



**of the European Atomic Energy Community (Euratom)
for nuclear research and training activities (2007-2011)**

Collaborative Project

MATTER

Project title: **MATerials TEsting and Rules**

Project number: **269706**

Project coordinator: **Agenzia Nazionale per le Nuove Tecnologie,
L'energia e lo Sviluppo Economico Sostenibile
(ENEA), Roma, Italy**

HZDR participant: **Institute of Safety Research**

Starting date: **01.01.2011**

Duration (months): **48**

Summary

The 2010-2012 implementation plan of the European Sustainable Nuclear Industrial Initiative (ESNII), in the frame of the Sustainable Nuclear Energy Technology Platform (SNETP), establishes a very tight time schedule for the start of construction of the European Gen IV prototypes; namely the construction of the LFR ETPP (European Technology Pilot Plant) MYRRHA will start in 2014 and that of the SFR Prototype ASTRID will start in 2017.

The Gen IV reactors pose new challenges to the designers and scientists in terms of higher operating temperature and higher irradiation damage of materials with respect to the present technologies. In this frame, the MATTER project intends to start well targeted researches to perform careful studies of materials behaviors in Gen IV operational conditions and to find out criteria for the correct use of these materials in relevant reactor applications.

Aim of the present project is to complement the materials researches, in the frame of the EERA guidelines, with the implementation of pre-normative rules.

The project comprehends:

- Mature materials research focused on testing procedures for the new reactors conditions
- Supporting experiments of mature materials aimed to liquid metals characterization and to pre-normative qualification
- Pre-normative activities, comprehensive of experiments, to revise and update the design rules
- Preparation and starting of the EERA Joint Program by harmonization of the structure and finalization of the preliminary program in accordance with the deployment strategy of the SNETP.

A relevant advantage of this approach consists in the possibility to achieve a correct aiming for the expensive materials testing operations. Other advantages are the comparability of the experimental data, being produced by consensual procedures, and the immediate availability of the experimental results (at least for some properties) in view of their pre-normative deployment.