Seventh Information Exchange Meeting on Actinide and Fission Product Partitioning and Transmutation

14-16 October 2002
Jeju, Korea

Preliminary Final Meeting Programme

3 October 2002

Sunday	**13 October 2002**	
14:00 – 18:00	**Registration and Cocktail reception**	

Monday	**14 October 2002**	
8:00 – 8:30	**Registration**	
Welcome addresses		
8:30 – 8:40	Dr. In-Soon Chang (President, KAERI, Korea)	
8:40 – 8:50	Mr. Peter Wilmer (Head, Nuclear Development Division, OECD/NEA)	
8:50 – 9:00	Mr. Se-Jun Yoon (Director, Atomic Energy Policy and Safeguards Division, Ministry of Science and Technology, Korea)	
General session: ***National and international programmes on P&T***		**Chairs: Chang-Kue Park (KAERI, Korea) and Peter Wilmer (OECD/NEA)**
9:00 – 9:20	Activities on R&D of Partitioning and Transmutation in Japan	Hideki Takano (JAERI) and Tetsuo Ikegami (JNC)
9:20 – 9:40	The Advanced Fuel Cycle Initiative: -The Future Path for Advanced Spent Fuel Treatment and Transmutation Research in the United States	John Herczeg (DOE)
9:40 – 10:00	R&D Activities for Partitioning and Transmutation in Korea	Jae-Hyung Yoo (KAERI)
10:00 – 10:20	**Break**	
10:20 – 10:40	Status of French research program for Actinides and Fission Product Partitioning and Transmutation	Dominique Warin (CEA)
10:40 – 11:00	Overview of Current Russian Activities in P&T Area	Victor Ignatiev (Kurchatov Institute)
11:00 – 11:20	Chinese programmes (title to be defined)	Zhixiang Zhao (China Institute of Atomic Energy)
11:20 – 11:40	European programmes (title to be defined)	Ved Bhatnagar (EC)
11:40 – 12:00	IAEA Activities in the Area of Partitioning and Transmutation	Alex Stanculescu (IAEA)
12:00 – 12:20	OECD/NEA Partitioning and Transmutation (P&T) Activities	Claes Nordborg (OECD/NEA)
12:20 – 14:00	**Lunch**	

Monday	**14 October 2002**	
Technical Session I: Fuel Cycle Strategy and Future Reactors		**Chairs: Peter Wydler (Switzerland) and Joo-Ho Whang (Kyung-Hee University, Korea)**
14:00 – 14:20	Role of P&T on Permanent Disposal of HLW in Korea	Y.S. Hwang, et al., (KAERI, Korea)
14:20 – 14:40	Long Term Issues Associated With Spent Fuel Management Options	J. S. Lee, et al., (IAEA)
14:40 – 15:00	Current Status of Czech R&D Program in Partitioning and Transmutation	J. Uhlir, et al., (NRI, Czech Rep.)
15:00 – 15:20	Overview of The P&T Activities At Forschungszentrum Karlsruhe	J.U. Knebel, (FZK, Germany)
15:20 – 15:40	Integrated Systems Assessment of Transmutation Systems	R. A. Krakowski, et al., (LANL, USA)
15:40 – 16:00	Detailed phase-out TRU transmutation scenarios studies based on fast neutron ADS systems	E. González, et al., (CIEMAT, Spain)
16:00 – 16:20	**Break**	
Technical Session II: Progress in Partitioning and Waste Forms		**Chairs: James Laidler (ANL, USA) and Jean-Paul Glatz (ITU, EC)**
16:20 – 16:40	Burning of Minor Actinides in the Fast Reactor Fuel Cycle: DOVITA Program –The Results of the 10-year Activity -	A. V. Bychkov, et al, (SSC RIAR, Russia)
16:40 – 17:00	Status of Pyro-Process Fuel Cycle Technology Development at CRIEPI	T. Yokoo, et al, (CRIEPI, Japan)
17:00 – 17:20	Development of Separations Technologies in the U.S. Partitioning and Transmutation Program	J. J. Laidler, (ANL, USA)
17:20 – 17:40	Towards A DIAMIX Process Flow sheet Using High Active Concentrate(HAC)	R. Malmbeck, et al, (JRC, Germany)
17:40 – 18:00	Waste Minimization in An(III)/Ln(III) Separation Process from High Level Liquid Waste	H. Hirano, et al., (JNC, Japan)
18:00 – 18:20	Electrochemical Behaviors of Lanthanide Fluorides in the Electrolysis System with LiF-NaF-KF Salt	J.B. Shim, et al., (KAERI, Korea)

