraction Systems**, NÚÑEZ Ana (*CIEMAT - ES*)

4f.2-2 Partitioning and Transmutation: Fuels and Recycling Processes: Transmutation - Non-metallic Fuels
Tuesday, September 22, 2015 · 15:45-18:35 (Room 6)
Session Chair: SOMERS Joseph (*European Commission*), TOURON Emmanuel (*CEA*)
15:45-16:05 [5031]-**Comprehension of the Densification Mechanisms of a Co-converted (U,Am)O2 Powder**, RAMOND Laure (*CEA - FR*)
16:05-16:25 [5058]-**Outcomes of the FP-7 Project PELGRIMM Investigating Pelletized and Sphere-packed Oxide Fuels for Minor-Actinides Transmutation in a Sodium Fast Reactor**,

DELAGE Fabienne (*CEA - FR*)
16:25-16:45 [5059]-**Post-Irradiation Examination Results for MgO-CERCER Am-bearing Fuels Irradiated in PHENIX within the Frame of the FUTURIX-FTA Experiment**, LOUBET Laurent (*CEA - FR*)
16:45-17:05 [5246]-**Innovative Oxide Precursor Synthesis Dedicated to Dustless Process for Americium Bearing Blanket Fabrication**, CAISSO Marie (*CEA - FR*)
--------10 minute break--------
17:15-17:35 [5268]-**Overview of the FUTURIX-FTA Irradiation Experiment in the Phénix Reactor**, CHICHESTER Heather (*INL - US*)
17:35-17:55 [5295]-**State-Of-The-Art on Innovative Fuels, an OECD/NEA Report**, CHAUVIN Nathalie (*CEA - FR*)
17:55-18:15 [5329]-**Application of Weak Acid Resin Process to the Production of Spherical and Calibrated Oxide Precursor Bearing Uranium and Americium: Overview of 10 Years Research at CEA**, PICART Sebastien (*CEA - FR*)
18:15-18:35 [5384]-**Development of Nitride Fuel Cycle Technology for Transmutation of Minor Actinides**, HAYASHI Hirokazu (*JAEA - JP*)

5b-2 Storage of Used Nuclear Fuel and Waste-II
Tuesday, September 22, 2015 · 15:45-18:35 (Room 8)
Session Chairs: KIM Chang-Lak (*KINGS*), FELIX Bernard (*ANDRA*)
15:45-16:05 [5303]-**Essential Components to Sustainable Spent Fuel Management: Dry Storage and Transportation**, GARCIA Justo (*AREVA - FR*)
16:05-16:25 [5314]-**Innovative Solutions for Waste Management: Optimization of Waste Packages for the Long Term Disposal**, LAMOUROUX Christine (*AREVA - FR*)
16:25-16:45 [5318]-**TN® MW: A New Cask Family Dedicated to Nuclear Wastes Transport and Storage**, DUMONT Bruno (*AREVA - FR*)
16:45-17:05 [5381]-**Residual Water during Drying of Damaged Spent Nuclear Fuel and Debris**, PLYS Martin (*Fauske & Associates, LLC - US*)
--------10 minute break--------
17:15-17:35 [5396]-**Site Radwaste Treatment Facility (SRTF) Sanmen – Lessons Learned**, LOHMANN Peter (*Westinghouse - DE*)
17:35-17:55 [5413]-**Safe Solutions for Dry Storage of Defective Fuel Rods**, VO VAN Vanessa (*AREVA - FR*)
17:55-18:15 [5452]-**Boric Acid Attack of the Reinforced Concrete Used in Spent Fuel Pool**, LAURE Chomat (*CEA - FR*)

5c.3-1 Strategic and Technical Development in D&D: Techniques and Processes – Decontamination-I
Tuesday, September 22, 2015 · 15:45-18:35 (Room 2)
Session Chairs: TACHIBANA Mitsuo (*JAEA*), BLET Vincent (*CEA*)

15:45-16:05 [5029]-**Development of Ion Specific Media and Modular Processing Systems to Treat Sr-Contaminated Water at Fukushima Daiichi Nuclear Power Plant**, SIMPSON Brett (*Kurion - US*)
16:05-16:25 [5113]-**Highly Selective Removal of Cesium in a Column Process Utilizing Newly Developed Silica Support Loaded with Copper-potassium Hexacyanoferrate**, BARRÉ Yves (*CEA - FR*)
16:25-16:45 [5176]-**Removal of 137Cs from Contaminated Soil Using Extraction Process in Supercritical CO2 Medium**, LEYBROS Antoine (*CEA - FR*)
16:45-17:05 [5208]-**Comparative Study of Sr Adsorbents for Radioactive Contaminated Water on Severe Accident**, TAKAHATAKE Youko (*JAEA - JP*)
--------10 minute break--------
17:15-17:35 [5408]-**Technologies Applying to D&D**, MOGGIA Fabrice (*AREVA - FR*)
17:35-17:55 [5490]-**Decontamination Techniques of Metal Ions in Soil by Supercritical Fluid with Synthetic Ligands**, PARK Jihye (*Kyung Hee University - KR*)
17:55-18:15 [5497]-**Transport of French PWR Steam Generators to Very Low Level Waste Disposal**, BRASCH-SERRES Aurélie (*EDF - FR*)
18:15-18:35 [5015]-**Distribution Behavior of Actinoids (U,Am,Np) into Various Zeolites**, MIMURA Hitoshi *(Tohoku University – JP)*

6a-1 Proliferation Resistance and Technical Aspects of Safeguards
Tuesday, September 22, 2015 · 15:45-18:35 (Room 9)
Session Chairs DELAUNE Philippe (*CEA*)
15:45-16:05 [5252]-**Proliferation Resistance, Physical Protection and Safety after Fukushima**, PILAT Joseph (*LANL - US*)
16:05-16:25 [5253]-**Revisiting Proliferation Resisitance**, PILAT Joseph (*LANL - US*)
16:25-16:45 [5270]-**Security and Nonproliferation Assessment of Breed-and-Burn Systems**, LYMAN Edwin (*Union of Concerned Scientists - US*)
16:45-17:05 [5298]-**Study on Cyber Attack Resistance to Devices Related to Nuclear Non-Proliferation Inspection**, TANAKA Masaru (*Nagoya Univeristy - JP*)
--------10 minute break--------
17:15-17:35 [5126]-**Elemental Detection of Cerium and Gadolinium in Aqueous Aerosols via Laser-Induced Breakdown Spectroscopy**, WILLIAMS Ammon (*Virginia Commonwealth University - US*)
17:35-17:55 [5395]-**Multi-Isotope Process (MIP) Monitor Deployment at H-Canyon**, MEIER David (*PNNL - US*)

