



# 11<sup>th</sup> MEDICIS Collaboration Board Infrastructure and Operation Report

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December 6<sup>th</sup>, 2023

# Infrastructure report

## Glovebox

- Dedicated radiochemistry glovebox

## Radiochemistry

- Improvements to radiochemistry 2023

## New collaborations

- Sc-47 thermal release studies

## Ampoule set-up

- Decontamination and opening

## ICP-OES

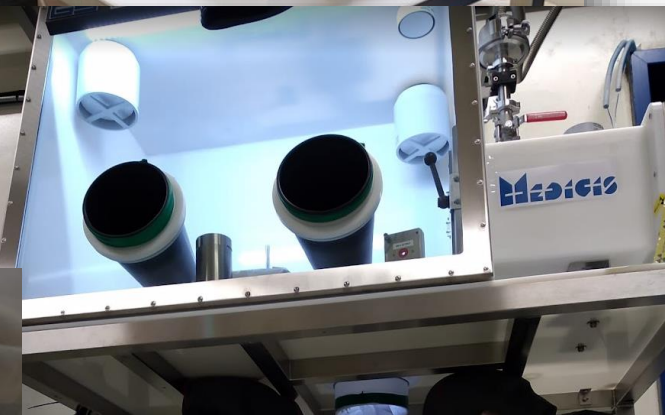
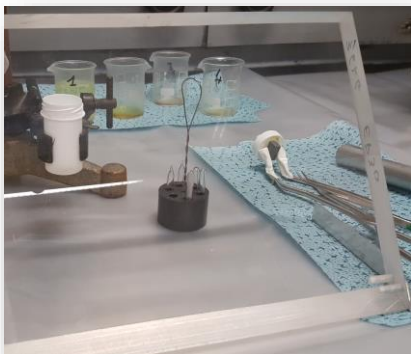
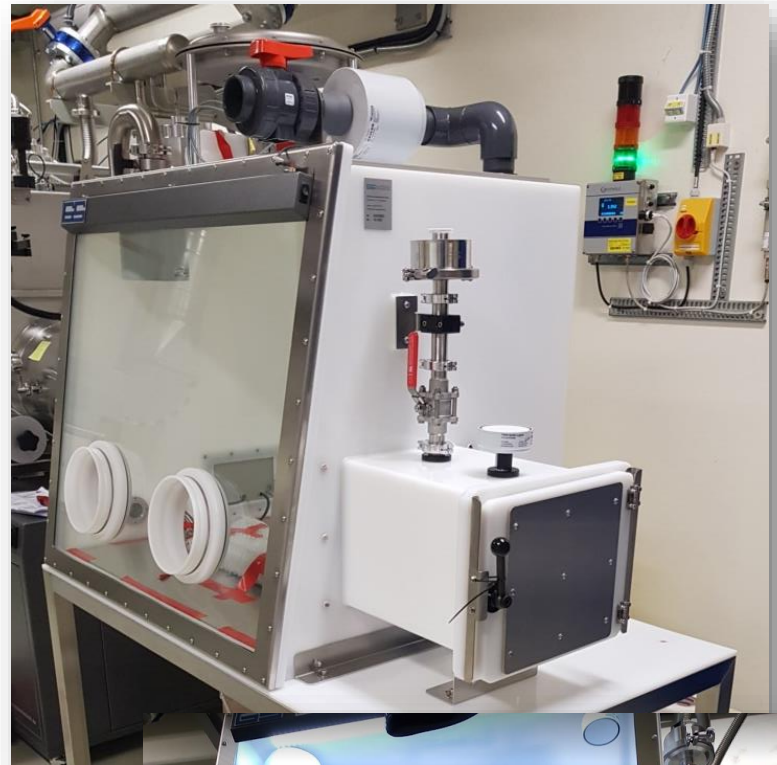
- Christmas gift to MEDICIS