Tuesday	**15 October 2002**	
Technical Session III: Progress in Fuels and Targets		**Chairs: Yasuo Arai (JAERI, Japan) and Sylvie Pillon (CEA, France)**
8:00 – 8:20	Requirements and Long-Term Development Plan for Fast-Spectrum Transmutation Fuels in the U.S.	D. C. Crawford, et al., (ANL, USA)
8:20 – 8:40	Status of the CEA programme on transmutation fuels and targets	S. Pillon, et al., (CEA, France)
8:40 – 9:00	Irradiation Test of U-Free Nitride Fuel and Progress of Pyrochemistry in JAERI	Y. Arai, et al., (JAERI, Japan)
9:00 – 9:20	The preparation of the Americium EFTTRA-T5 transmutation experiment with inert matrix targets	R.P.C. Schram, et al., (NRG, Netherlands)
9:20 – 9:40	The achievement of high ^{99}Tc transmutation rate in research reactor SM	A.A. Kozar, et al., (IPCRAS, Russia)
9:40 – 10:00	Fabrication and Property Measurements of MA Nitride Fuels and LLFP Targets	M. Akabori, et al., (JAERI, Japan)
10:00 – 10:20	**Break**	
Poster Technical Session I: Fuel Cycle Strategy and Future Reactors		**Chairs: Peter Wydler (Switzerland) and Joo-Ho Whang (Kyung-Hee University, Korea)**
10:20 – 12:20	"ORIENT-Cycle" - An Evolutional Recycle Concept with Fast Reactor for Minimizing High Level Waste -	N. Takaki, et al., (JNC, Japan)
	Analysis of Mass Flow and Cost for Double-Strata Fuel Cycle	K. Nishihara, et al., (JAERI, Japan)
	Investigation of TRU Recycling With Various Neutron Spectrum	Y.N. Kim, et al., (Hanyang Univ., Korea)
	Saturation Condition and Evolution of the Nuclides for Sub-critical System Driven by Accelerator	S. Fan, et al., (CIAE, China)
	Transmutation of Long-Lived Fission Products in the ATW System	Y. Kim, et al., (ANL, USA)
	Partitioning and Transmutation of Spent Nuclear Fuel by PEACER	B.G. Park et al., (SNU, Korea)
	Direct use of spent PWR fuel in Accelerator Driven System	C. J. Jeong, et al., (KAERI, Korea)
	Assessment of the Equilibrium State in the Reactor Based Pu or TRU Stabilization	T.K. Kim, et al., (ANL, USA)
	Use of Thorium for Transmutation of Plutonium and Minor Actinides in LWRs	E. Shwageraus, et al., (MIT, USA)
	Transmutation Capability of Once-Through Critical or Subcritical Molten-Salt Reactors	E. Rodriguez-Vieitez, et al., (UCLA. USA)
	Transmutation of actinides in critical and subcritical reactors	P.N. Alekseev, (RRC-KI, Russia)