Wednesday, September 23, 2015 · 10:15-12:15

1d Natural Resources
Wednesday, September 23, 2015 · 10:15-12:15 (Room 1)
Session Chairs: GRANCEA Luninita (*OECD NEA*), GABRIEL Sophie (*CEA*)
10:15-10:35 [5025]-**Extraction of Uranium from Sea Water: A Few Facts**, GABRIEL Sophie (*CEA - FR*)
10:35-10:55 [5056]-**Uranium and Thorium Production Projections in Turkey**, UZMEN Reşat (*AMR METALURJI A.S. - TR*)
10:55-11:15 [5184]-**Uranium in Greenland**, THRANE Kristine (*Geological Survey of Denmark and Greenland - DK*)
11:15-11:35 [5309]-**Statistical Model of Global Uranium Resources and Long-term Availability**, MONNET Antoine (*CEA - FR*)
11:35-11:55 [5312]-**Uranium Mining in 50 years**, POLAK Christian (*AREVA - FR*)

2c Pu-management Options
Wednesday, September 23, 2015 · 10:15-12:15 (Room 3)
Session Chair: STAINSBY Richard (*NNL*), EVANS Cécile (*AREVA*)
10:15-10:35 [5326]-**Simulations of Progressive Potential Scenarios of Pu Multirecycling in SFR and Associated Phase-out in the French Nuclear Power Fleet**, TIPHINE Marion (*CEA - FR*)
10:35-10:55 [5140]-**Plutonium Use in Fuel Cycle – Options for Russia**, SHADRIN Andrei (*Bochvar Institute - RU*)

10:55-11:15 [5453]-**TOP MOX: A Pu-Management Solution**, BREITENSTEIN Peter (*AREVA - FR*)
11:15-11:35 [5201]-**Physical and Economical Aspects of Pu Multiple Recycling on the Basis of REMIX Reprocessing Technology in Thermal Reactors**, TEPLOV Pavel (*NRC Kurchatov Institute - RU*)
11:35-11:55 [5480]-**CONVERT: A Full Life Cycle Solution for UK Pu Stockpile**, FAVET Dominique (*AREVA - FR*)
11:55-12:15 [5382]-**Comparative Study of Plutonium and Minor Actinide Transmutation Scenario**, NISHIHARA Kenji (*JAEA - JP*)

2d-3 Non-SFR Gen-IV Reactor Designs
Wednesday, September 23, 2015 · 10:15-12:15 (Room 2)
Session Chairs: KIM Sang Ji (*KAERI*), VAN DEN DURPEL Luc (*Nuclear-21.Net*)
10:15-10:35 [5488]-**Evolution of the Canadian SCWR Fuel-assembly Concept and Assessment of the 64 Element Assembly for Thermalhydraulic Performance**, NAVA DOMINGUEZ Armando (*Canadian Nuclear Laboratories - CA*)
10:35-10:55 [5254]-**Transient Processes in the Nuclear-Burning-Wave Reactor**, FOMIN Sergii (*NSC "Kharkov Institute of Physics and Technology" - UA*)
10:55-11:15 [5421]-**Non-proliferation Features of SVBR-100 Fuel Cycle Based on Reprocessed Uranium**, ARTISIUK Vladimir (*Rosatom - RU*)
11:15-11:35 [5435]-**Lead-Cooled Fast-Neutron Reactor (BREST): Approaches to the Closed NFC**, LEMEKHOV Vadim (*JSC "NIKIET" - RU*)
11:35-11:55 [5426]-**Conceptual Study of a Plutonium Burner High Temperature Gas-cooled Reactor with High Nuclear Proliferation Resistance**, GOTO Minoru (*JAEA - JP*)
11:55-12:15 [5243]-**The Revolver Reactor Feasibility Study**, MORNEAU Rachel (*University of Texas at Austin - US*)

3e Nuclear Fuel Design and Fabrication
Wednesday, September 23, 2015 · 10:15-12:15 (Room 7)
Session Chair: MOLLARD Pierre (*AREVA*)
10:15-10:35 [5272]-**Synthesis of Accident Tolerant Nitride Fuels**, JAQUES Brian (*Boise State University - US*)
10:35-10:55 [5441]-**Thermodynamics Analysis of the Current Defluoration Process of UF6 and its Application for Efficient Recycling of Fluorine in the French Nuclear Fuel Cycle**, BORGARD Jean-Marc (*CEA - FR*)
10:55-11:15 [5444]-**AREVA Next Generation Fuel – A Step forward in Fuel Performance and Fuel Cycle Economy**, MOLLARD Pierre (*AREVA - FR*)
11:15-11:35 [5463]-**AREVA Developments of Fuels with Enhanced Accident Tolerance**, BISCHOFF Jeremy (*AREVA - FR*)
11:35-11:55 [5478]-**In-situ Control of the Operating Conditions of Oxide Nuclear Fuels Using**

Oxygen Buffer Systems, PENNISI Vanessa (*CEA - FR*)
11:55-12:15 [5494]-**OECD Nuclear Energy Agency's Collaborative Activities on Nuclear Materials Research**, MASSARA Simone (*OECD/NEA - FR*)

4a-4 LWR Used Fuel Processing: Dissolution
Wednesday, September 23, 2015 · 10:15-12:15 (Room 4)
Session Chairs: JUBIN Robert T. (*ORNL*), GRANDJEAN Stéphane (*CEA*)
10:15-10:35 [5131]-**Radiolysis of Nitric Acid Solution for the Volatility Condition of Nitrous Acid**, WATANABE Daisuke (*Hitachi - JP*)
10:35-10:55 [5167]-**Effect of Nitrous Ion on Oxidation of Oxidizing-metallic Ion in Nitric Acid Solution**, IRISAWA Eriko (*JAEA - JP*)
10:55-11:15 [5209]-**Chemical Composition of Insoluble Residue Generated at the Rokkasho Reprocessing Plant**, YAMAGISHI Isao (*JAEA - JP*)
11:15-11:35 [5265]-**Corrosion of Zirconium in the Context of the Spent Nuclear Fuel Reprocessing Plant**, GWINNER Benoit (*CEA - FR*)
11:35-11:55 [5317]-**Advances in Heterogeneous Autocatalytic Reactions Applied to Uranium Dissolution**, MAGNALDO Alastair (*CEA - FR*)
11:55-12:15 [5473]-**Carbon 14 Distribution during Spent Fuel Dissolution Application to an UOx3**, CROZET Marielle (*CEA - FR*)