## Fumehoods

- Upgrades for 2024

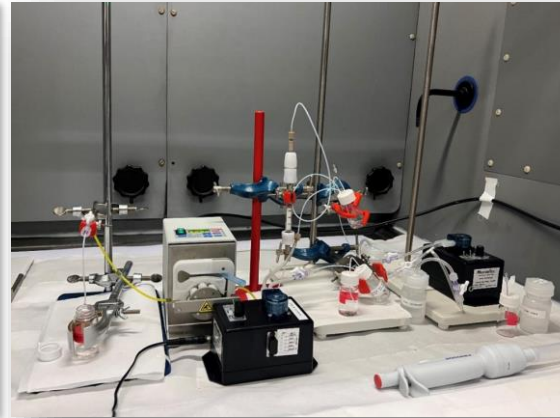
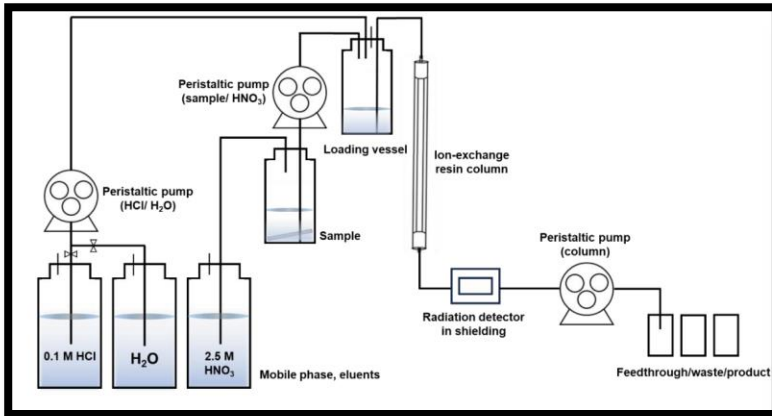
# MEDICIS Glovebox

- Glovebox commissioned last year
- Crucial in the developments of radiochemistry for 2023
- Increasing facility capabilities by allowing the operation and handling of alpha contaminated materials for example foil retrievals with Ac-225
- Further customisation planned with some new storage options inside of the glovebox



# Radiochemistry developments

Semi-automated ion-exchange chromatography and electrochemical methods



Summer student: Rudolfs Zablockis

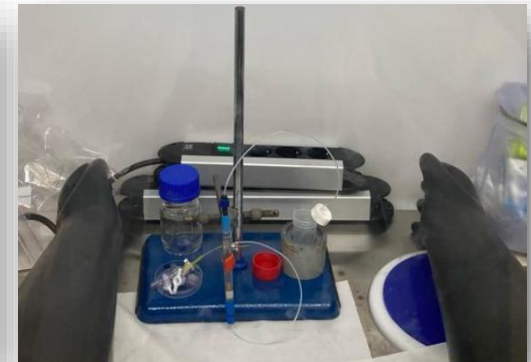
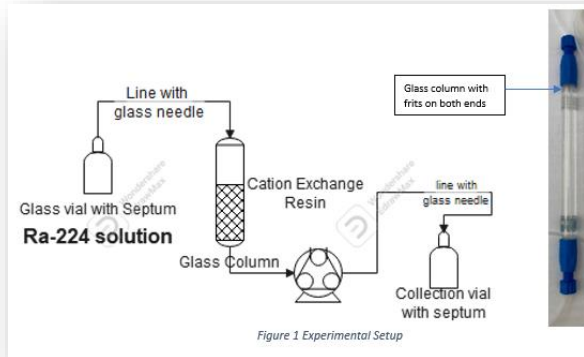
- Electrochemistry
  - ❖ Depositing contaminant metals onto electrode via electrolysis
- Ion-exchange chromatography:
  - ❖ Loading phase: Adsorb ion of interest inside column on resin
  - ❖ Feed through phase: wash column to flush out contaminants
  - ❖ Elution phase: elute out product
  - ❖ Cleaning phase: Flush column with deionized H2O for column reusability

## Experiment :5

### Experiment for the Chromatographic Separation of Radium and Lead

The objective of the experiment is to study the separation of lead and bismuth from radium using cation exchange resin.

- $^{224}\text{Ra}$  and  $^{212}\text{Pb}$  generator
  - ❖ Glass bottle + glass wool
  - ❖ Rn collection chamber
  - ❖ Cation exchange resin



