



Automatization of ICP-MS analysis in a large scale production lab

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- **About Eurofins**
- **Where we started**
- **ESI prepFAST system**
- **Tough matrices and FAST FIAS**
- **prepFAST IC – speciation and direct analysis on one system**

- 42 countries
- 400 laboratories
- 30 000 employees
- 400+ employees in Sweden



- Customer segments:
 - Industries
 - Consults
 - Utilities
 - Food/Feed
 - Pharma, ...

Analysis of different matrices:

Waters

Soils

Sludges

Food/feed samples

Instrument park:

3 ICP-OES systems

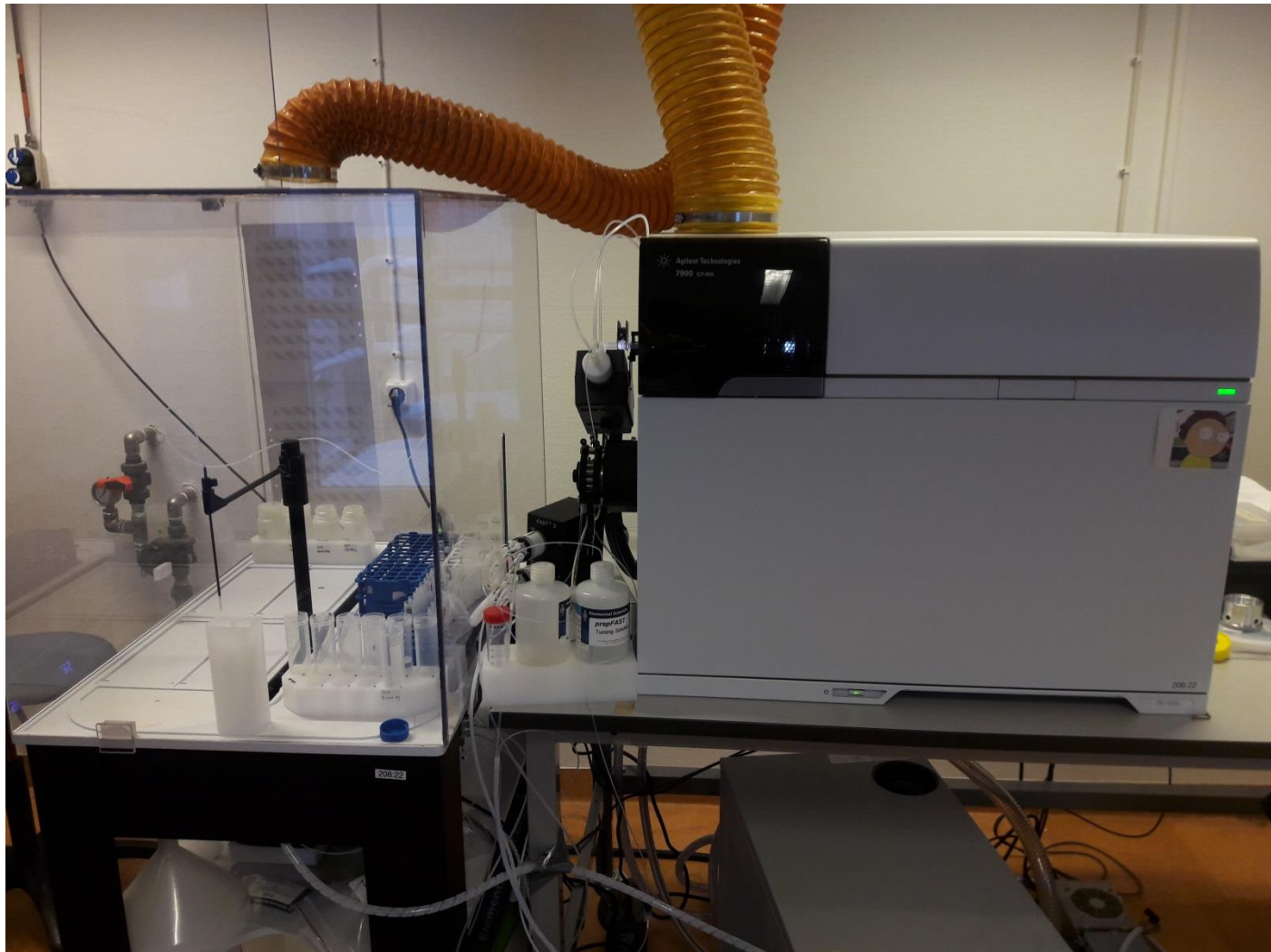
9 ICP-MS systems

3 AFS systems

- **Analytical and organic chemistry at Linköpings University**
- **Worked with biochemistry and microbiology for quite some time during studies.**
- **Worked in Eurofins since 2014 first as a chemist, since 2015 with method development and validation/quality**