4b-2 Fuel Pyroprocessing: Analyses
Wednesday, September 23, 2015 · 10:15-12:15 (Room 6)
Session Chairs: SOUCEK Pavel (*EC-JRC -ITU*), VERCOUTER Thomas (*CEA*)
10:15-10:35 [5068]-**Validation of a Computer Model to Support Pyroprocessing Technology Development**, JUNG Young-Eun (*KAIST - KR*)
10:35-10:55 [5124]-**Measurement of Cerium in Molten Salt Aerosol via Laser-Induced Breakdown Spectroscopy**, WILLIAMS Ammon (*Virginia Commonwealth University - US*)
10:55-11:15 [5226]-**Quantitative Analysis of Molten Salt by Laser-induced Breakdown Spectroscopy**, YOO Bung-Uk (*Chungnam National University - KR*)
11:15-11:35 [5375]-**Multiphase Flow Simulation of Immiscible Liquids in a Molten LiCl-KCl/Cd System**, KIM Kwangrag (*KAERI - KR*)
11:35-11:55 [5445]-**Spectroelectrochemical Studies on U, Np, and Lanthanide Ions in Molten Salt**, PARK Tae-Hong (*KAERI - KR*)

4f.1-5 Partitioning and Transmutation: Fuels and Recycling Processes: Speciation
Wednesday, September 23, 2015 · 10:15-12:15 (Room 5)
Session Chairs: NASH Kenneth L. (*Washington State University*), LAMOUROUX Christine (*AREVA*)
10:15-10:35 [5168]-**Complexation and Extraction Studies of High Valency Actinides by Schiff Base Ligands**, NILSSON Mikael (*University of California, Irvine - US*)

10:35-10:55 [5179]-**Complex Structure of An and Ln Complexes with Modified Diglycolamides in Solution and Solid State Using Different Speciation Techniques**, WILDEN Andreas (*Forschungszentrum Jülich GmbH - DE*)
10:55-11:15 [5352]-**The Challenges of Chemical Metrology in the Fuel Cycle and the Role of CETAMA**, ROUDIL Daniele (*CEA - FR*)
11:15-11:35 [5359]-**Speciation and Thermodynamics Data to Better Describe the Efficiency of Actinides Separation by N,N-dialkylamides**, CHARBONNEL Marie-Christine (*CEA - FR*)
11:35-11:55 [5415]-**Trans-Lanthanide Comparison of Metal Organic Complexes in Actinide Lanthanide Partitioning System**, GULLEKSON Brian (*Oregon State University - US*)

5b-3 Storage of Used Nuclear Fuel and Waste-III
Wednesday, September 23, 2015 · 10:15-12:15 (Room 8)
Session Chair: VO VAN Vanessa (*AREVA*)
10:15-10:35 [5011]-**Update on the Waste Control Specialists (WCS) Plans for Consolidated Interim Storage of Used Nuclear Fuel**, VALENZANO Mike (*AREVA - US*)
10:35-10:55 [5097]-**Stabilization Technique and Non-destructive Neutron Inspection System of Irradiated Metal Uranium Fuel**, HUANG Shangfeng (*Institute of Nuclear Energy Research - TW*)
10:55-11:15 [5099]-**Dry Storage of Irradiated Stainless Steel Clad Fuel**, HAMBLEY David (*NNL - GB*)
11:15-11:35 [5322]-**The Study for Applying Spent Fuel Pool Island (SFPI) during Decommissioning in Korea**, BAIK Jun-Ki (*Kepco International Nuclear Graduate School - KR*)
11:35-11:55 [5325]-**Alpha Radiolysis Induced by Plutonium Dioxide: Radiolysis of Water Sorbed on Plutonium Dioxide and Effect of Alpha Radiolysis due to Plutonium Dioxide on Plastic Materials**, VENAULT Laurent (*CEA - FR*)

5c.3-2 Strategic and Technical Development in D&D: Techniques and Processes – Decontamination-II
Wednesday, September 23, 2015 · 10:15-11:15 (Room 9)
Session Chairs: BONNET Nicephore (*Kurion*), VENAULT Laurent (*CEA*)
10:15-10:35 [5206]-**Degradation of Cobalt(II)-EDTA Complex using TiO2-based Photocatalysis and H2O2/UV Process: Application to the Nuclear Field**, LEPEYTRE Célia (*CEA - FR*)
10:35-10:55 [5244]-**U(VI) Extraction Using Novel Betainium-type Ionic Liquids for Repeatable Decontamination**, MORI Takahiro (*Tokyo Institute of Technology - JP*)
10:55-11:15 [5461]-**Kurion Modular Detritiation System for Robust, Large-Scale and Economical Light Water Detritiation**, BONNET Nicephore (*Kurion - US*)

5c.4 Strategic and Technical Development in D&D: Techniques and Processes - Cutting, Remote Handling, Simulation
Wednesday, September 23, 2015 · 11:15-12:15 (Room 9)

Session Chairs: BOUCAU Joseph (*Westinghouse*), LAURENT Gerard (*EDF*)
11:15-11:35 [5010]-**Analysis of the Behavior of Radioactive Cesium in Incinerators during Garbage**, SUGITSUE Noritake (*JAEA - JP*)
11:35-11:55 [5133]-**Visualization Framework to Display the Space Dose Rate on the CAD-based Dismantling Process Simulation**, LEE Jonghwan (*KAERI - KR*)
11:55-12:15 [5335]-**Lessons Learned from Reactor Internals Segmentation Projects**, KREITMAN Paul (*Westinghouse - US*)

Wednesday, September 23, 2015 · 15:15-16:55

2d-4 Molten Salt Reactors
Wednesday, September 23, 2015 · 15:15-16:55 (Room 2)
Session Chairs: SHISHIDO Hiroki (*Tohoku Univertsity*), LECARPENTIER David (*EDF*)
15:15-15:35 [5336]-**U-Pu Fast Molten Salt Reactor and Its Fuel Cycle**, PONOMAREV Leonid (*A.A.Bochvar High Technology Institute of Inorganic Materials - RU*)
15:35-15:55 [5420]-**Study on the Thorium-based Breeder with Molten Fluoride Salt Blanket in the Nuclear Hot Spring**, XIA Bing (*Tsinghua University - CN*)
15:55-16:15 [5147]-**Evaporation Behavior of Volatile Fission Products in FLiNaK Salt**, TAIRA Masami (*University of Fukui - JP*)
16:15-16:35 [5233]-**Thermodynamic Characterization of the Molten Salt Reactor Fuel**, CAPELLI Elisa (*JRC-ITU - DE*)
16:35-16:55 [5513]-**The Risk-Rewards Structure of Using Spent Nuclear Fuel in Molten Salt Reactor**, DU Zhuoqi (*Technical University of Munich - CN*)

