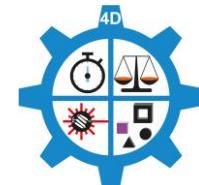
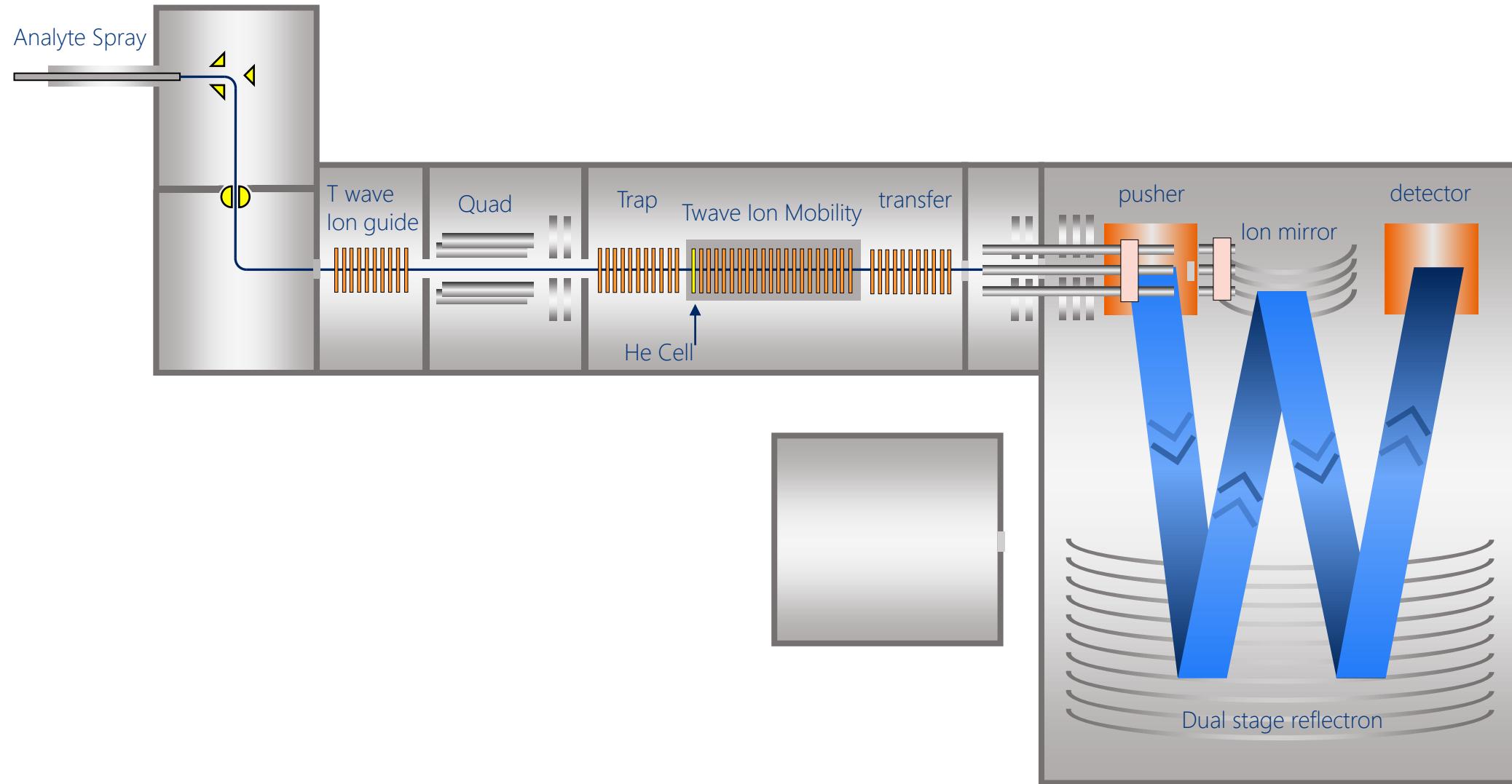


Hyphenating Ion Mobility