

**International Topical Meeting on
Nuclear Research Applications and
Utilization of Accelerators
IAEA Headquarters, 4 – 8 May 2009
Summary of the ADS Topical Area**

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Scope and Participation

- National and International ADS Programs
- Nuclear Data for ADS
- ADS Experiments
- ADS Demonstrator (MYRRHA / XT-ADS)
- Approximately 40 Oral and 20 Poster Contributions in Domain of ADS

Conclusions and Recommendations (1/8)

- Important Advancement in Accelerator Technology
 - Studies and progress achieved to demonstrate intensity, improved beam stability and reliability
 - Additional investment Cost ~30 – 40% over “normal” similar facility; e.g. for scientific research

Conclusions and Recommendations (2/8)

- LBE Technology Demonstration
 - Major milestone: successful MEGAPIE irradiation
 - Firm experimental observations allowing to substantiate windowless target design
 - Containment possibility of Polonium within LBE system volume
- Material R&D for Pb Systems
 - Surface coating, O₂ control, high temperature applications
 - Synergetic with innovative GEN IV fast reactor systems

Conclusions and Recommendations (3/8)

- Important ADS Experimental Efforts
 - Belarus: YALINA Booster
 - GUINEVERE (SCK•CEN, Mol, Belgium; Euratom Project)
 - Japan: ongoing FFAG-KUCA and planned TEF-P and TEF-T (Phase 2 of J-PARC)
 - China: Venus 1 completed and Venus 2 planned
 - India: Coupling experiments (DT source and sub-critical LWR (phase-1); (p,n) source with HWR (phase-2))

Conclusions and Recommendations (4/8)

- Large Number of Activities in Many Member States Devoted to
 - Improve understanding of ADS technology, HLM technology, as well as of structural material behaviour under irradiation and in contact with LBE
 - Ensure the capability to design and construct ADS experimental facility (demonstrator)
 - Current level of success of these activities provides sufficient confidence that ADS demonstrator could be built and operated to a safety level at least matching with the state-of-the-art fission reactors

Conclusions and Recommendations (5/8)

- Experimental Validation
 - Sufficient for reliable sub-critical core design
 - Fuels containing significant fraction of transuranics still unproven at large scale
- With its Deterministic Safety Features, ADS Offers Good Opportunities for
 - New fuels/structural materials development and qualification
 - Studies of alternative coolants
 - Studies of future innovative reactor systems for sustainable thorium utilization

Conclusions and Recommendations (6/8)

- Acceptance by Society of Robust Scheme on Spent Nuclear Fuel Disposal is a Major Condition for Sustainable Nuclear Energy Development.

Conclusions and Recommendations (7/8)

- ADS Has the Potential to Offer the Option of Spent Fuel Volume and Radiotoxicity Reduction. This Option is Pursued in
 - Euratom Programs
 - China
 - India
 - Japan
 - Rep. of Korea- activities of SNU in NUTRECK (PEACER concept)
 - U.S.A.: Likely to revive studies to assess closing the fuel cycle options- including ADS

Conclusions and Recommendations (8/8)

- Current Research and Technology Development Status and Potential of ADS Make a Strong Case for Enhanced International Collaboration
 - MYRRHA / XT-ADS is most advanced programme to meet the requirements of a demonstration technology
 - Having ADS in the domain of its mandate on peaceful uses of nuclear energy, IAEA should play a major role towards the realization of an ADS demonstrator