2g-3 Nuclear Reactor Physics and Fuel Cycle Analysis-II
Wednesday, September 23, 2015 · 15:15-16:55 (Room 1)
Session Chairs: ARIE Kazuo (*Toshiba Corporation*), FAVET Dominique (*AREVA*)
15:15-15:35 [5471]-**Analysis of Fission Yields Uncertainty Propagation in PWR Fuel Decay Heat**, LECARPENTIER David (*EDF - FR*)
15:35-15:55 [5261]-**TRIAD, an Innovative Visualization Tool for Criticality-Safety and Shielding Studies**, MARCHAUD Gilles (*Independent - FR*)
15:55-16:15 [5088]-**Mean Cross Section Prediction in PWR-MOX Using Neural Network**, LENIAU Baptiste (*CNRS - FR*)
16:15-16:35 [5020]-**The NRNU MEPhI Activities in the Development and Application of Advanced Tools for Innovative Nuclear Energy Systems Sustainability Assessments**, KOROVIN Yurij (*National Research Nuclear University MEPhI - RU*)

3g Advances in Processes and Technologies
Wednesday, September 23, 2015 · 15:15-16:55 (Room 7)
Session Chair: MOLLARD Pierre (*AREVA*)

15:15-15:35 [5004]-**Application and Structure Improvement of Reciprocating Plate Extraction Column for Natural Uranium Industry**, WANG Xue Jun (*Tsinghua University - CN*)
15:35-15:55 [5434]-**Lock-in Thermography for Characterization of Nuclear Materials**, SEMEROK Alexandre (*CEA - FR*)
15:55-16:15 [5499]-**Novel Filtration Solutions Specific to the Nuclear Industry**, CHADWICK Chris (*Porvair Filtration Group - GB*)
16:15-16:35 [5156]-**Sensitivity of Seawater Uranium Cost to System and Design Parameters**, FLICKER Margaret Elise (*University of Texas at Austin - US*)

4a-5 LWR Used Fuel Processing: Separation Processes-II
Wednesday, September 23, 2015 · 15:15-16:55 (Room 4)
Session Chair: DINH Binh (*CEA*)
15:15-15:35 [5074]-**A Study on the Application of N,N-dialkylamides as Extractants for U and Pu by Continuous Counter-current Extractors**, BAN Yasutoshi (*JAEA - JP*)
15:35-15:55 [5095]-**Application of Turbidity Measurement for Evaluation of Two-phase Separation in N,N-dialkylamides–nitric Acid Systems**, TSUTSUI Nao (*JAEA - JP*)
15:55-16:15 [5330]-**Kinetics Extraction of Uranium(VI) and Plutonium(IV) by N,N-dialkylamides**, LÉLIAS-VANDERPERRE Anne (*CEA - FR*)
16:15-16:35 [5401]-**Mechanism of Nitric Acid Reduction and Kinetic Modelling**, BALBAUD-CELERIER Fanny (*CEA - FR*)

4b-3 Fuel Pyroprocessing: Technology
Wednesday, September 23, 2015 · 15:15-16:55 (Room 3)
Session Chairs: IIZUKA Masatoshi (*CRIEPI*), RAQUET Olivier (*CEA)*
15:15-15:35 [5039]-**High-corrosion-resistant Materials in LiCl-KCl Melts for Pyrochemical Reprocessing**, WANG Ning (*China Academy of Engineering Physics - CN*)
15:35-15:55 [5125]-**Measurements of CeCl3 Properties on Liquid Cadmium Cathode (LCC) in LiCl-KCl Eutectic Salt as a Basic Safeguarding Application in Pyroprocessing Technology**, YOON Dalsung (*Virginia Commonwealth University - KR*)
15:55-16:15 [5153]-**An Experimental Equipment that Removes the Graphite Matrix in HTGR Spherical Fuel Elements Using Electrochemical Intercalation Method**, WANG Shuwei (*Tsinghua University - CN*)
16:15-16:35 [5183]-**Evaluation on Wastes and Products Generated from Pyroprocessing**, LEE Hyojik (*KAERI - KR*)
16:35-16:55 [5447]-**An Innovative Anode Concept for Improving Anodic Dissolution Rate of Nitride Fuel in Electrorefining Process**, SATO Takumi (*JAEA - JP*)

4d-1 Final Waste Conditioning: Effluent Conditioning
Wednesday, September 23, 2015 · 15:15-16:55 (Room 6)
Session Chairs: SUDREAU Francois (*CEA*)

15:15-15:35 [5161]-**Thermal Decomposition Analysis of Simulated High-level Liquid Waste in Cold-cap**, KAWAI Kota (*Tokyo Institute of Technology - JP*)
15:35-15:55 [5204]-**Waste Homogenisation Tank: Experimental Validation of a Numerical Study**, MACQUERON Corentin (*AREVA - FR*)
15:55-16:15 [5321]-**Innovative Plasma Routes for Liquid Radwaste Processing**, LEMONT Florent (*CEA - FR*)
16:15-16:35 [5225]-**Initial Evaluation of a Hot Isostatic Pressed Waste Form from Iodine-Loaded Silver-Exchanged Mordenite**, JUBIN Robert (*ORNL - US*)

4f.1-6 Partitioning and Transmutation: Fuels and Recycling Processes: Partitioning Processes-I
Wednesday, September 23, 2015 · 15:15-16:55 (Room 5)
Session Chairs: MOYER Bruce A. (ORNL), MIGUIRDITCHIAN Manuel (*CEA*)
15:15-15:35 [5035]-**Concept for the Single Cycle Process Based on Mutual Separation by Reverse Extraction of Actinides and Fission Products**, SASAKI Yuji (*JAEA - JP*)
15:35-15:55 [5069]-**The TRU-SANEX Process – One Reprocessing Option for a Closed Fuel Cycle**, SARSFIELD Mark (*NNL - GB*)
15:55-16:15 [5082]-**The United States Material Recovery and Waste Form Development Program**, PAVIET Patricia (*U.S. Department of Energy - US*)
16:15-16:35 [5101]-**Development of a Selective Americium Separation Process Using TPAEN as a Water-soluble Stripping Agent**, MARIE Cécile (*CEA - FR*)
16:35-16:55 [5340]-**SACSESS, A European Project on the Optimization of Safe Actinide Separation Processes**, BOURG Stéphane (*CEA - FR*)