Where we started

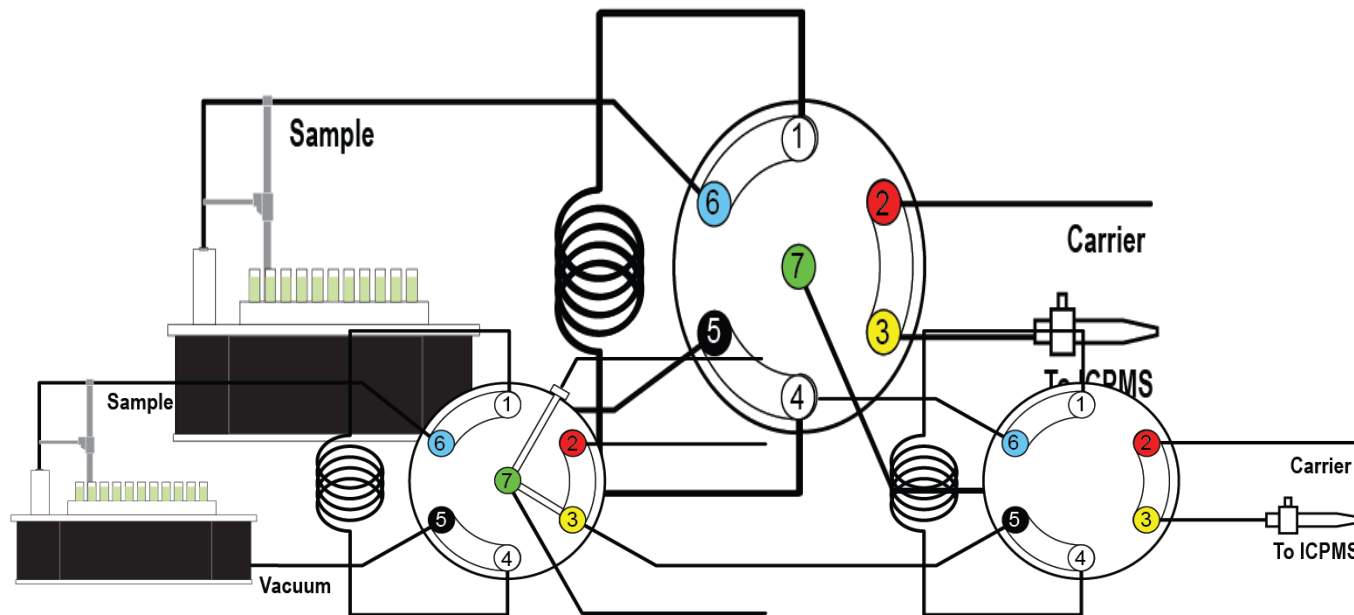




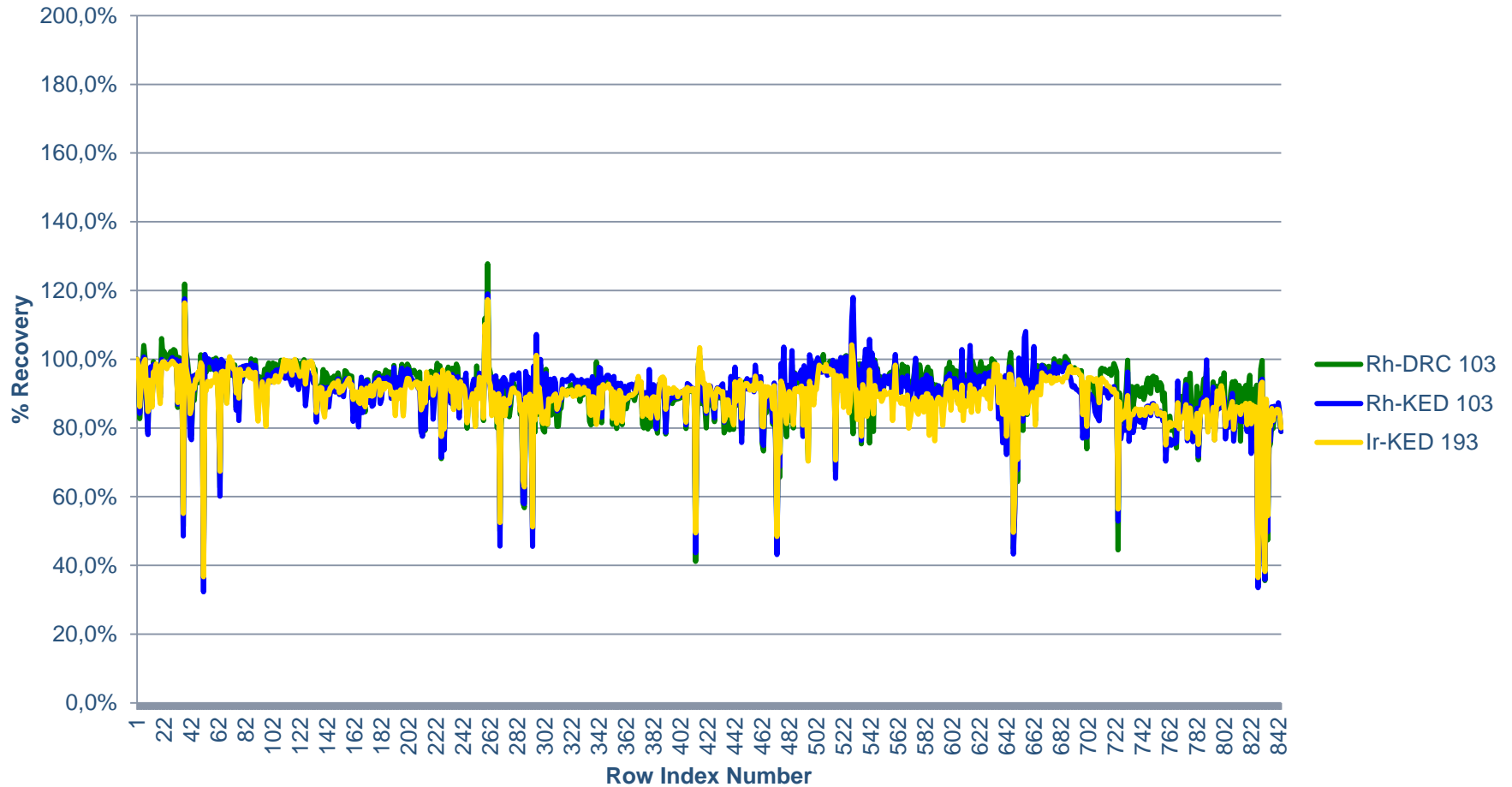
