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SANDA - WP3

Target Preparation for Improvement of Nuclear Data Measurements

Task 3.2: Fostering the network of target makers

Task coordinator: JRC, partners: PSI

The demand for high-quality targets, specially designed for the envisaged experiment and targets manufactured for nuclear reaction studies in a broad variety of application fields is constantly increasing, with the production of radioactive samples comprising particular challenges due to the special requirements arising from the emitted radiation. Only a handful of laboratories in Europe are capable and equipped to meet these special requirements.

Sharing knowledge, equipment and resources is a key issue for efficient work in high-cost and man-power intensive fields. Especially for producing radioactive targets, there are only a few laboratories in Europe, which are able and allowed to handle such material. Production of radioactive isotopes and handling of radioactive material is, due to the measures to be taken for radiation protection, extremely time consuming and cost-intensive. In addition, storage and transport of radioactive material get more complicated due to the more strict regulations within the European Union.

Networking of target makers is mandatory to become more efficient. To maintain this network regular meetings with the target laboratories in Europe are needed to share knowledge and also to improve the production techniques of well-characterized samples/targets. Unfortunately because of the Covid-19 pandemic the target makers could not come together nor visit some target preparation laboratories in Europe. However the network of target makers established in the frame of the CHANDA project could help the target makers to share knowledge via e-mail and on-line meetings. The target producers could also consult the internet platform https://www.intds.org/ of the International Nuclear Targets Development Society (INTDS). This society is a non-profit, educational organization that encourages the sharing of techniques developed, or being developed, to provide research-quality targets and reference samples, mostly for basic research in physics, chemistry, and related sciences. It mentors people new to target and sample preparation and publishes the techniques of target preparation and related topics. The INTDS bibliography index lists currently over 1160 articles.

The target makers met during the SANDA WP3 workshop for target production hosted by PSI in Switzerland. The workshop had to be postponed in 2020 because of the Covid-19 pandemic and took finally place on-line in August 2021. The target laboratories were represented by JRC (Belgium), PSI (Switzerland) and IFIN-HH (Romania) and the participants gave an overview of the current target preparation and characterization techniques applied in their laboratory.

In September 2022, the target makers met during the 30rd conference of the International Nuclear Targets Development Society, hosted by PSI in Switzerland. The INTDS conference is the only world conference specifically for the target makers community where experience related to target preparation and characterization is shared and discussed. Representatives of target makers in- and outside Europe gave presentations and discussed problems related to target preparation and characterization.

Several laboratories from Europe were present during the INTDS conference of which only a few laboratories (marked with *) are able and allowed to handle radioactive material.

- *PSI - Paul Scherrer Institut, Switzerland
- *JRC – Joint Research Centre, Belgium
- *JGU - Johannes Gutenberg-Universität Mainz, Germany
- *SCK CEN Belgian Nuclear Research Centre, Mol, Belgium
- GSI - Helmholtzzentrum für Schwerionenforschung, Darmstadt, Germany
- HIM Helmholtz-Institut Mainz, Germany
- Technische Universität Dresden, Germany
- Forschunsgzentrum Jülich, Germany
- CERN, Switzerland
- JYU - University of Jyväskylä, Finland
- HIL - Ion Laboratory, University of Warsaw, Poland
- IFIN-HH - Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, Bucharest - Magurele, Romania
- INFN - Istituto Nazionale di Fisica Nucleare, Italy
- University of Bern, Switzerland
- WWU -Westfälische Wilhelms-Universität Münster, Germany
- GANIL CNRS - Grand Accélérateur National d'Ions Lourds, France
- DISAT - Dipartimento di Scienza Applicata e Tecnologia, Italy
- CNRS Subatech, France
- ARRONAX - Accelerator for Research in Radiochemistry and Oncology, France