5e-1 Progress in Geological Disposal from Siting to Industrial Implementation-I
Wednesday, September 23, 2015 · 15:15-16:55 (Room 8)
Session Chairs: VON BERLEPSCH Thilo (*DBE TECHNOLOGY GmbH*), LABALETTE Thibaud (*ANDRA*)
15:15-15:35 [5053]-**Cigéo: The French Geological Disposal Project**, OUZOUNIAN Gerald (*Andra - FR*)
15:35-15:55 [5138]-**Managing the Cigéo Design: A Challenge and an Opportunity**, MUSCETTI Roberto (*INGEROP - IT*)
15:55-16:15 [5279]-**DOPAS Full-Scale Demonstration of Plugs and Seals**, VUORIO Marja (*Posiva Oy - FI*)
16:15-16:35 [5289]-**Developing Resilient Concepts for Geological Disposal of Waste in Japan**, UMEKI Hiroyuki (*NUMO - JP*)
16:35-16:55 [5290]-**Assuring Operational Safety of a Japanese Geological Repository**, SUZUKI Satoru (*NUMO - JP*)

6b Public Confidence

Wednesday, September 23, 2015 · 15:15-16:55 (Room 9)
Session Chair: FAUDON Valérie (*SFEN*)
15:15-15:35 [5022]-**Updates on the Responsible Science Program & the "Culture of Nuclear Non-Proliferation" and Curriculum Expansion including the Soft Sciences**, KOROVIN Yurij (*National Research Nuclear University MEPhI - RU*)
15:35-15:55 [5045]-**Knowledge Management Insights from Yucca Mountain**, MCMAHON Kevin (*SNL - US*)
15:55-16:15 [5323]-**The Nuclear Power Problem: Junior High School Dialogue and Summit for Final Disposal of HLW**, SAWADA Tetsuo (*Tokyo Institute of Technology - JP*)
16:15-16:35 [5356]-**A Global Acceptance Model Developed by AREVA TN**, MONOT Bernard (*AREVA - FR*)

Wednesday, September 23, 2015 · 17:05-19:05

2e-2 Accelerator-Driven Systems
Wednesday, September 23, 2015 · 17:05-19:05 (Room 3)
Session Chairs: BAETEN Peter (*SCK.CEN*), VAN DEN DURPEL Luc (*Nuclear-21.Net*)
17:05-17:25 [5104]-**Transmutation of Minor Actinides and Long-lived Fission Products in a Generic Accelerator-driven System (ADS)**, FRIEß Friederike (*IANUS - DE*)
17:25-17:45 [5185]-**Designing of a Fusion Blanket System Using Molten Salt Flinabe for Transmutation of Minor Actinides**, SHISHIDO Hiroki (*Tohoku University - JP*)
17:45-18:05 [5271]-**Current Activities for Research and Development on Accelerator-Driven System in JAEA**, SUGAWARA Takanori (*JAEA - JP*)
18:05-18:25 [5380]-**Current Status and Future Plan of Research and Development on Partitioning and Transmutation Based on Double-strata Concept in JAEA**, TSUJIMOTO Kazufumi (*JAEA - JP*)
18:25-18:45 [5081]-**MgO Effect on an ADS Neutronic Parameters**, THIOLLIÈRE Nicolas (*CNRS - FR*)
18:45-19:05 [5418]-**Evaluation of Criticality and Depletion for Different Reactivity Insertions in Fusion-fission Hybrids Systems**, VELASQUEZ CABRERA Carlos Eduardo (*Universidade Federal de Minas Gerais - BZ*)

2f-1 Thorium Fuel Cycles-I
Wednesday, September 23, 2015 · 17:05-19:05 (Room 2)
Session Chairs: SHWAGERAUS Eugene (*Cambridge University*), CORNET Stéphanie (*OECD NEA*)
17:05-17:25 [5486]-**Perspectives on the Use of Thorium in the Nuclear Fuel Cycle**, MICHEL-SENDIS Franco (*OECD/NEA - FR*)
17:25-17:45 [5414]-**Analysis of Multi-Stage Thorium Fuel Cycles for Improved Resource Utilization and Plutonium Inventory Management**, KRAHN Steven (*Vanderbilt University - US*)

17:45-18:05 [5319]-**Checkerboard Heterogeneous Uranium-Thorium Seed-Blanket Cores for Pressure-Tube Heavy Water Reactors**, MCDONALD Michael (*Canadian Nuclear Laboratories - CA*)
18:05-18:25 [5407]-**Innovative Thorium Fuel Cycles in a Generation IV Very High Temperature Hybrid System**, RODRIGUEZ GARCIA Lorena Pilar (*Higher Institute of Technologies and Applied Sciences (InSTEC) - CU*)
18:25-18:45 [5192]-**Assessment of the Thorium Fuel Cycle in the Nuclear Belgian Fleet**, MERINO Ivan (*SCK•CEN - BE*)

2g-4 Nuclear Reactor Physics and Fuel Cycle Analysis-III
Wednesday, September 23, 2015 · 17:05-19:05 (Room 1)
Session Chairs: REMPE Joy (*Rempe and Associates*), OHKI Shigeo (*JAEA*)
17:05-17:25 [5278]-**Analysis of the Trapu and Doublon Irradiations in Phenix for the Experimental Validation of the Darwin Package for Fast Reactors**, LEBRAT Jean Francois (*CEA - FR*)
17:25-17:45 [5122]-**Calculations of Curium Isotope Impurities in Production of 144Ce with High Specific Activity for Artificial Sources of Antineutrino**, SALDIKOV Ivan (*National Research Nuclear University MEPhI - RU*)
17:45-18:05 [5135]-**Preparation of Data to Estimate the Efficiency of Waste Transmutation in Innovative NPPs**, KOROVIN Yurij (*Obninsk Institute for Nuclear Power Engineering NRNU MEPhI - RU*)
18:05-18:25 [5119]-**Contribution of Neutron Capturing Reactions in Precision Calculations of Total Energy Release in Nuclear Reactors**, BAHDANOVICH Rynat (*National Research Nuclear University MEPhI - RU*)

3c Uranium Ore Processing and Uranium Conversion
Wednesday, September 23, 2015 · 17:05-19:05 (Room 7)
Session Chair: POLAK Christian C. (*AREVA Mines*)
17:05-17:25 [5285]-**New Process for the Selective Extraction of Uranium from Phosphoric Ores: From Molecule Design to Laboratory Platform Tests**, BERNIER Gilles (*CEA - FR*)
17:25-17:45 [5470]-**Uranium Extraction in Ionic Liquids: Aggregation Effects on Mechanisms**, SUKBAATAR Tamir (*CEA - FR*)
17:45-18:05 [5511]-**Study of Uranium Peroxide Precipitation: Thermodynamic and Kinetic Approaches**, BERTRAND Murielle (*CEA - FR*)
18:05-18:25 [5475]-**A Review of the Denitration Routes in the Conversion Industry**, MOREL Bertrand (*AREVA - FR*)
18:25-18:45 [5222]-**A Comparative Study on Uranium Recovery from Central Anatolia Region Uranium Ores**, MURAT Alkan (*MTA Mineral Research & Exploration General Directorate - TR*)

