

# Nuclear Astrophysics at the Canfranc Underground Laboratory, 2nd CUNA Workshop



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## Astrophysical production of $^{146}\text{Sm}$ isotope

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### Summary

A possible p-process chronometer could be the  $^{146}\text{Sm}$  nucleus and this issue is directly related to the uncertainties of  $^{146}\text{Sm}/^{144}\text{Sm}$  production ratio observed in many meteorites and planetary bodies. One of the components of production ratios are the cross sections of type  $(\alpha, \gamma)$  and  $(\alpha, n)$  which are leading to the formation of  $^{146}\text{Sm}$  and  $^{144}\text{Sm}$  isotopes. The  $(\alpha, \gamma)$  and  $(\alpha, n)$  cross sections from the threshold up to 15-20 MeV's were obtained. The contributions to the cross sections of direct and pre-equilibrium processes as well as of the compound processes were analyzed. The cross section values obtained in the present evaluations gave new data on  $\alpha$ -potentials and nuclear level densities. They were compared with experimental data from the literature.

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