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CiSCoTe : Cible Solide Irradiée Contrôlée en Température (Solid Target irradiated under control temperature by thermocouple and pyrometer)

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In a context of development of radiometals (165Er, 52Mn or 89Zr) for imaging applications at Orleans'cyclotron, more regular and higher activities are necessary. For that, a new targetry was developed for solid target using a known cooling system [1] where target was in a shuttle. In this targetry, two measurements of temperature have been integrated: one by thermocouple on the backside of the target [2] and a second in its front side without contact by pyrometric measurement. For these experiments, targetry has been evaluated with irradiation of holmium solid target by protons (16MeV) and 17.5MeV (deuterons) [3] for 165Er, Cr target (14MeV) for 52Mn and Y target (12MeV) for 89Zr. First results demonstrated difficulties to direct measurements of lanthanides, certainly due to its excitation. Using a foil of Aluminum, measurements have been obtained from 1 to 20μA with a flow limited at 3.6L/min but reproducibility of results was not possible. Explanations why were in progress and some new experiments must be realized to more clarify these points.

Reference :
[1] G. Goin et al., Proc. 9th Int. Conf. on Cyclotrons and their Applications, 1981, p. 133-135.
[2] S. Chan et al., Proc. 15th International Workshop Targetry and Target Chemistry, 2016, 27-30 [3] J. Vaudon et al. Instruments 2018, 2, 15.
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Primary author: FREALLE, Louis (CEMHTI, CNRS, Univ. Orléans)

Co-authors: CANIZARES, A. (CEMHTI, CNRS, Univ. Orléans); ZANGHI, D. (CEMHTI, CNRS, Univ. Orléans); DA SILVA, I. (CEMHTI, CNRS, Univ. Orléans,); RIFARD., P. (CEMHTI, CNRS, Univ. Orléans)

Presenter: FREALLE, Louis (CEMHTI, CNRS, Univ. Orléans)

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