4c-1 Fast Neutron Reactor Fuel Manufacturing and Processing: Future Reprocessing
Wednesday, September 23, 2015 · 17:05-19:05 (Room 4)
Session Chairs: TODD Terry (*INL*), MASSON Michel (*CEA*)
17:05-17:25 [5313]-**CEA's R&D on Advanced Fuel Treatment with Multi-recycling of Plutonium and Uranium**, GRANDJEAN Stéphane (*CEA - FR*)
17:25-17:45 [5106]-**Code Concept for Engineering Optimization and Diagnostics of Fast Reactors Spent Nuclear Fuel Reprocessing Mixed Technology**, LIVENTSOV Sergey (*National Research Tomsk Polytechnic University - RU*)
17:45-18:05 [5311]-**Studies on the Disintegration Mechanism of Spherical Fuel Elements for HTGR**, WEN Mingfen (*Tsinghua University - CN*)
18:05-18:25 [5484]-**Oxygen Self-diffusion in Polycrystalline U0.55Pu0.45O2 Mixed Oxide**, VAUCHY Romain (*CEA - FR*)
18:25-18:45 [5103]-**A New Approach to the Carbide Fuel Reprocessing**, FEDOROV Yuriy (Khlopin Radium Institute – RU)

4d-2 Final Waste Conditioning: Cement
Wednesday, September 23, 2015 · 17:05-19:05 (Room 6)
Session Chair: TRONCHE Eric (*CEA*)
17:05-17:25 [5063]-**Waste Embedding in Cement-based Matrices: Process Modelling for Reliability Improvement**, GIRARDIN Pascal (*CEA - FR*)
17:25-17:45 [5275]-**Up-Scaling Methodology to Provide Knowledge for a Process Book: Application to a Cementation Process.**, TRONCHE Eric (*CEA - FR*)
17:45-18:05 [5037]-**New Binders, New Trends, New Potentialities in Waste Cementation**, LAMBERTIN David (*CEA - FR*)

4f.1-7 Partitioning and Transmutation: Fuels and Recycling Processes: Partitioning Processes-II
Wednesday, September 23, 2015 · 17:05-19:05 (Room 5)
Session Chairs: SASAKI Yuji (*JAEA*), BOURG Stéphane (*CEA*)
17:05-17:25 [5117]-**ALSEP Process Development: Centrifugal Contactor Testing and Speciation Studies**, GELIS Artem (*ANL - US*)
17:25-17:45 [5128]-**Improving TALSPEAK Separations: New Knowledge Leading to Alternate Extractants, Holdback Reagents, and Buffers**, NASH Kenneth (*Washington State University - US*)
17:45-18:05 [5234]-**Separation of Americium from a Concentrated Raffinate by Liquid-Liquid Extraction : Hot Tests in ATALANTE Facility**, VANEL Vincent (*CEA - FR*)
18:05-18:25 [5299]-**Operating Experience of Reprocessing of High Burn up and Short Cooled Fast Reactor Spent Fuel at CORAL**, VADIVELRAJAN Vijayakumar (*Indira Gandhi Centre for Atomic Research - IN*)

5a Policies and Strategies in Radioactive Waste Management
Wednesday, September 23, 2015 · 17:05-19:05 (Room 9)
Session Chairs: GARAMSZEGHY Miklos (Mike) (*NWMO*), UMEKI Hiroyuki (*NUMO*)
17:05-17:25 [5028]-**Update on the United States Department of Energy's Used Fuel Disposition R&D Campaign**, MCMAHON Kevin (*SNL - US*)
17:25-17:45 [5052]-**The French Radioactive Waste Disposal System: Communication and Dialogue**, OUZOUNIAN Gerald (*Andra - FR*)
17:45-18:05 [5316]-**French Atomic & Alternative Energies Commission Decommissioning Policy and Strategies: What is at stake & Feedback Experience**, PIKETTY Laurence (*CEA - FR*)
18:05-18:25 [5343]-**Ambitioning a Zero Radioactive Waste Future for Nuclear Energy**, ROMARY Jean-Michel (*AREVA - FR*)
18:25-18:45 [5449]-**Swedish Decommissioning and Waste Management Plans and Financing**, WESTLÉN Daniel (*Vattenfall - SE*)

5e-2 Progress in Geological Disposal from Siting to Industrial Implementation-II
Wednesday, September 23, 2015 · 17:05-19:05 (Room 8)
Session Chair: DUMONT Jean-Noël (*ANDRA*)
17:05-17:25 [5294]-**The NUMO 2015 Safety Case**, FUJIYAMA Tetsuo (*NUMO - JP*)
17:25-17:45 [5291]-**Advances in Scenario Development for a Deep Geological Repository in Japan**, INAGAKI Manabu (*NUMO - JP*)
17:45-18:05 [5292]-**Challenges for the Next Generation of Radionuclide Transport Models**, INAGAKI Manabu (*NUMO - JP*)
18:05-18:25 [5466]-**Andra's Current Actions and Prospects for Long-Term Memory Preservation of Radioactive Waste Repositories**, DUMONT Jean-Noël (*Andra - FR*)

Thursday, September 24, 2015 · 10:15-13:05

1e Environmental and Health Impact
Thursday, September 24, 2015 · 10:15-13:05 (Room 1)
Session Chairs: POINSSOT Christophe (*CEA*), SEROND Ana-Paula (*AREVA*)
10:15-10:35 [5269]-**Resource Intensities of the Back End of the Nuclear Fuel Cycle**, PHATHANAPIROM Urairisa (*University of Texas at Austin - US*)
10:35-10:55 [5287]-**Health Effects of Low Dose Exposures to External Ionizing Radiation in the French Cohort of Nuclear Workers CEA-AREVA-EDF**, LEURAUD Klervi (*IRSN - FR*)
10:55-11:15 [5288]-**Environmental Management throughout the Mining Cycle: A Proactive and Integrated Approach**, LACROIX Emilie (*AREVA - FR*)
11:15-11:35 [5331]-**The Cost of Nuclear Accidents: What Results for What Issues?**, DEVEZEAUX DE LAVERGNE Jean-Guy (*CEA - FR*)
--------10 minute break--------

11:45-12:05 [5333]-**Recycling the Actinides, A Beneficial Contribution to the Overall Environmental Footprint of Nuclear Energy Systems**, POINSSOT Christophe (*CEA - FR*)
12:05-12:25 [5334]-**NELCAS, An Efficient and Relevant Tool to Assess Key Environmental Indicators for Nuclear Energy**, POINSSOT Christophe (*CEA - FR*)
12:25-12:45 [5398]-**Evolution of Uranium Mining Practices: An Overview**, GRANCEA Luminita (*OECD/NEA - FR*)

