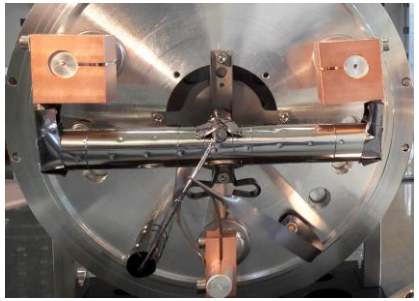
Collaboration Board 2019
Operation Report

MEDICIS Operator: Laura LAMBERT

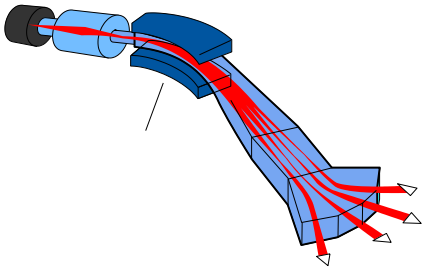
CERN | EN ENGINEERING DEPARTMENT

Collection procedure

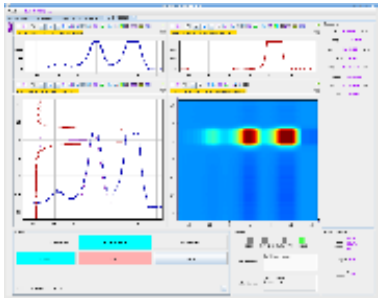
Heating



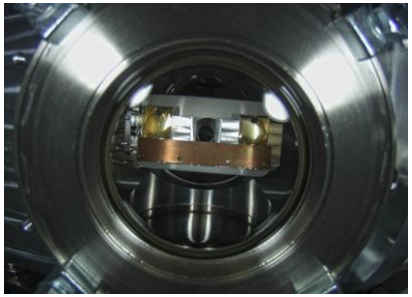
Separation



Optimization



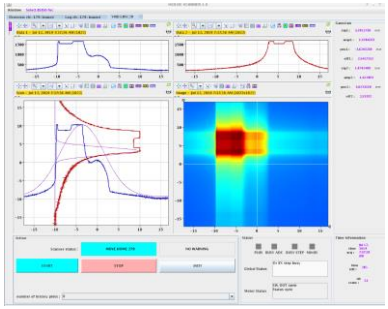
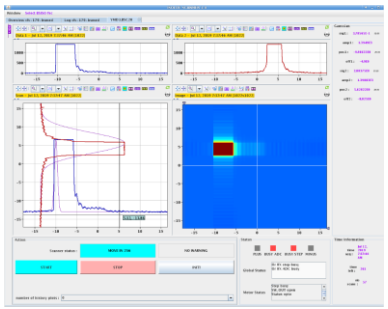
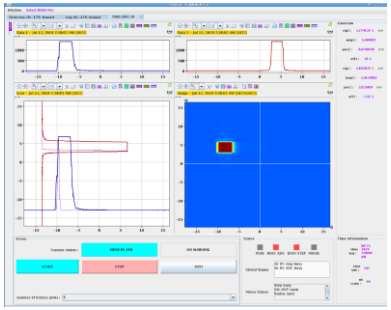
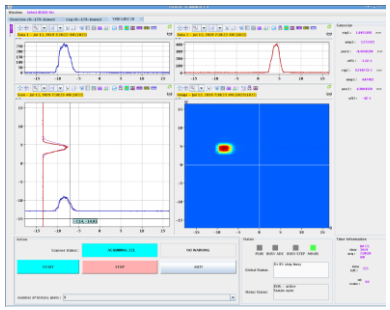
Implantation



Contaminants

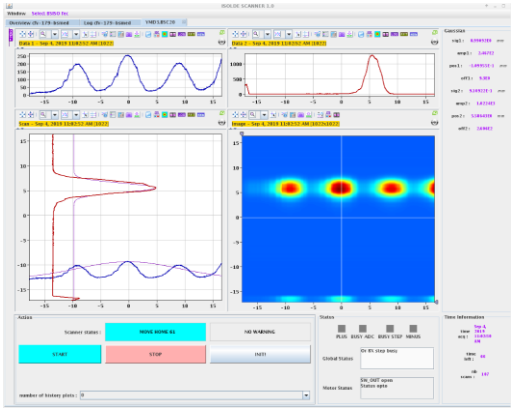
Profiles of mass 168 with different sensitivities, mass 169 centered
→ shows cross contamination of stable Er168 on Er169 collection

