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Title: Analytical Capability of Plasma Spectrometry Team

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Analytical Capability of Plasma Spectrometry Team

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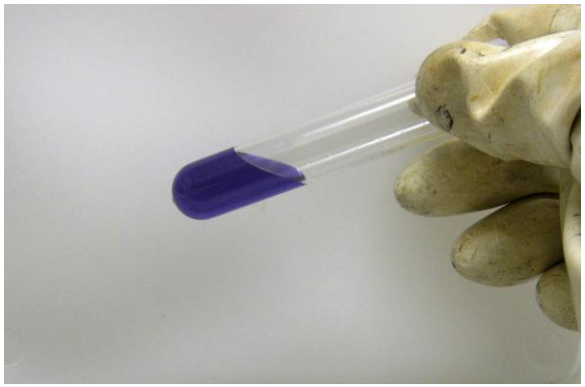
What Kind of Samples We Analyze?

- **Pu and U metal**
- **Pu oxide for nuclear fuel**
- **^{238}Pu oxide for heat source**
- **Nuclear forensic samples: filters, swipes**

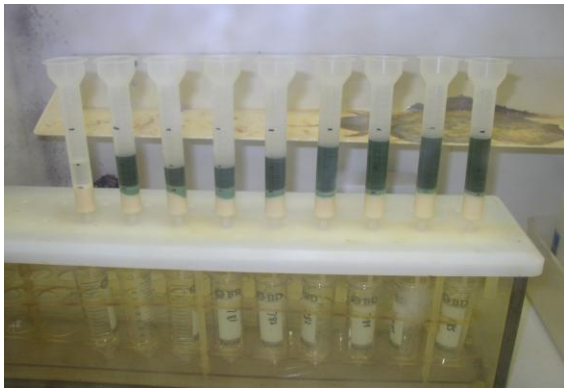
What Kind of Sample Preparation We do?



Metal dissolution

Marple filter dissolution

Pu oxide closed vessel acid digestion

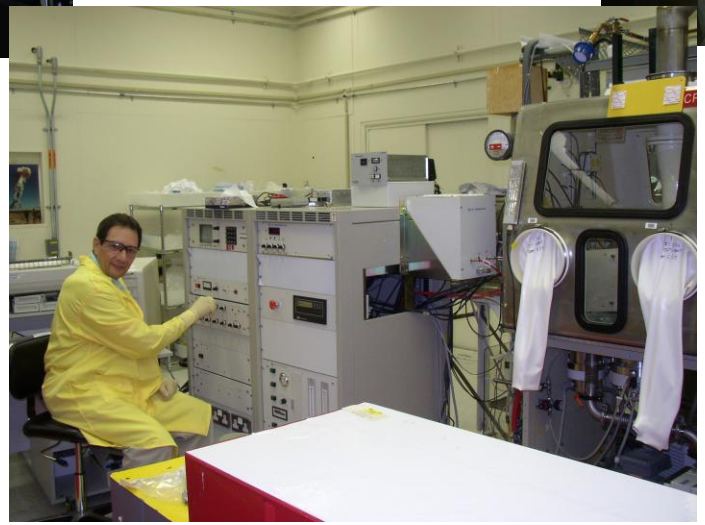


Column separation to remove Pu

What Techniques We Use for Trace Elemental Analysis?

Glove box interfaced ICP-AES (IRIS, Thermo Electron)

Fume hood contained ICP-AES (Ultima 2, Horiba Jobin yvon)



Glove box interfaced ICP-MS (VG PQ2^{+})

