MYRRHA - CERN collaboration day,

27 February 2020

Proposal: Target and Collector

CERN Participants: M. Calviani, T. Stora

MYRRHA Participants: A. Fabich, L. Popescu (D. Ene by interaction)

Topic:

Thorium-based target material life-cycle

Goal(s):

D1 : Development of target material and test

D2 : Feedback on operational experience

D3 : Safety-related infrastructures and handling

D4 : Oxidation for waste handling

Timeline: 2020-2025

D1 : start : t0 (after 2022) end t0+?

D2 : 2020 (secondment of Myrrha staff 2-3 months total , several periods + time from CERN expert)

D3 : 2020 : share of MEDICIS safety file + hot cell (see with D. Ene)

secondment of Myrrha staff at later moment

D4 : hands-on oxidation @ CERN by Myrrha Staff ; existing expertise in Uranium fuel oxidation at SCK

CERN support for this project is (0 = nice, ……., 5 = crucial): 4

Topic:

Ion source

Goal(s):

D1: High intensity and efficiency ion source development

Timeline: 2021-2025

D1 : common development

CERN expert, online/offline facilities ; Myrrha ISOL student, offline facilites

CERN support for this project is (0 = nice, ……., 5 = crucial): 3

Topic:

- *Target material development*

Goal(s):

- *D1 : Develop new efficient high power ISOL target materials*
- *D2 : online tests*

Timeline: 2020-2025

D1 : synthesis @ Myrrha 2021

D2 : online @ Isolde/Medicis 2021-2022

CERN support for this project is (0 = nice, ……., 5 = crucial): 3

Topic:

- *Yield station / Isotope collector*

Goal(s):

- *D1 : review of design by CERN expert*
- *D2 : review of design of Isotope collector*

Timeline: 2021

Review of yield station by CERN – CDR : 2021 ; TDR : 2022

Review of collector station by CERN – CDR : 2020 ; TDR : 2021

CERN support for this project is (0 = nice, ……., 5 = crucial): 3

Collaboration proposal : RIB production and R&D

Benefits for MYRRHA:

- Incorporate 60yrs+ Isolde expertise in target material development and ion source for RIBs
- Accelerate licensing process
- Participate in operating ISOL facility
- Access to online testing facility
- Immediate start-up of actinide materials development(@CERN)

MYRRHA contribution:

- *Secondment of students - Number ?*
- *Offline studies for new targets*
- *Access for CERN staff to nuclear facilities*

MYRRHA technical contact:

- L. Popescu, …

Benefits for CERN:

- Common interest in pushing ISOL RIB production techniques, including high power targets
- Operator training in hot cells
- PIE for targets
- Request to further exploit the CERN nano-lab for actinides

CERN contribution:

- *Expertise in ISOL operating facility and licensing (0.4FTEy)*
- *ISOL target and ion source expertise (0.4FTEy)*
- *Safety files*
- *Commitment for nano-Actinide target production for Myrrha ? TBC*

CERN technical contact:

- T. Stora, …