2e-1 Partitioning and Transmutation
Thursday, September 24, 2015 · 10:15-13:05 (Room 3)
Session Chairs: TAIWO Temitope (*ANL*), SATURNIN Anne (*CEA*)
10:15-10:35 [5092]-**Development of a Fast Reactor for Minor Actinides Transmutation (1) - Overview and Method Development**, TAKEDA Toshikazu (*University of Fukui - JP*)
10:35-10:55 [5105]-**Development of a Fast Reactor for Minor Actinides Transmutation (2) - Study on the MA Transmutation Core Concepts**, FUJIMURA Koji (*Hitachi - JP*)
10:55-11:15 [5094]-**Development of a Fast Reactor for Minor Actinides (MAs) Transmutation (3) - Evaluation of Measurement Data with MA Transmutation**, SUGINO Kazuteru (*JAEA - JP*)
11:15-11:35 [5096]-**Innovative TRU Burning Fast Reactor Cycle Using Uranium-free TRU Metal Fuel (1) Overview and Progress of Core Design Study**, ARIE Kazuo (*Toshiba - JP*)
--------10 minute break--------
11:45-12:05 [5093]-**Innovative TRU Burning Fast Reactor Cycle Using Uranium-free TRU Metal Fuel (2) Fundamental Properties of Uranium-free TRU-Zr Metal Fuel**, ARITA Yuji (*University of Fukui - JP*)
12:05-12:25 [5383]-**Enhancing MA Transmutation by Irradiation of (MA, Zr)Hx in FBR Blanket Region**, KONASHI Kenji (*Tohoku University - JP*)
12:25-12:45 [5203]-**Sensitivity Analysis of Minor Actinides Transmutation to Physical and Technological Parameters**, TIMOTHÉE Kooyman (*CEA - FR*)
12:45-13:05 [5136]-**Analyses of the Performance of the ASTRID-like TRU Burners in Regional Scenario Studies**, VEZZONI Barbara (*Karlsruhe Institute of Technology - DE*)

2f-2 Thorium Fuel Cycles-II
Thursday, September 24, 2015 · 10:15-13:05 (Room 2)
Session Chairs: MICHEL-SENDIS Franco (*OECD NEA*), KRAHN Steven (*Vanderbilt University*)
10:15-10:35 [5142]-**Fuel Cycle Analysis of Advanced Burner Reactors with Breed-and-Burn Thorium Blanket**, GORMAN Phillip (*University of California, Berkeley - US*)
10:35-10:55 [5163]-**The Fuel Self-sufficient RBWR-SS Core Designs**, GORMAN Phillip (*University of California, Berkeley - US*)
10:55-11:15 [5171]-**An Investigation of the Feasibility of Net-Breeding Thorium Cycles in Pressure-Tube Heavy Water Reactors**, GOLESORKHI Sourena (*University of Ontario Institute of Technology - CA*)

11:15-11:35 [5141]-**Comparison of Reduced-moderation Boiling Water Reactor and Sodium-cooled Fast Reactor Technologies**, GORMAN Phillip (*University of California, Berkeley - US*)
--------10 minute break--------
11:45-12:05 [5214]-**Three Component U-Pu-Th Fuel for Plutonium Irradiation in Heavy Water Reactors**, PEEL Ross (*The University of Sheffield - GB*)
12:05-12:25 [5371]-**A Comparative Neutronic Analysis of the Sodium Cooled Fast TRU Burning Cores Using Uranium and Thorium Metallic Fuels**, YOU Wuseung (*Kyung Hee University - KR*)

4b-4 Fuel Pyroprocessing: Separation
Thursday, September 24, 2015 · 10:15-13:05 (Room 7)
Session Chairs: GLATZ Jean-Paul (*JRC-ITU*), MENDEZ Eric (*CEA*)
10:15-10:35 [5047]-**Electrochemical Extraction of Lutetium and Magnesium by Co-reduction in Molten LiCl-KCl**, JIANG Tao (*China Academy of Engineering Physics - CN*)
10:35-10:55 [5066]-**Electrochemistry and Electrocrystallization of Yttrium on Mo Substrate in LiCl–KCl Eutectic Salt**, PESIC Batric (*University of Idaho - US*)
10:55-11:15 [5196]-**Thermo-Mechanical Properties and Loss of TRU Elements on the Crucible Used in Electrowinning Process in Pyroprocessing**, KIM Daeyoung (*Chungnam National University - KR*)
11:15-11:35 [5207]-**Behavior of Impurities during Purification of LiCl by Zone Refining**, SHIM Moonsoo (*Chungnam National University - KR*)
--------10 minute break--------
11:45-12:05 [5337]-**Electrochemical Properties and Extraction of Cerium(III) in 1-butyl-3-methylimidazolium Chloride and 1-butyl-3-methylimidazolium Tetrafluoroborate Ionic Liquid with Different Electrode**, ZHANG Meng (*Harbin Engineering University - CN*)
12:05-12:25 [5332]-**Electrochemical Extraction of Samarium at Various Cathodes from LiCl–KCl Molten Salt**, ZHANG Meng (*Harbin Engineering University - CN*)
12:25-12:45 [5432]-**Extraction Behavior of Nd(III) and Sm(III) to 1-alkyl-3-methylimidazolium nonafluorobutanesulfonate**, ASANUMA Noriko (*Tokai University - JP*)

4c-2 Fast Neutron Reactor Fuel Manufacturing and Processing: Future Fuels
Thursday, September 24, 2015 · 10:15-13:05 (Room 4)
Session Chairs: RONDINELLA Vincenzo (*EC-JRC-ITU*), ROYET Vincent (*CEA*)
10:15-10:35 [5221]-**MARINE: Irradiation of Sphere-Pac Fuel and Pellets of UO2-x Containing 13% Americium**, D'AGATA Elio (*JRC-IET - NL*)
10:35-10:55 [5263]-**Diffusion Studies of U-Zr Alloys with Fe Alloys at 650C and 700 C**, KOURY Daniel (*University of Nevada, Las Vegas - US*)
10:55-11:15 [5315]-**Preparation and Safety Testing of Fast Reactor Fuels and Targets**,

SOMERS Joseph (*JRC-ITU - DE*)
11:15-11:35 [5433]-**The ASGARD Project: Conversion, Manufacture and Dissolution of Advanced Fuels**, EKBERG Christian (*Chalmers University of Technology - SE*)
11:35-11:55 [5451]-**DFT-GGA Predictions of Thermodynamic Parameters in Solid Phase for Binary Compounds of Actinides and Fission Products**, CERINI Marta (*Politecnico di Milano - IT*)