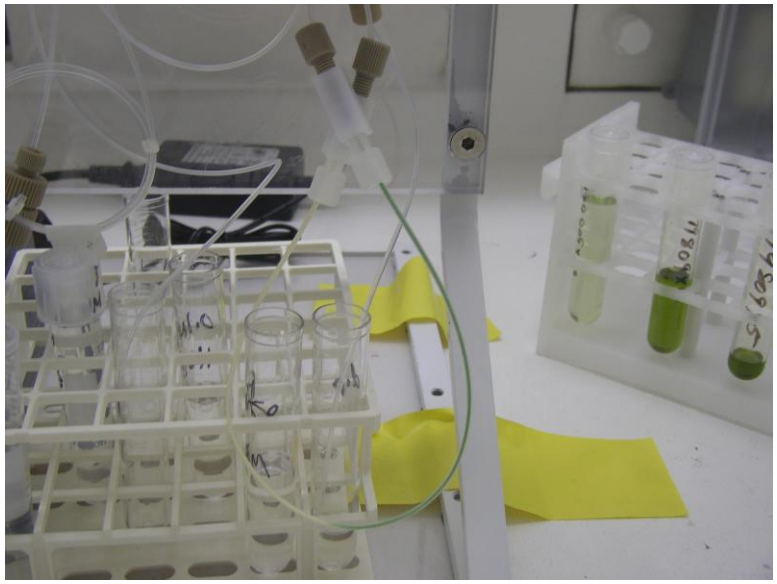
Direct ^{238}Pu Oxide Analysis by DC Arc Spectrometry

New generation DC arc spectrometer (Prodigy, Teledyne Leeman) designed for glove box

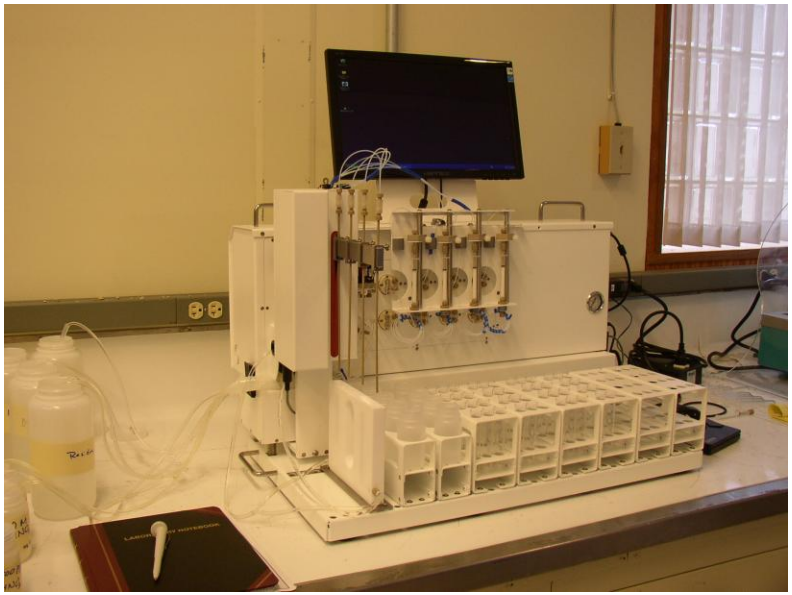
An arc generated at the sample electrode

Glove box contained DC arc stand

New Micro Column System Actinide Separation



Manual micro column separation for Pu- gas pressured extraction column to reduce raw material consumption and waste generation

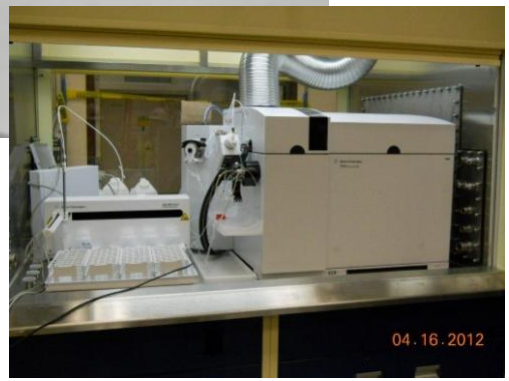


Automated multi column actinide separation system designed by Staff in PS team and fabricated by J2 Scientific

