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## Synthesis and first tests at CERN-ISOLDE of UCx targets produced with carbon nanotubes

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The first online mass separated isotope (ISOL) beam was produced 60 years ago at the Niels Bohr Institute in Copenhagen. Krypton beams were obtained by fission reactions in a large and heated UO<sub>2</sub> target positioned at proximity of a neutron converter [1]. Since then a large variety of other targets and primary drivers have been developed and used in several facilities throughout the world. At CERN-ISOLDE for example, actinide targets (ThnatCx, ThnatO<sub>2</sub>, UdepCx with diverse microstructures) have been developed for over thirty years and represent today more than 60% delivered beam time.

We report here the synthesis and first online tests of UC<sub>x</sub> targets made by carbothermic reduction of UO<sub>2</sub> powders pressed with carbon nanotubes. This program took place within the SPES project and EURISOL-DS, in which carbide target materials are developed to meet the stringent requirements of both facilities in terms of mechanical, heat and isotope production characteristics [2,3]. The resulting material is compared with the standard ISOLDE UC<sub>x</sub> production target. We will provide in particular some details on the synthesis, properties and first radioactive ion beam yields obtained with these new targets.

Fig. 1. Left: SEM picture of UC<sub>x</sub> synthesized for SPES and compared to standard ISOLDE UC<sub>x</sub> target  
Right : UC<sub>x</sub> target pellet synthesized with carbon nanotubes

### References

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