4d-3 Final Waste Conditioning: Glass
Thursday, September 24, 2015 · 10:15-13:05 (Room 6)
Session Chairs: MIURA Yoshiyuki (*JNFL*), LEMONT Florent (*CEA*)
10:15-10:35 [5054]-**Low Temperature Glass Composite Material (GCM) Waste Form for Radiological Iodine Captured by Ag-Zeolites: Optimization and Durability**, NENOFF Tina (*SNL - US*)
10:35-10:55 [5166]-**Effect of the Glass Structure on the Leachability of Borosilicate Glass for HLW Vitrification**, SAWADA Kayo (*Nagoya Univeristy - JP*)
10:55-11:15 [5186]-**Formation of Crystalline Phases of Platinoids in Vitrification Process**, USAMI Tsuyoshi (*CRIEPI - JP*)
11:15-11:35 [5191]-**Study for Generation of Yellow Phase Using Small-Scale Joule Heating Melter**, URUGA Kazuyoshi (*CRIEPI - JP*)
--------10 minute break--------
11:45-12:05 [5193]-**Full-Scale Inactive Test of the Advanced Melter in RRP**, KOMAMINE Satoshi (*JNFL - JP*)
12:05-12:25 [5345]-**Cold Crucible Deployment in La Hague Facility: The Feedback from the First Four Years of Operation**, DIDIERLAURENT Régis (*AREVA - FR*)
12:25-12:45 [5348]-**New Operation Records for La Hague R7/T7 Vitrification Facilities : A Success of a Continuous Improvement Program**, GARCIA Aurelien (*AREVA - FR*)

4f.1-8 Partitioning and Transmutation: Fuels and Recycling Processes: Kinetics-modeling
Thursday, September 24, 2015 · 10:15-13:05 (Room 5)
Session Chairs: GEIST Andreas (*Karlsruhe Institute of Technology*), CHARBONNEL Marie-Christine (*CEA*)
10:15-10:35 [5067]-**Kinetics Challenges Associated with Minor Actinide Separations Using 2-Ethylhexylphosphonic Acid Mono-2-ethylhexyl Ester**, LUMETTA Gregg (*PNNL - US*)
10:35-10:55 [5090]-**Actinide and Lanthanide Solvent Extraction Kinetic Rates via Microfluidics**, GELIS Artem (*ANL - US*)
10:55-11:15 [5116]-**Solvent Extraction Modeling in Nuclear Fuel Cycle Reprocessing: Speciation of Fission Products with Monoamides**, MOEYAERT Pauline (*CEA - FR*)
11:15-11:35 [5199]-**Dissolution Behavior of MgO- and Mo-Based Inert Matrix Fuel for the Transmutation of Plutonium and Minor Actinides**, MODOLO Giuseppe (*Forschungszentrum Jülich GmbH - DE*)

--------10 minute break--------
11:45-12:05 [5360]-**Insights into Lanthanide-HEH[EHP] Exchange Dynamics in Advanced TALSPEAK Systems**, KRAHN Elizabeth (*Washington State University - US*)
12:05-12:25 [5368]-**PAREX a Numeric Code for Plant Operation Aid**, DINH Binh (*CEA - FR*)
12:25-12:45 [5423]-**Molecular Dynamics Simulations and Experimental Studies of Tri-n-butyl Phosphate for Liquid-Liquid Extraction**, NGUYEN Hung (*University of California, Irvine - US*)

5c.5 Strategic and Technical Development in D&D: Site and Building Rehabilitation
Thursday, September 24, 2015 · 10:15-11:35 (Room 8)
Session Chairs: LARSSON Arne (*STUDSVIK*), PELLENZ Gilles (*EDF*)
10:15-10:35 [5079]-**Possibilities of Soil Remediation and Experiences at Application Using a Belt Conveyor System**, LANGER Felix (*NUKEM Technologies Engineering Services - DE*)
10:35-10:55 [5149]-**Procedure of Regulatory Clearance for Metal Radwastes at KAERI**, SHIN Ki-Baek (*KAERI - KR*)
10:55-11:15 [5189]-**Waste Retrieval Technologies - New Approaches Demonstrated at Selected Projects**, SOKCIC-KOSTIC Marina (*NUKEM Technologies Engineering Services - DE*)
11:15-11:35 [5344]-**Nuclear Energy Agency Task Group: Sustainable Strategies for Site Remediation at Nuclear Sites**, DECUNG Fabien (*EDF - FR*)

5c.6 Strategic and Technical Development in D&D: Material Management Recycling and Reuse
Thursday, September 24, 2015 · 11:45-13:05 (Room 8)
Session Chairs: LARSSON Arne (*STUDSVIK*), DUTZER Michel (*ANDRA*)
11:45-12:05 [5041]-**Development of Fuel Debris Treatment Technology by the Fluorination Method**, FUKASAWA Tetsuo (*Hitachi - JP*)
12:05-12:25 [5260]-**SO.G.I.N Caorso NPP Experience in Management of Materials Deriving from Dismantling of Turbine Systems and of the Off Gas Building**, ROMANI Sabrina (*SO.G.I.N - IT*)
12:25-12:45 [5296]-**Demonstration of a 100 g-scale System for Zirconium Recovery from Used Nuclear Fuel Cladding Hull Waste**, JEON Min Ku (*KAERI - KR*)
12:45-13:05 [5370]-**Fluorination Behavior of Uranium and Iron Oides by Fluorine**, SATO Nobuaki (*Tohoku University - JP*)

6c Human Capacity Building
Thursday, September 24, 2015 · 10:15-13:05 (Room 9)
Session Chair: BEELEY Philip (*Khalifa University*)
10:15-10:35 [5324]-**HRD Issues in Support the Fuel Cycle Development in Embarking States**, ARTISIUK Vladimir (*Rosatom - RU*)
10:35-10:55 [5495]-**Training the 21st Century Nuclear Workforce at South Florida's Public Research University**, KAVALLIERATOS Konstantinos (*Florida International University - US*)

10:55-11:15 [5500]-**Building and Sustaining a Competent Nuclear Workforce – A Perspective from a Global Nuclear Recruiter**, THOMAS Callum (*Thomas Thor Associates - GB*)
11:15-11:35 [5086]-**Capacity Building Activities for Introducing Nuclear Power in a Mix Energy System**, BOUHELAL Oum Keltoum (*Higher National School of Mines of Rabat - MA*)
--------10 minute break--------
11:45-12:05 [5070]-**An Investigation of Multi-culture Effects on an Insider Threat in Nuclear Power Development**, SUH Young A (*KAIST - KR*)

12:05-12:25 [5498]-**The French Offer in Human Capacity Building**, NAVON-GROSS Audrey (I2EN – FR)