

Summary of the Session VI:
Compatibility of materials and
coolants in nuclear reactors'
environments

Second Session VI Wednesday PM

- Tarek Farouk Nagla, Mohamed ELMESAWY ,EGYPT: The water cooled performance for fission and fusion reactors
 - Thermodynamic Properties of Water and Steam
 - PWR-1400.AP-1000,VVER-1000.CANDU-6
 - Boric Acid Corrosion of Carbon Steel Reactor Pressure & steam generator
 - Neutron Activation of Coolant Water
 - Cooling Water System design for fusion Tokamak Reactor
 - Water Radiolysis in Fusion Neutron Environments for ITER
- Yiren. Chen, and B. Alexandreanu ,USA: cracking of neutron irradiated austenitic stainless steels in light water reactor environments
 - Irradiation-assisted stress corrosion cracking US NRC has AM technical action plan
 - Test Facility and Specimens
 - Very high CGRs in highly irradiated materials

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- Hee Sang SHIM, KAERI, South Korea :surface modification methods of zirconium alloy fuel cladding tube for mitigation of corrosion product deposit in simulated pwr primary
- PWR components & materials
 - Corrosion products & problems
 - Crud-induced power shift (CIPS or AOA)
 - Reduction of corrosion product deposition
 - Fuel crud deposition test
 - Effect of surface
- Yirin CHEN, ANLM,USA: Effects of sodium exposure on grade 91 steel
 - SFR Material Requirements Supporting companies develop FPP
 - Materials Degradation in Na
 - Materials and Na Exposure Tests – G91
 - Stress-strain curves G91
 - Effect of Na Exposure
 - Microstructural Evolution with Sodium Exposure
 - Effects of Different Carbides
 - Carbon Concentration Profiles

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- Vahram PETROSYANM,ARMENIA: Investigation of VVER-440 RPV surveillance test specimens from Armenian NPP
 - experimental methods materials
 - Influence of long term thermal ageing
 - Influence of high flounce irradiation and effect of recovery annealing
- Cecile PETECH, CEA,FRANCE: Some challenges to adapt nuclear codes and standards to innovation
 - Basic definitions: nuclear codes and standards
 - Innovative systems, specificities
 - Connection between environment, materials and nuclear codes
 - General process to consider environment
 - Examples

Second Session VI Wednesday PM

- Abdelfattah Ali, EGYPT: Effect of water addition on mitigation of severe accident consequences
 - Numerical Simulation
 - Problem Descriptions
 - Bundle nodalization
 - RELAP-SCDAPSIM modeling
- Alexandr IVANOV, Kurchatov Institute, Russia : Mechanism of the local corrosion of fuel element cladding due to decomposition of hydrogen solutions in the neighbourhood of the coolant saturation temperature
 - New corrosion mechanisms
 - Radiolysis suppression
 - Solubility of hydrogen in water
 - Diffusion of dissolved hydrogen into formed bubbles Results of numerical calculations
 - Jointly solve the diffusion and the radiolysis problems
 - Release of hydrogen into bubbles. Calculation of radiolysis in water

Second Session VI Wednesday PM

- Juana GERVASONI, Argentina : Applicability of Coolant Materials in Hybrid Fission-Fusion Nuclear Reactors Patent for making Pb-Li using LiCl as Li source
 - Fusion-Fission collaboration
 - Concentric model for a FUSION-FISSION HYBRID REACTOR (FFHR)
 - What is Cermet?
 - FFHR: Neutron Spectra for different shells
 - System simulated with IMPC5, where a sphere of UO₂ is embedded into a Tungsten matrix