Tuesday	**15 October 2002**	
Poster Technical Session II: Progress in Partitioning and Waste Forms		**Chairs: James Laidler (ANL, USA) and Jean-Paul Glatz (ITU, EC)**
10:20 – 12:20	Engineering-Scale Research and Development (R&D) Experiences in Minor Actinide Partitioning/Transmutation	E. D. Collins, et al., (ORNL, USA)
	Electrochemical Reduction of UO_2 in Li_2O-LiCl Molten Salt	J. M. Hur, et al., (KAERI, Korea)
	Removal of Uranium From Simulated Fly Ash By Chloride Volatilization Method	N. Sato, et al., (Tohoku Univ., Japan)
	Development of Electrochemical Separations of Uranium and RE Elements from Fluoride Melts	R. Zvejskova, et al., (NRI, Czech Rep.)
	A Study on the Development of Fluorination Process	S. W. Kwon, et al., (KAERI, Korea_
	Separation of Zirconium from LiF-BeF_2-ZrF_4 Molten Salt by Pyrohydrolysis	M. S. Woo, et al., (KAERI, Korea)
	Investigation of the Electrochemical Behaviour of Pu in a LiCl-KCL Eutectic	J. Serp, et al, (JRC, Germany)
	Kinetics of novel extraction systems used in the partitioning of nuclear waste	M. Weigl, et al., (FZK, Germany)
	Electrochemical separation of fission-products from high level liquid waste of spent nuclear fuel	M. Ozawa, et al., (JNC, Japan)
	Effective Actinide(III)-Lanthanide(III) Separation in Miniature Hollow Fiber Modules	A. Geist, et al., (FZK, Germany)
	Host phases for actinides and long-lived fission products transmutation / immobilization	S.C. Chae, et al., (KIGAM, Korea)
	Recent Progress of Partitioning Process in JAERI: Development of Amide-Based Artist Process	S. Tachimori, et al., (JAERI, Japan)
	Decontamination Study of Some Noticeable Fission Products in the Actinide Recovery by TRUEX process	T. Fujii, et al., (Kyoto Univ., Japan)
	SANEX-BTP Process Development Studies	C. Hill, et al., (CEA, France)

Tuesday	**15 October 2002**	
Poster Technical Session III: Progress in Fuels and Targets		**Chairs: Yasuo Arai (JAERI, Japan) and Sylvie Pillon (CEA, France)**
10:20 – 12:20	Investigations of Mononitride Ceramics for Transmutation Fuels: Cold and Hot Fuels Work	K. McClellan, et al., (LANL, USA)
	A Study on Characteristics of U-Zr Metallic Fuel	B.S. Lee, et al., (KAERI, Korea)
	The comparison of the performance for the alloy fuel and the inter-metallic dispersion fuel by the MACSIS-H and the DIMAC	B. O. Lee, et al., (KAERI, Korea)
	Incineration of americium in target rods using coated particles	A. Renard, et al., (BN, Belgium)
	Impact of the curium management on the fabrication of MA-bearing targets at an industrial scale in the frame of a mixed PWR and FBR P&T scenario	S. Pillon, et al., (CEA, France)
	The EFTTRA T4ter irradiation experiment on the behaviour of spinel inert matrix fuels	F.C. Klaassen, et al., (NRG, Netherlands)
	Conception and fabrication of innovative Am-based targets : the CAMIX/COCHIX experiment	N. Schmidt, et al., (CEA, France)
	Experimental Transmutation of Neptunium in the BOR-60 Reactor in the Form of Vibropac UNpO2 Fuel	A.A. Mayorhsin, et al, (SSC RIAR, Russia)
	Transport properties of molten salt reactor fuel mixtures: the case of Na,Li,Be /F and Li,Be,Th/F salts	V. Ignatiev, (RRC-KI, Russia)
12:20 – 14:00	**Lunch**	
Technical Session IV: Progress in Materials: Spallation Targets and Advanced Coolants		**Chairs: Guenter Bauer (FZJ, Germany) and Joachim Knebel (FZK, Germany)**
14:00 – 14:20	The MEGAPIE Project – An Update	F. Groschel, et al, (PSI, Switzerland)
14:20 – 14:40	Experimental Studies Supporting the Design of a 1 MW LBE Target	X. Cheng, et al., (FZK, Germany)
14:40 – 15:00	Stagnant Pb-Bi Corrosion Experiment for HYPER Materials	T.Y. Song, et al., (KAERI, Korea)
15:00 – 15:20	Forecasts of Void Swelling, Irradiation Creep and Tensile Properties of Ferritic-Martensitic Steels Envisioned for Service in Accelerator-Driven Devices	F. A. Garner, et al., (PNNL, USA)
15:20 – 15:40	The CIRCE Test Facility for Verification and Validation of the LBE-Cooled XADS Concept Design Choices	G. Gherardi, et al., (ENEA, Italy)
15:40 – 16:00	Liquid Metal Target for a 5MW Spallation Neutron Source (ESS)	G. Bauer (FZJ, Germany)
16:00 – 16:20	**Break**	