and Action Spectroscopy in a Synapt G2 to Probe the Structure and Kinetics of Aggregating Peptides

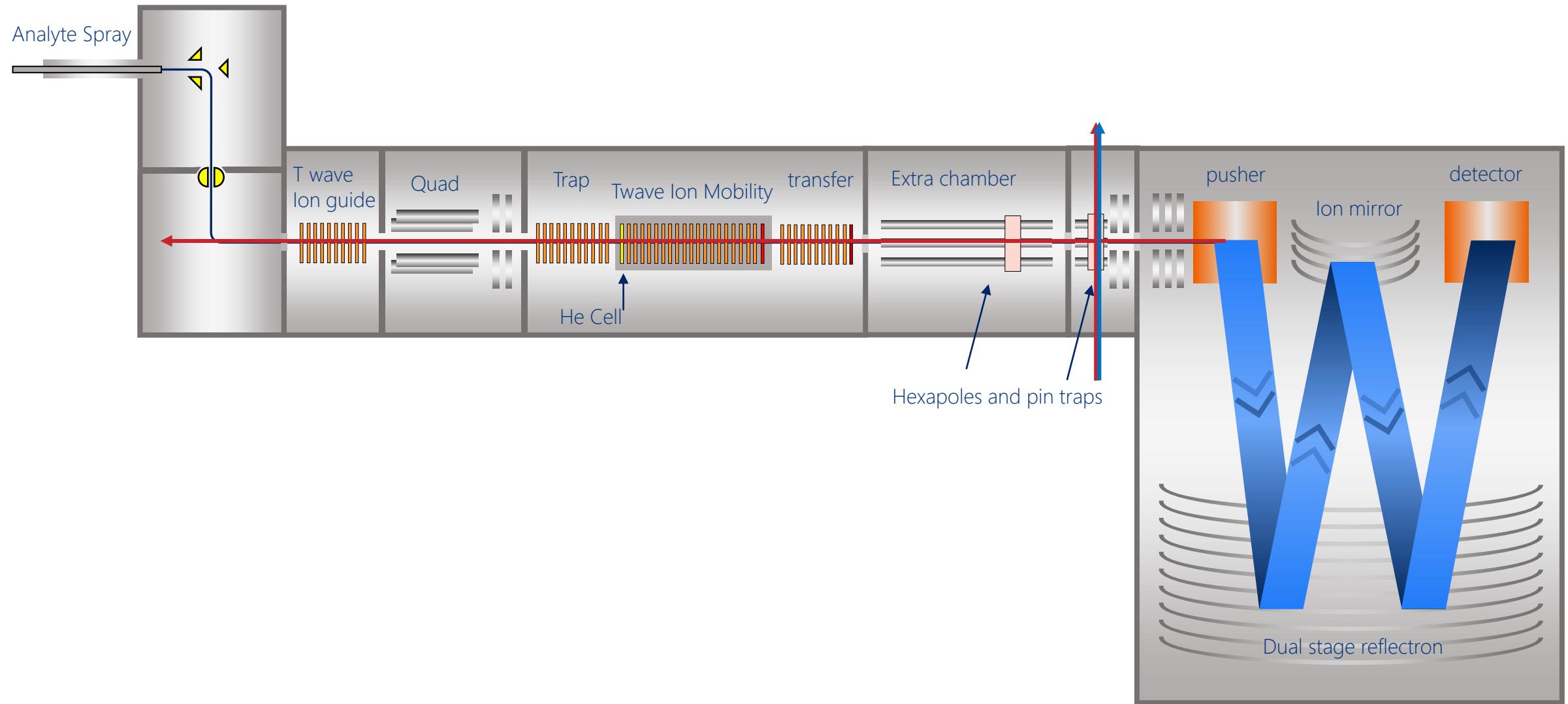
Steven Daly, MSVision



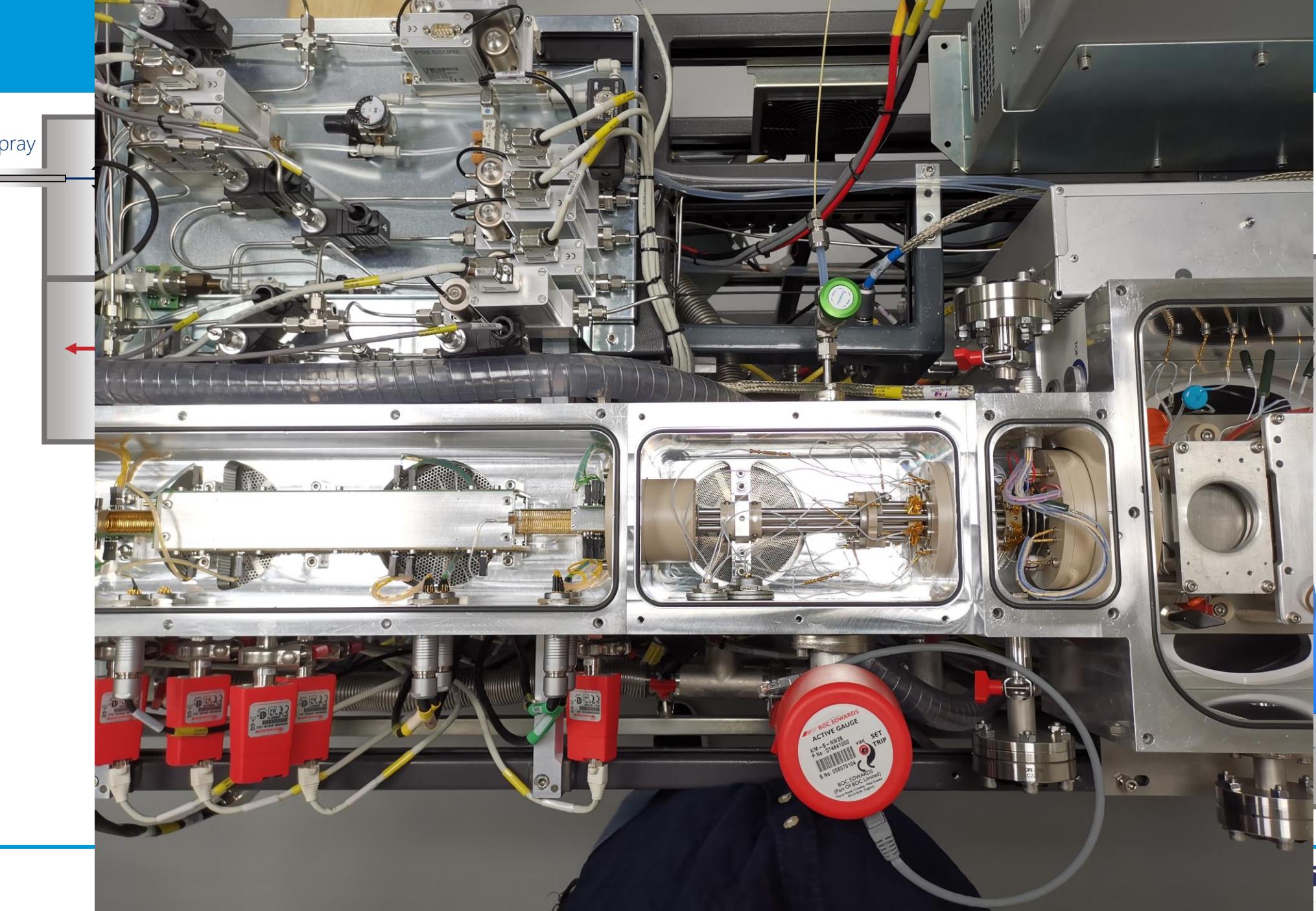
The PhotoSynapt.