What Is New?-RLUOB

New Trace Element labs

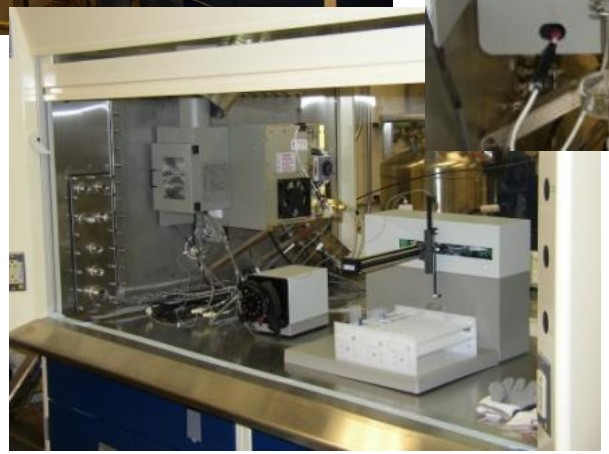
ICP-AES (iCAP 6000, Thermo)



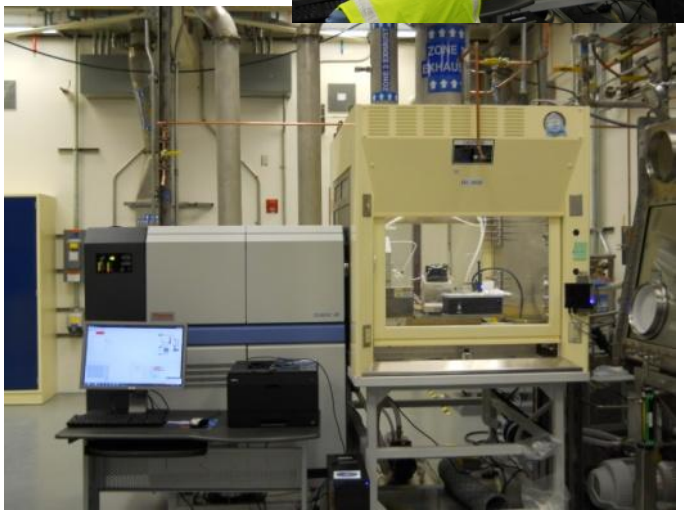
ICP-MS (7700, Agilent)

ICP-MS (X Series 2, Thermo)

What Is New?-RLUOB (cont.)

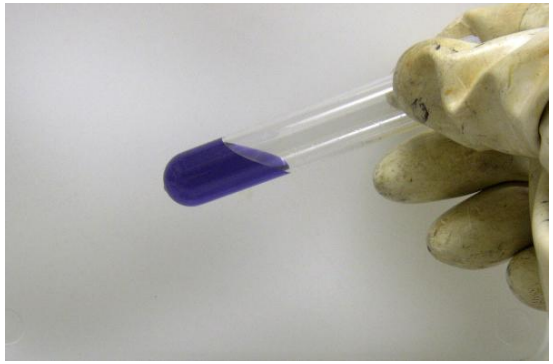


ICP-AES (Prodigy, Teledyne Leeman) interfaced with glove box



High resolution ICP-MS (Element XR, Thermo)

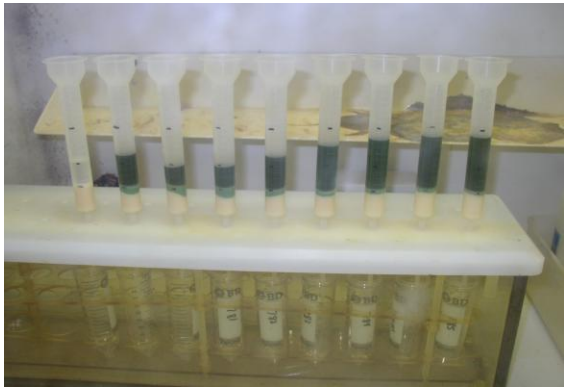
Sample Preparation



Metal dissolution – Pu and U

Marple filter dissolution - nuclear forensic

Pu oxide closed vessel acid digestion – nuclear fuel



Column separation to remove Pu