Tuesday	**15 October 2002**	
Technical Session V: Progress in Physics and Nuclear Data		**Chairs: Toshitaka Osugi (JAERI, Japan) and Enrique Gonzalez (CIEMAT, Spain)**
16:20 – 16:40	First measurements of the kinetic response of the MUSE-4 fast ADS mock-up to fast neutron pulses	D. Villamarín, et al., (CIEMAT, Spain)
16:40 – 17:00	Calculation and Experimental Studies on Minor Actinides Samples Irradiations in Fast Reactors	A. Kotchetkov, et al., (IPPE, Russia)
17:00 – 17:20	Experimental Studies of MA Nuclear Data Correction on Critical Assemblies	V. Dulin, et al., (IPPE, Russia)
17:20 – 17:40	The Physics problems of the spallation neutron production source related to accelerator-driven system	S. Fan, et al., (CIAE, China)
17:40 – 18:00	HINDAS: A European nuclear data program for accelerator-driven systems	A. J. Koning, (NRG, Netherlands)
18:00 – 18:20	Neutron cross-section for P&T and ADS at the n_TOF facility at CERN	E. González, (CIEMAT, Spain)
19:00 – 21:00	**Banquet**	

Wednesday	**16 October 2002**	
Technical Session VI: Transmutation Systems (Critical and Sub-critical): Design and Safety		**Chairs: Luciano Cinotti (Ansaldo, Italy) and Michael Cappiello (LANL, USA)**
8:00 – 8:20	ADTF: Design Overview	M. Cappiello, (LANL, USA)
8:20 – 8:40	Core Design Characteristics of The HYPER System	Y. H. Kim, et al., (KAERI, Korea)
8:40 – 9:00	Loss of Flow Assessment of the LBE-Cooled XADS Concept	S. Aliotta, et al., (Palermo Univ., Italy)
9:00 – 9:20	MYRRHA, A Multipurpose Accelerator Driven System for R&D. Pre-design study completion	H. Aït Abderrahim, et al., (SCK-CEN, Belgium)
9:20 – 9:40	Construction and Utilization of a Subcritical Assembly Driven by a Proton Accelerator with Proton Energy 660 Mev for Experiments on Long Lived Fission Products and Minor Actinides Transmutation (SAD)	V. Shvetsov, (JINR, Russia)
9:40 – 10:00	A Preliminary Simulation of TRADE Dynamics	A. D'Angelo, et al., (ENEA, Italy)
10:00 – 10:20	**Break**	

Wednesday	**16 October 2002**	
Poster Technical Session IV: Progress in Materials: Spallation Targets and Advanced Coolants		**Chairs: Guenter Bauer (FZJ, Germany) and Joachim Knebel (FZK, Germany)**
10:20 – 12:20	Activities of UPV/EHU Concerning The TS-1 Target System Experiments	A. Peña, et al., (Basque Country Univ., Spain)
	Design of a LBE Spallation Target for Fast-Thermal Accelerator Driven sub-critical System (ADS)	P. Satyamurthy, et al., (BARC, India)
	VICE –Vacuum Interface Compatibility Experiment: R&D support for a windowless liquid metal spallation target in MYRRHA	P. Schuurmans, et al., (SCK-CEN, Belgium)
Poster Technical Session V: Progress in Physics and Nuclear Data		**Chairs: Toshitaka Osugi (JAERI, Japan) and Enrique Gonzalez (CIEMAT, Spain)**
10:20 – 12:20	Transmutation performance of ADS-systems: dependence on nuclear data	A. Hogenbirk, et al., (NRG, Netherlands)
	Minor actinides transmutation scenario studies with PWR's, FR's and moderated targets	J.P. Grouiller, et al., (CEA, France)
	MUSE-4 Benchmark Calculations Using MCNP-4C and Different Nuclear Data Libraries	N. Messaoudi, et al., (SCK-CEN, Belgium)
	Investigation of Local Spectral Differences between Critical and Driven Subcritical Configurations in MUSE4	M. Plaschy, et al., (PSI, Switzerland)
	Determination of reactivity by a revised rod-drop technique in the MUSE-4 programme - Comparison with dynamic measurements	G. Perret, et al., (CEA, France)
	New methods for the Monte Carlo simulation of neutron noise experiments in ADS	M. Szieberth, et al., (Budapest U., Hungary)
	Reactor Physics Calculations on MOX fuel in Boiling Water Reactors (BWRs)	C. Demazière, et al., (Chalmers U., Sweden)
	Light charged particle production induced by fast neutrons (E_n = 25 – 65 MeV) on ^{59}Co and ^{nat}Fe	E. Raeymackers, et al., (UCL, Belgium)
	The use of Ge detectors for (n, xn) cross section measurements at intense and low-frequency pulsed neutron beams	S. Lukic, et al., (IN2P3, France)
	Nuclear Data for ADS: Code System and Theoretical Data Library	S. Yavshits, et al., (KRI, Russia)
	Feasibility Study of New Microscopic Fission Chambers Dedicated for ADS	D. Ridikas, et al., (CEA, France)
	Nucleon-Induced Fission Cross Sections for ADS Needs	V.P. Eismont, et al., (KRI, Russia)
	Moderated Sub-Assembly Concept For Americium Transmutation	I. Y. Krivitski, (IPPE, Russia)
	Spallation Neutrons from Various Targets and Energy Amplification Using Thorium	V. Kumar, et al., (Rajasthan Univ., India)