The PhotoSynapt.



Analyte Spray

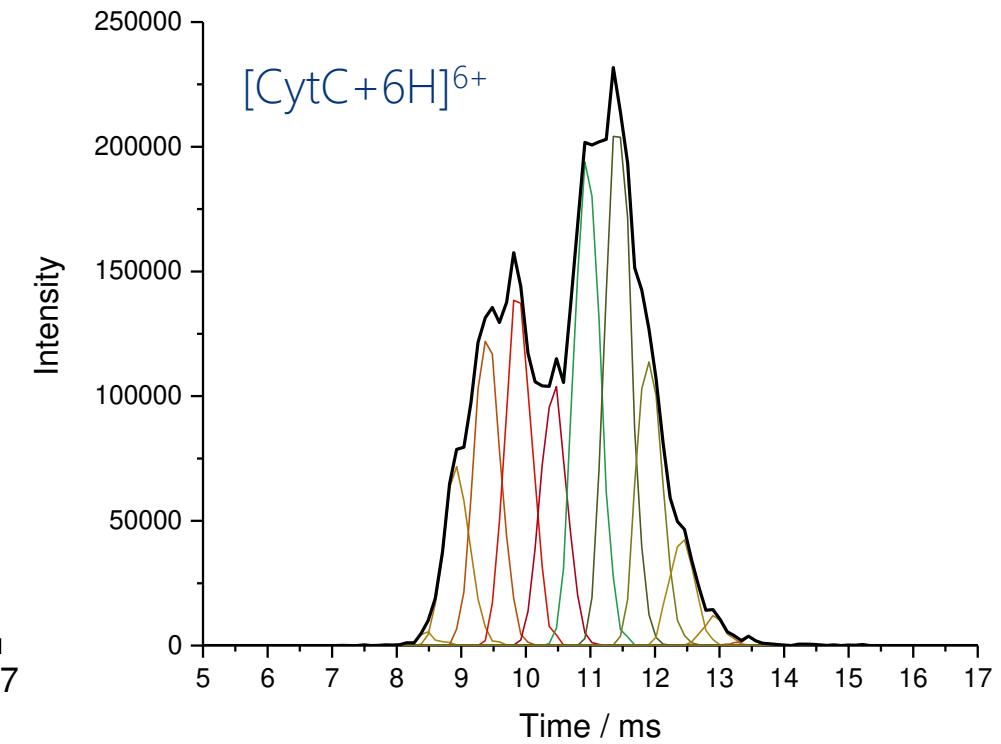
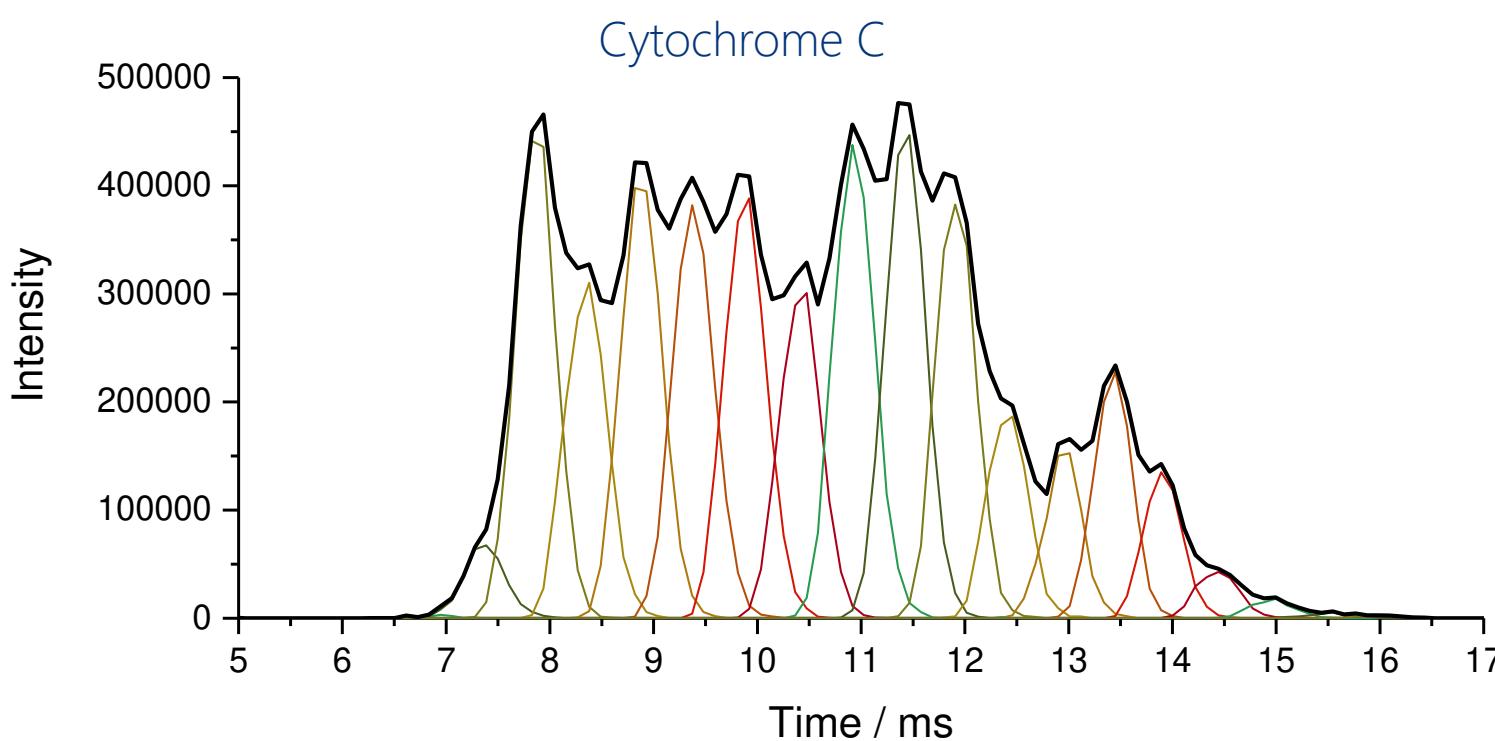