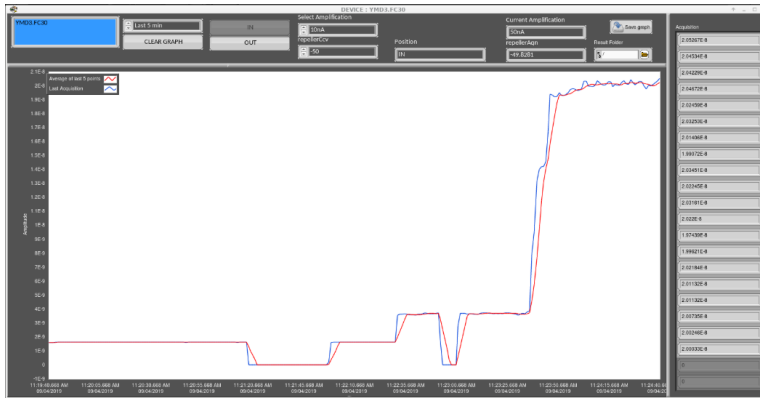
Less sensitivity → More sensitivity

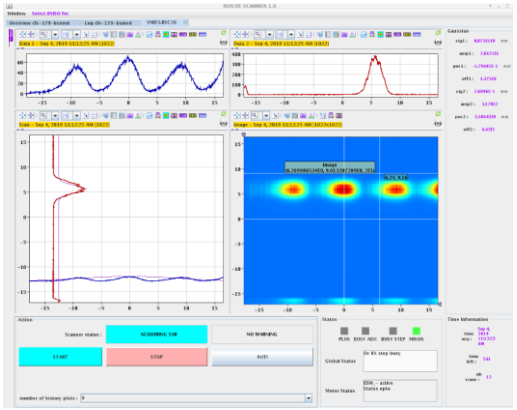
Lasers on/off – Tb155/Gd155 centered

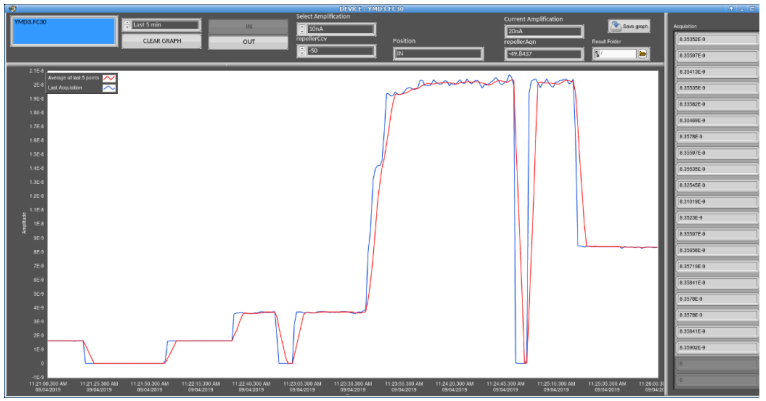
Laser on, 20.5nA





Laser off, 8.3nA

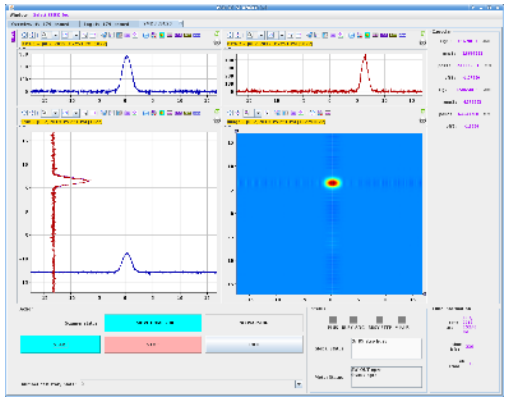




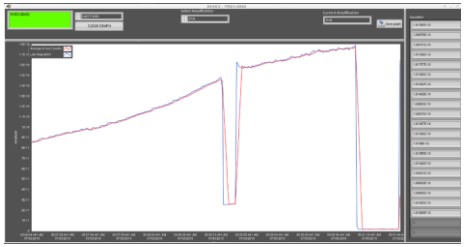
Er-169 results

RN of interest	Start of collection	End of collection	Time for collection (hrs)	Activity RN (MBq)	Eff (%)
Er-169	02-Jul	04-Jul	39	79	0.309
Er-169	08-Jul	11-Jul	67	27	N/A
Er-169	11-Jul	15-Jul	88.75	24	0.096
Er-169	15-Jul	17-Jul	40.5	7	N/A
Er-169	22-Jul	25-Jul	71.75	4	N/A

- No simple method to quantify how much Er168 is contaminating the beam
  - Optimization and implantation included the frame of the sample holder not just the sample itself
  - Optimization included the tail of Er168, not just Er169



Sample: 181pA



Separated beam: 273pA

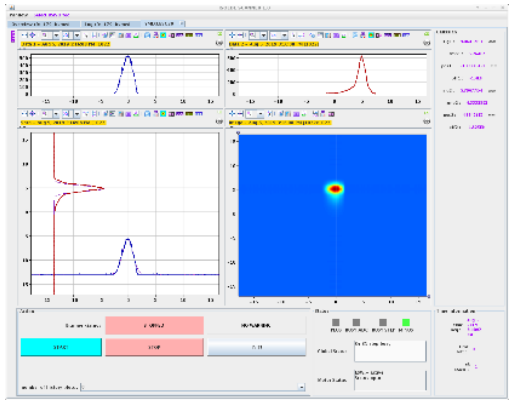
Collimator: 86pA

Total beam: 17.6nA

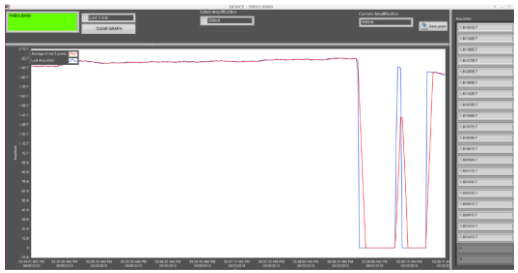
Tb-155 results

RN of interest	Start of collection	End of collection	Time for collection (hrs)	Activity RN (MBq)	Eff (%)	Contaminant	Activity of Contaminant (Bq)
Tb-155	05-Aug	08-Aug	66	0.095 [95kBq]	0.128	Tb-156	300
Tb-155	02-Sep	06-Sep	91.25	0.108 [108kBq]	0.146	Tb-156	1850

