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Production of actinium-225 at JRC Karlsruhe

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The targeted treatment of cancerous tumors by alpha-emitting radionuclides has shown remarkable efficacy in recent clinical trials. It is likely that this treatment option will ultimately be applicable to a wide range of cancers and other diseases, subject to the development of specific carrier molecules. Currently Ac-225 is mainly produced from natural ingrowth in existing stocks of Th-229. An anticipated wider application for radiotherapy will require many orders of magnitude more radionuclide than can currently be produced. Consequently, following up on earlier experimental work at JRC, we are pursuing alternative production methods. In particular, the production by irradiation of Ra-226 with medium-energy protons at cyclotrons will be investigated. In this talk, past experience with proton irradiation of Ra-226 at JRC Karlsruhe will be reviewed. In addition, short- and medium-term plans for future work in this direction will be presented.

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