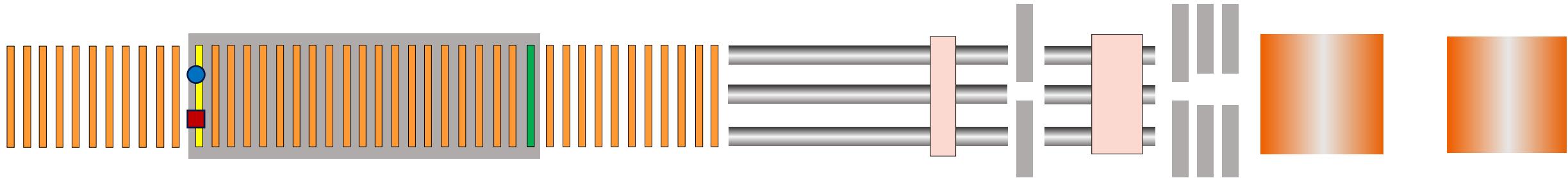


detector

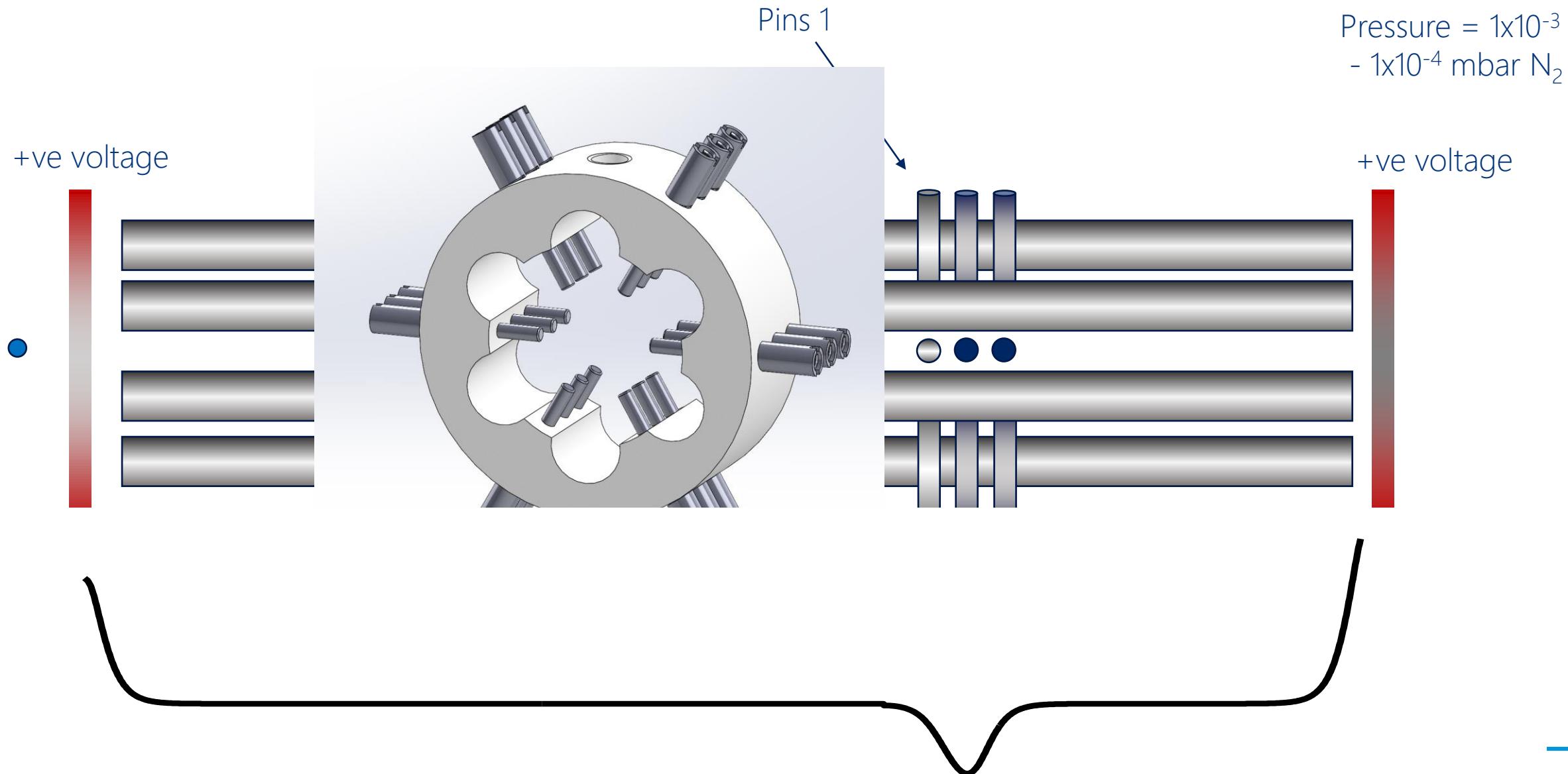