MEDICIS radiochemist: Muhammad Inzamam

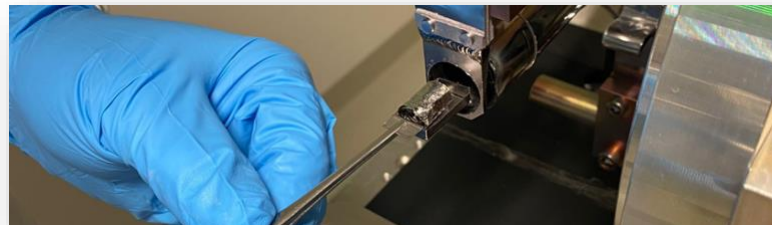
# Sc thermal release studies

Masters student: Patricija Kalnina

PhD  
Thesis  
of Edgars  
Mamis



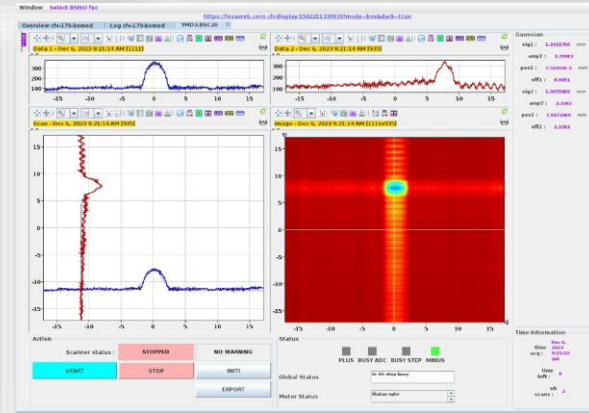
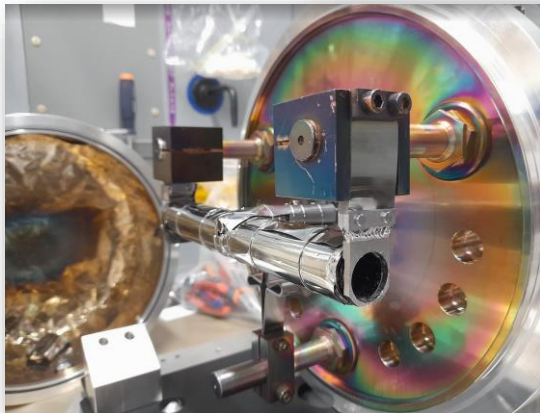
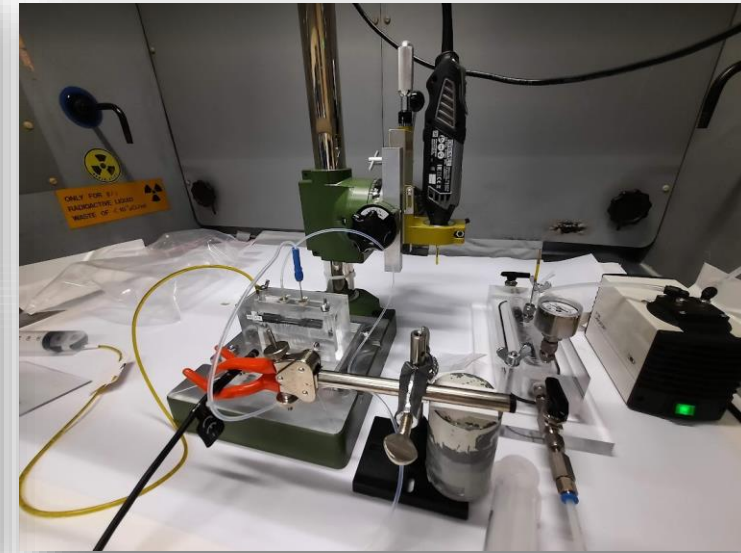
- In collaboration with CHARM facility – nat-Ti and nat-V foils irradiated using secondary neutrons
- Thermal release studies performed using pump stand in Nano Laboratory
- No dose received over entire experimental period!



# Ampoule processing



NEUTRONS  
FOR SOCIETY



# ICP-OES



European Organization for Nuclear Research  
Organisation européenne pour la recherche nucléaire

EDMS No. 3006268

Group Code: SY/STI

DO-xxx/SY/STI

**MEDICIS**

## Price Enquiry

### Technical Specification Supply, installation, and commissioning of one Inductively Coupled Plasma Optical Emission spectroscopy (ICP-OES) for the MEDICIS Facility

#### Abstract

This Technical Specification concerns the supply, installation, and commissioning of one ICP-OES for the MEDICIS facility on the Meyrin site of CERN (Switzerland).

The supply is foreseen to be fully installed and commissioned on CERN site in 2024.

- Measures the light emitted at element-specific characteristic wavelengths from analytes
- The detector measures the intensity of the emitted light
- This is correlated to the concentration of that particular element in the sample

# Fumehood upgrades





# Conclusion

## Glovebox

Dedicated glovebox for radiochemistry or alpha contaminated materials

## Radiochemistry

Improvements to radiochemistry for the year 2023

## New collaborations with other facilities

Scandium thermal release studies

## Ampoule processing

Improvements to ampoule decontamination and opening procedure

## ICP-OES

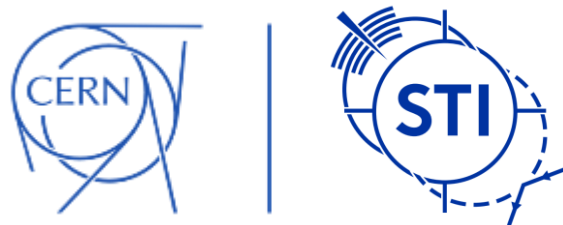
New equipment furthering facility quality control capabilities

## Fumehood

Fumehood upgrades aligning with facility demands of increase in activities



# MEDICIS



Thank-you to the MEDICIS dream team and all of our collaborators!

Merci!