- Gd is laser ionized! More info with MELISSA report

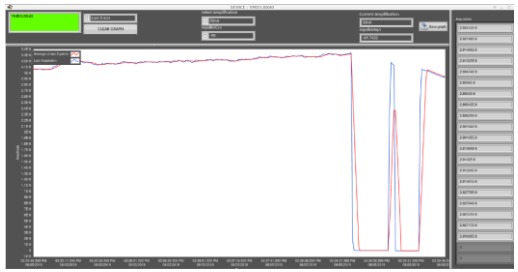


Sample: 181nA



Separated beam: 207nA

Collimator: 29.2nA



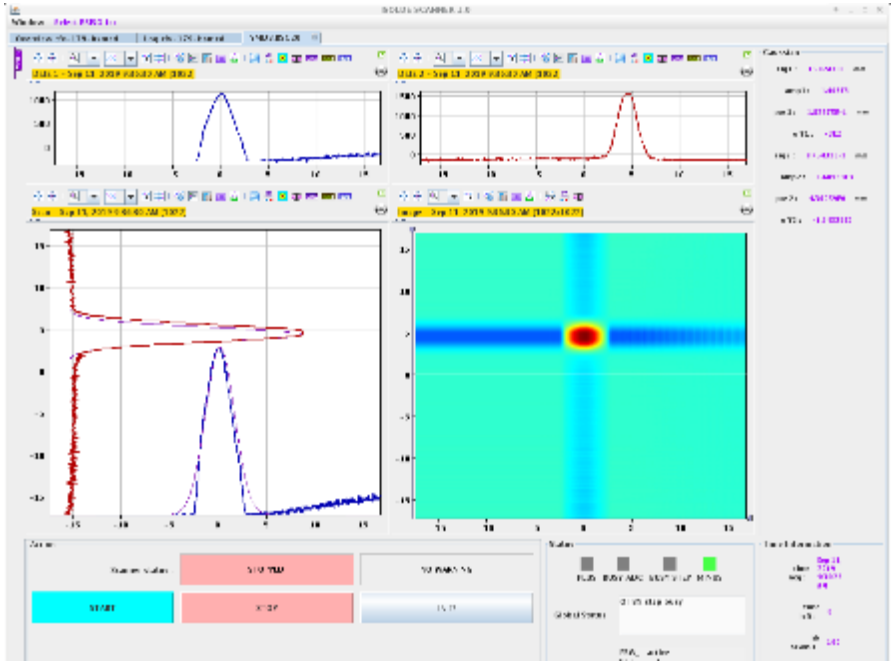
Total beam: 1.31uA

Yb-175 results

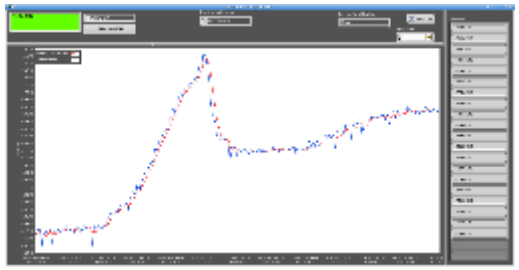
RN of interest	Start of collection	End of collection	Time for collection (hrs)	Activity RN (MBq)	Eff (%)	Contaminant	Activity of Contaminant (Bq)
Yb-175	10-Sep	12-Sep	40	276	4.11	-	-

- First results are good!
- Second collection ongoing

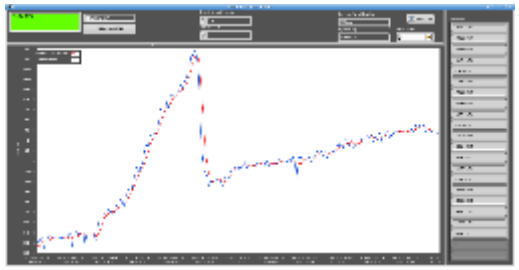
Heating Target by 10A followed by stabilization of current



Sample: 673pA



Collimator: 0.5pA



Conclusion for first laser ionized collections at MEDICIS

Er169

- Change of operational procedures
  - Ensure optimization is performed on sample only
  - Laser optimization on Er169

Tb155

- Gd is laser ionized
  - Need radiochemistry pre-irradiation!

Yb175

- So far so good!
- More results required for comments on how to proceed with optimizations

Thank-you! Merci!