

## Focus Point on Nuclear data for energy

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During the past decades, new nuclear systems have been designed with the goals of ensuring the sustainability of nuclear energy, minimizing long-lived radioactive waste and improving the safety of nuclear reactors. This has led to the request for new or more precise nuclear data, either because reactions on isotopes neglected before have become important, as for instance minor actinides to be transmuted in critical or accelerator-driven sub-critical reactors (ADS), or because new types of reactions have to be described, like spallation reactions in ADS. Nuclear data are in fact all the quantities necessary to describe the nuclear reactions occurring in a system, such as probability of interaction or cross-sections, and characteristics of the reaction products, charge, mass, energy and direction of emission. High-quality experimental data together with theoretical models and evaluation procedures are necessary to build evaluated data libraries or, in the case of high-energy reactions, reaction models to be used by simulation codes.

In Europe, an important effort has been devoted to the collection of high-quality nuclear data, and partially supported by the EURATOM framework programmes: in particular ANDES (Accurate Nuclear Data for nuclear Energy Sustainability) and CHANDA (solving CHallenges in Nuclear Data) in FP7. This *Focus Point* presents part of the work performed during these programmes. The paper by F. Gunsing *et al.* summarizes the extensive programme of nuclear data measurements performed at the n\_TOF facility at CERN and the perspectives for the future. The three other papers are relative to high-energy reactions which play an important role in the ADS target, in particular as regards the production of radioactive isotopes. The paper by J. Benlliure *et al.* reviews the progress brought by the inverse kinematics experimental technique in the understanding of spallation-induced fission reactions and future possibilities to further improve our knowledge. In J. Cugnon *et al.*, successes and remaining deficiencies of the high-energy models developed during the above-cited projects are discussed. Finally, results concerning the production and distribution of isotopes in a lead-bismuth eutectic spallation target irradiated by high-energy protons, which are of high interest for the validation of the models, are presented in B. Hammer-Rotzler *et al.* Other results from ANDES and CHANDA can be found in the topical issue of *EPJ A* on *Perspectives on Nuclear Data for the Next Decade*, which has been published in December 2015.

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