prepFAST syringes

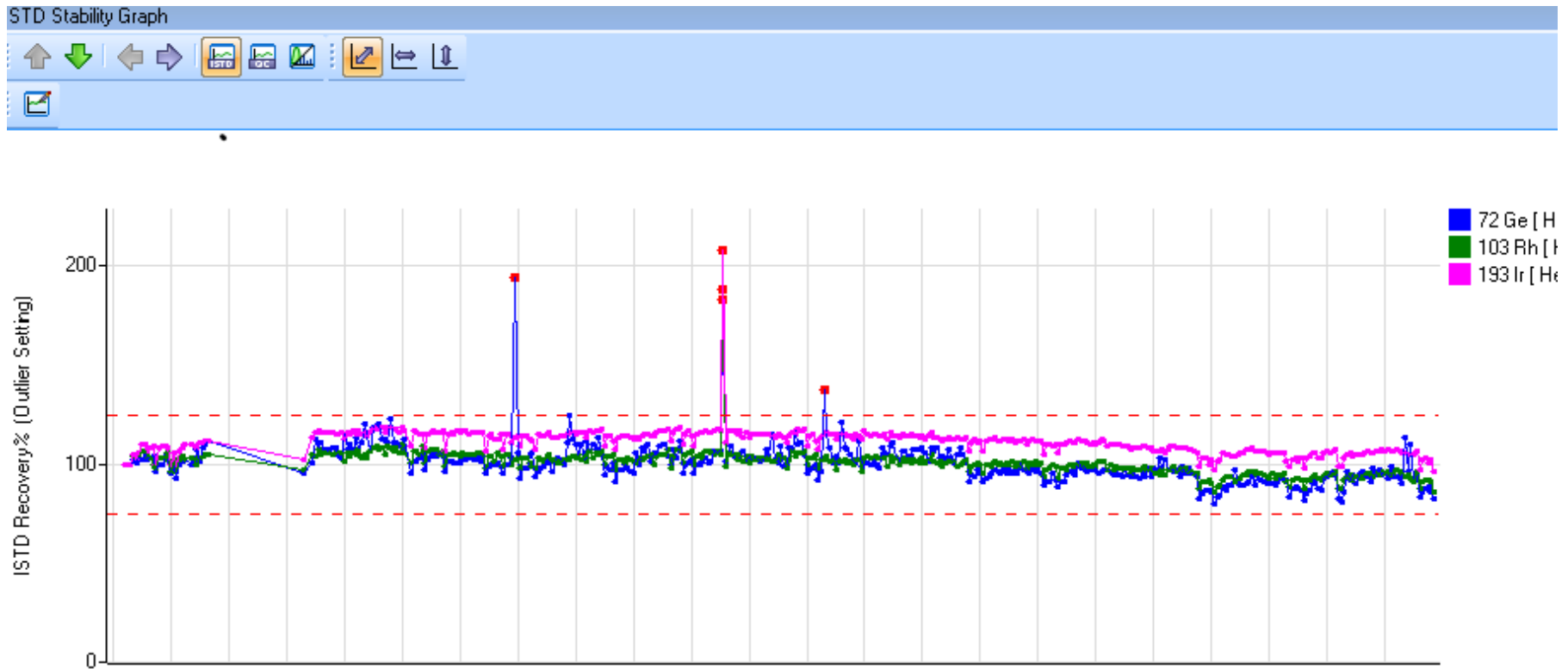


prepFAST (and FAST) schematics