Wednesday	**16 October 2002**	
Poster Technical Session VI: Transmutation Systems (Critical and Sub-critical): Design and Safety		**Chairs: Luciano Cinotti (Ansaldo, Italy) and Michael Cappiello (LANL, USA)**
10:20 – 12:20	Actinide Burning in a Lead-Bismuth-Cooled Critical Fast Reactor with Economic Electricity Generation	P. Hejzlar, et al., (MIT, USA)
	Transmutation of Cesium-135 with Fast Reactors	S. Ohki, et al., (JNC, Japan)
	Proposed Subcriticality Level for an 80 MW_{th} Lead-Bismuth Cooled ADS	L. Mansani, et al., (Ansaldo, Italy)
	A Particle-Bed Gas Cooled Fast Reactor Core Design For Waste Minimization	T. A. Taiwo, et al., (ANL, USA)
	The Multiregion Molten Salt Reactor Concept	Gy. Csom, et al., (Budapest U., Hungary)
	A Study on Once-Through Actinides Transmutation	P. T. León, et al., (UPM, Spain)
	Conceptual Study of Neutron Irradiator Driven by Electron Accelerator	D. Ridikas, et al., (CEA, France)
	Target Buffer Assessment for Accelerator Driven Transmuters	Y. Gohar, (ANL, USA)
	Benchmarking activity on ENEA available tools for dynamic analysis of LBE cooled subcritical systems	P. Meloni, et al., (ENEA, Italy)
	Preliminary Thermal Hydraulic Analyses of HYPER Fuel Assembly Using MATRA	N.I. Tak, et al., (KAERI, Korea)
	Thermal-Hydraulic Design Analysis of a 5 MW Sodium-Cooled Tungsten Target	X. Cheng, et al., (FZK, Germany)
	Safety Analysis of the Accelerator Driven Test Facility	X. Cheng, et al., (FZK, Germany)
	Safety performance of liquid metal cooled accelerator driven systems	J. Wallenius, et al., (RIT, Sweden)
	Application of the RELAP5/Pb-Bi Code to Safety Studies for the ADS MYRRHA Facility	S. Heusdains, et al. (SCK-CEN, Belgium)
12:20 – 14:00	**Lunch**	
14:00 – 16:00	**Summary Session (review by session chairs) 20 min per each technical topic**	**Chair: Dave Hill (ORNL, USA)**
16:00 – 16:20	**Break**	
16:20 – 18:00	**Panel Discussion on future development (Panelists: T. Mukaiyama, J. Laidler, P. Wydler, D. Hill, Chang-Kue Park, and T. Osugi)**	**Chairs: T. Mukaiyama and J. Laidler**
18:00 – 18:20	**Closing Session**	**Dave Hill (ORNL, USA)**