

CONCLUSIONS

The IAEA Technical Meeting (TM) held in Kharkov, from 9 to 13 June 2008 contributed to the better understanding of radiation effects and mechanisms of material damage and basic physics of accelerator irradiation under specific conditions as well as overviewed the latest developments in understanding radiation effects and recent theoretical models. This event also facilitated the exchange of the knowledge and best practice between experts from developed and developing Member States which may help to achieve the international consensus in the developmental efforts on advanced nuclear reactors technologies and fuel cycle.

The major findings of the (i) Working Groups on Techniques & Experiments and (ii) Simulations and Modeling that were agreed on at the final Summary Session as recommendations for the Coordinated Research Project are as follows:

- A “correlation of experiments” approach was suggested. This involves both a traditional round-robin exercise and complimentary irradiation of the same materials by different particles and in different conditions;
- The use of multi-beams and high energy electrons and protons for the simulation of transmutation and synergetic H/He effects was recommended;
- The need for addressing various scales of radiation effects and multi-scale modeling with determination of theoretical bridging, was emphasized;
- The need for advanced qualification of structural and phase states of materials with the application of a broad range of analytical tools, such as 3D nuclear nano-probe techniques, synchrotron sources, some of which have high spatial resolution and/or sensitivity, was pointed out;
- The necessity of identifying benchmarks for the verification of theoretical models and computational codes was underlined;
- The need to consider all aspects for all irradiation parameters, such as: type of particle (neutron, electron, ion), energy spectrum, implantation and temperature profile, dose rate, was pointed out;
- The correlation experiments on accessible materials (model alloys e.g. Fe-Cr and Fe-Cr-Ni) for joint studies was recommended.

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