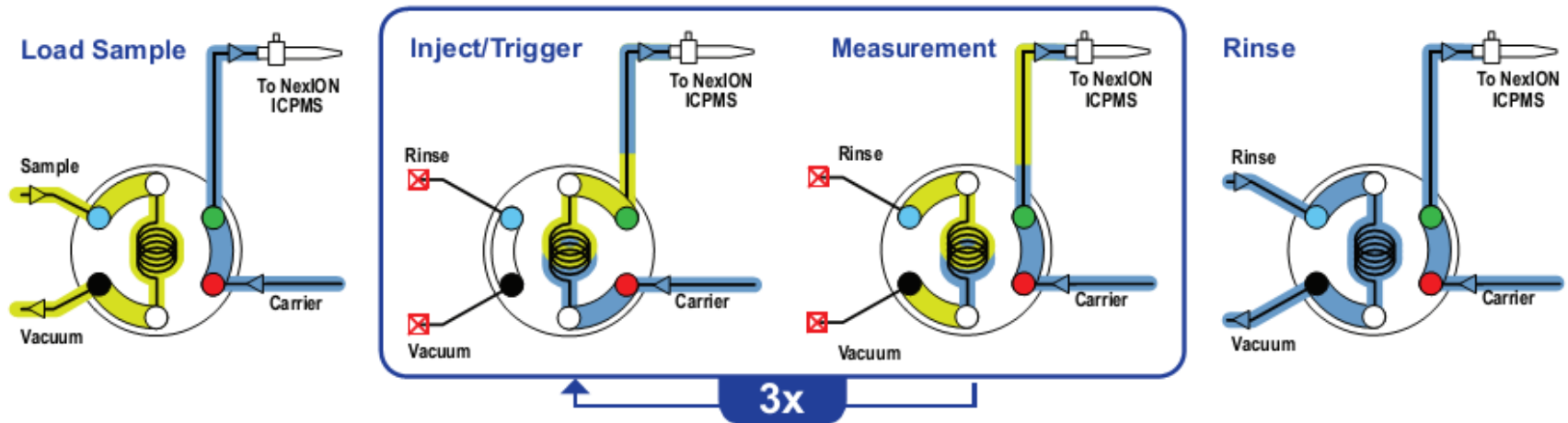


Internal Standards





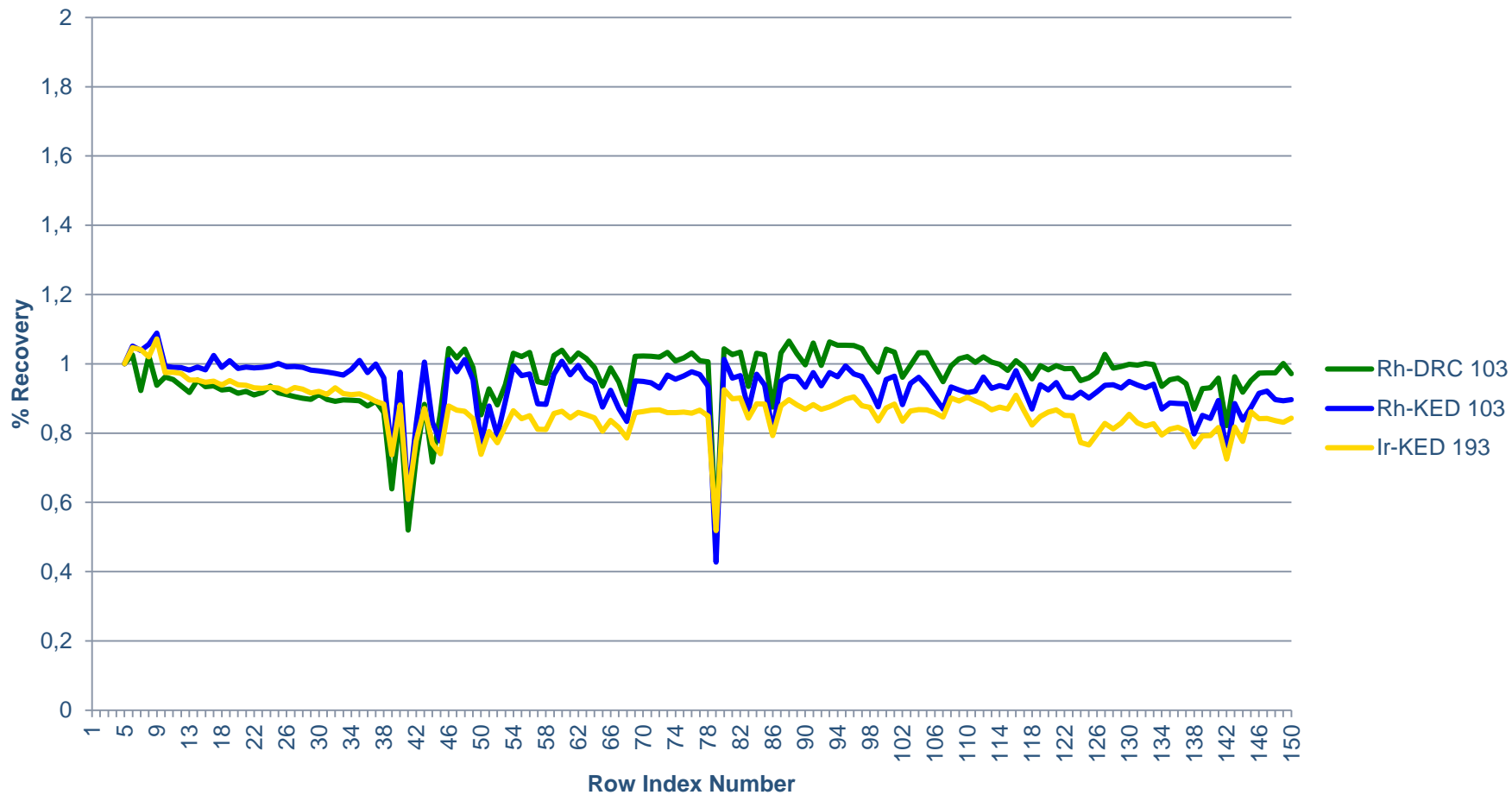