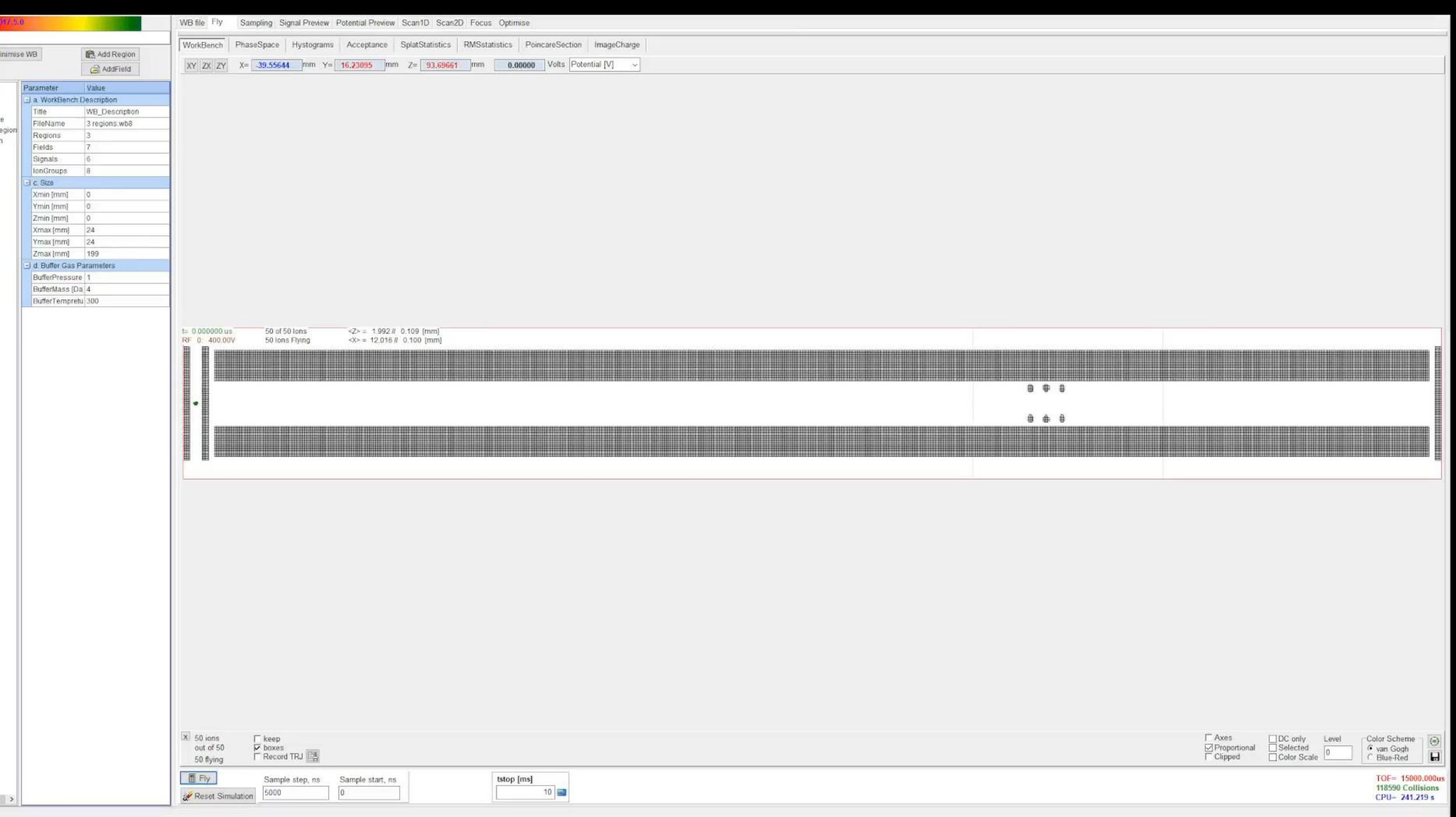
on

Functional Overview – The PhotoSynapt acquisition cycle