FAST FIAS - NexION



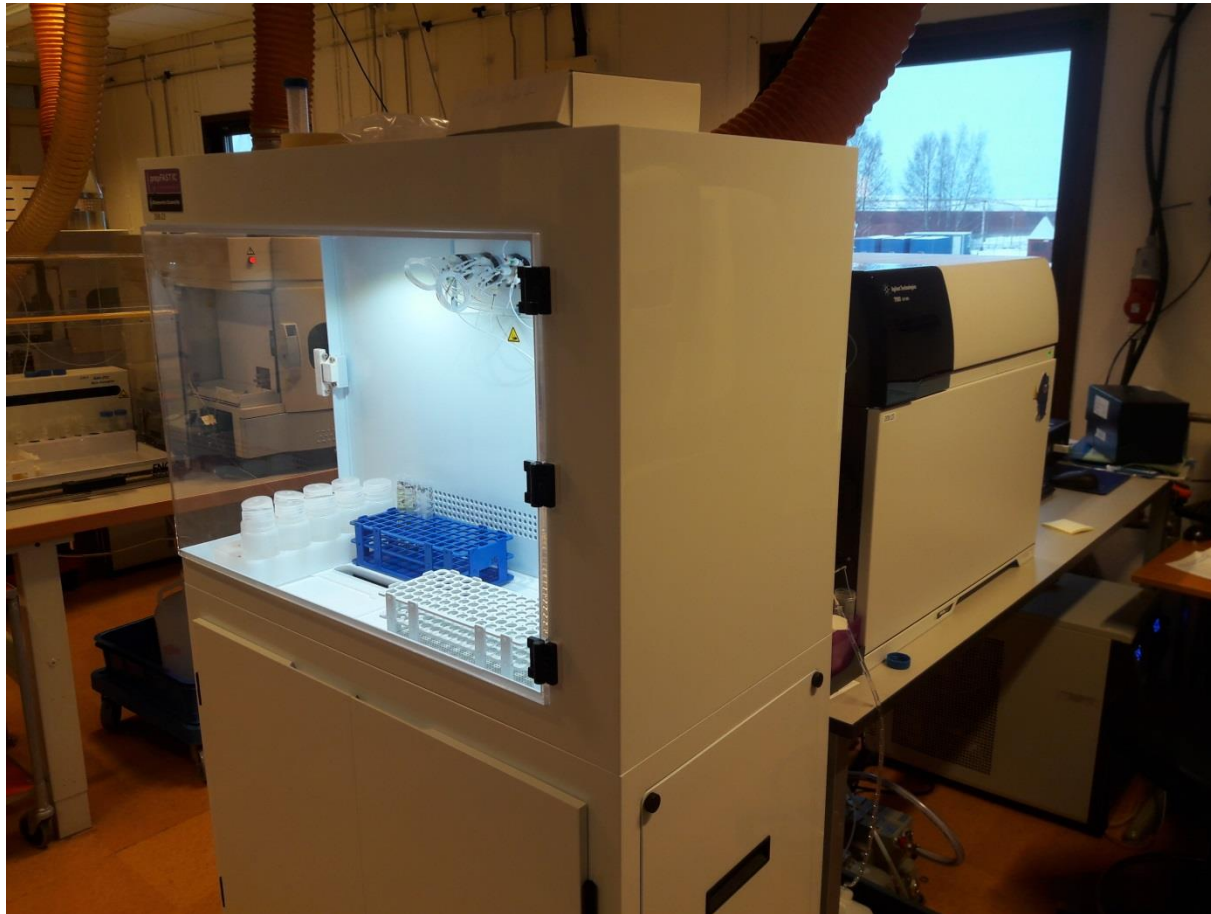
Total Dissolved Solids (TDS)	Recommended Injection Time
< 0.2%	5000ms
0.2-1%	2000ms
1-3%	1000ms
3-5%	500ms
5-10%	250ms
>10%	125ms

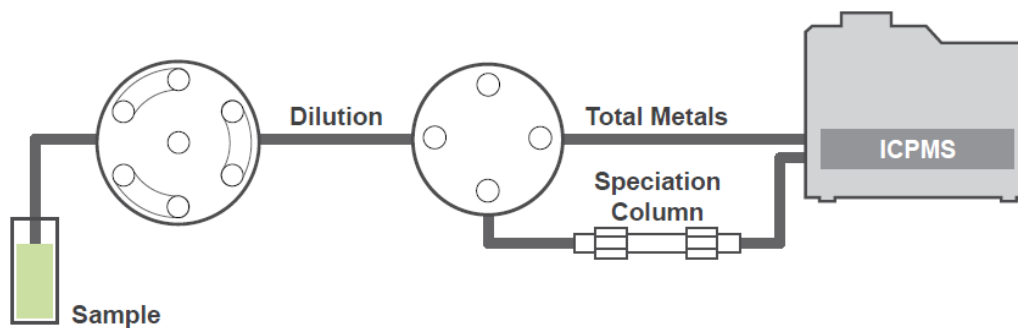
Element	LOQ 10 x std[$\mu\text{g/l}$]	Element	LOQ 10 x std[$\mu\text{g/l}$]
Be-KED 9	0,09856	Cu-KED 63	0,36976
B-KED 11	4,53531	Cu-KED 65	0,47712
Na-DRC 23*	0,00779	Zn-DRC 66	0,1803
Mg-DRC 24*	0,03771	Zn-KED 66	0,7252
Al-DRC 27	4,27913	As-KED 75	0,1894
Si-KED 28*	0,28236	Se-DRC 78	2,40307
K-DRC 39*	0,01186	Se-DRC 82	0,37638
Ca-DRC 43*	0,02088	Sr-KED 88	0,1954
V-DRC 51	0,01237	Mo-KED 98	0,11191
Cr-DRC 52	0,20753	Ag-KED 107	0,04765
Cr-KED 52	0,34539	Cd-KED 114**	0,0259
Cr-KED 53	0,95311	Sn-KED 118	0,07118
Mn-KED 55	0,15434	Sb-KED 121	0,19857
Fe-DRC 56	1,08352	Ba-KED 138	0,22962
Fe-KED 56	5,88987	Hg-KED 202	0,06079
Co-KED 59	0,02966	Tl-KED 205	0,00751
Ni-KED 60	0,31276	Pb-KED 208	0,18009
Ni-KED 62	0,5004	U-KED 238	0,0035

Internal Standards









Advantages

Definetly reduced risk of random/human errors

Lower risk of contamination

Maintenance free (most of the time)

Roubust – can take a hit

User friendly module system (vacuum, syringe modules etc)

Disadvantages

Small containers for washes, use quite a lot of wash solutions. Need for in house solution most of the time

prepFAST

FAST FIAS

prepFAST IC

Questions?