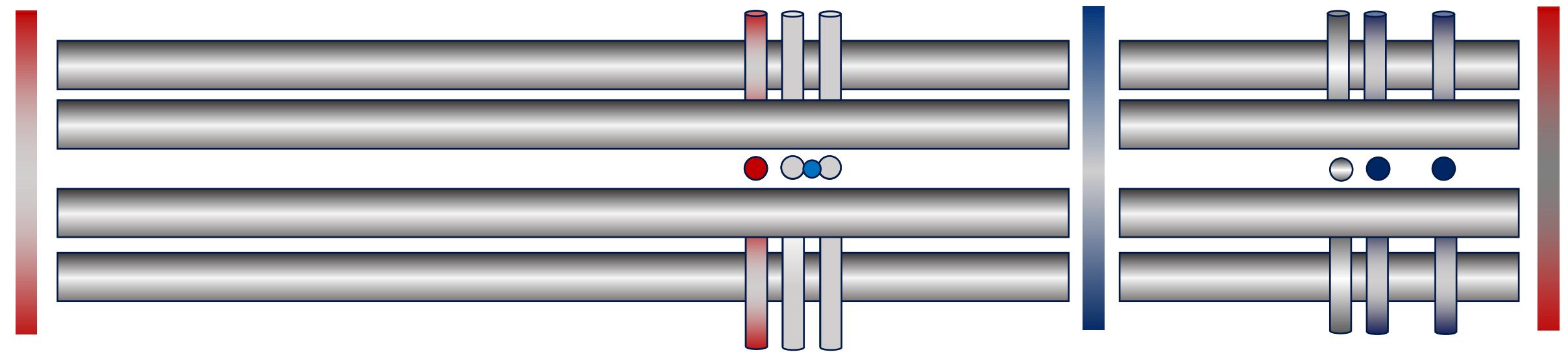


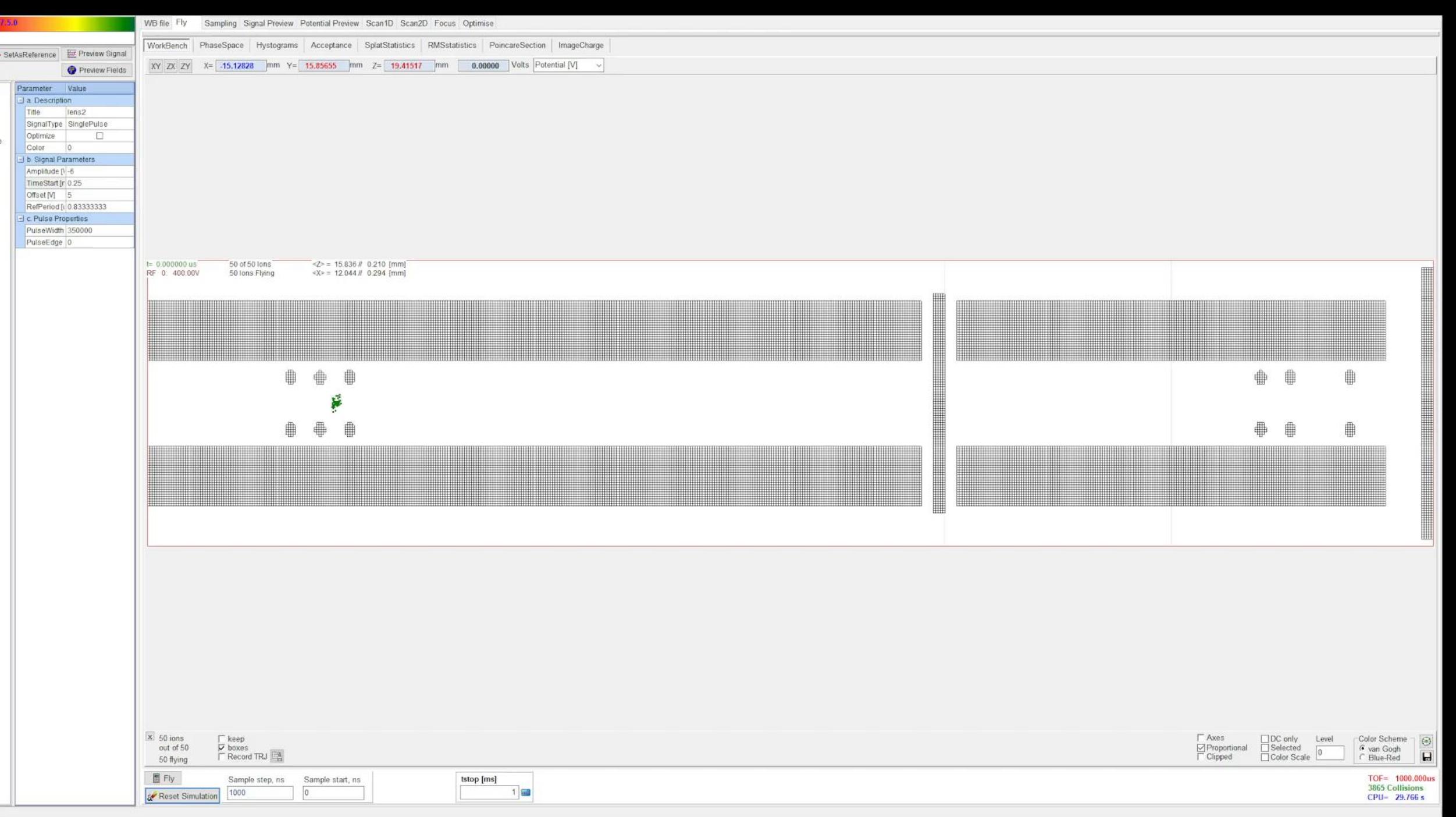
Functional Overview – First Hexapole trapping





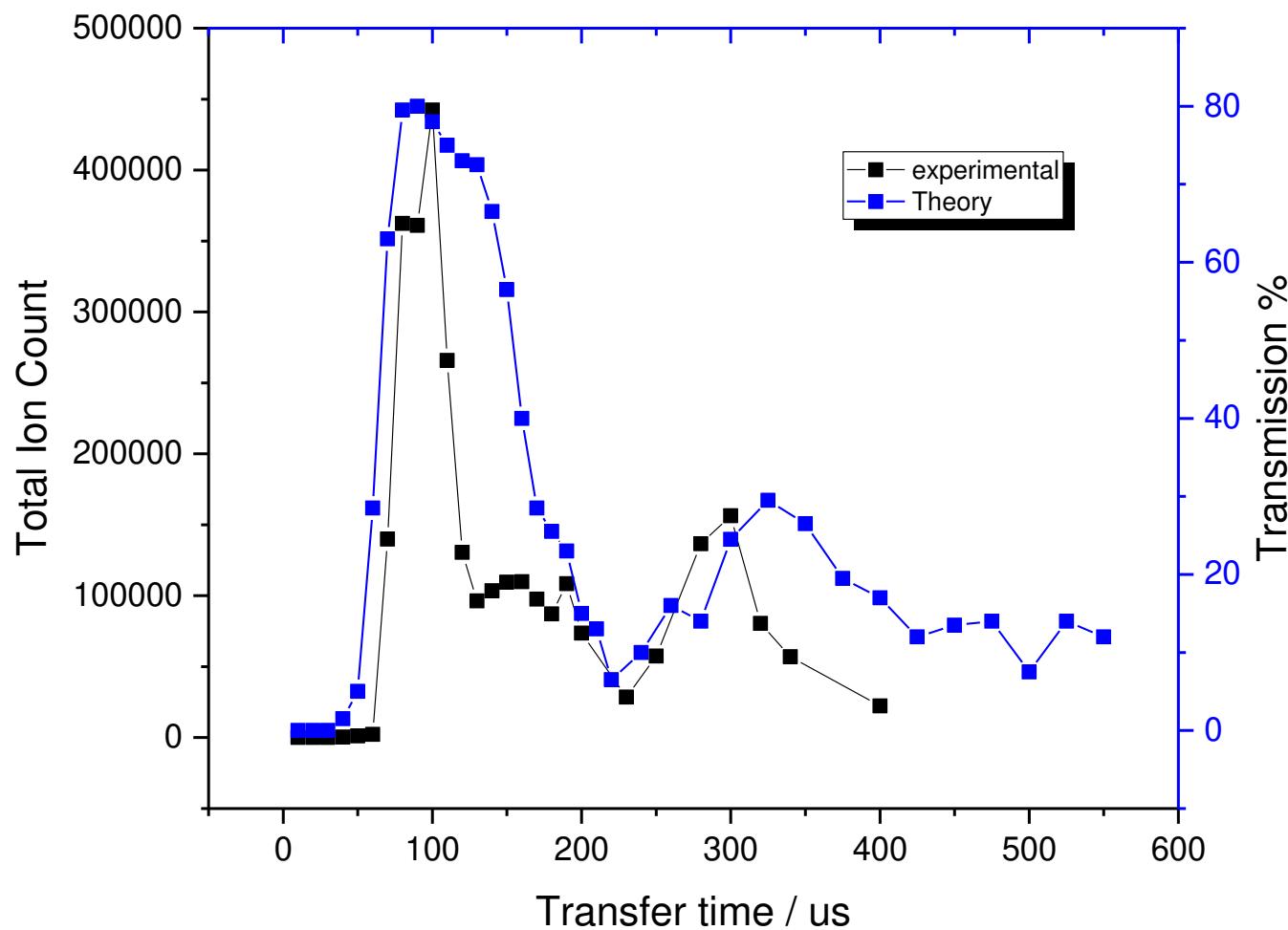
Functional Overview – Transfer between traps



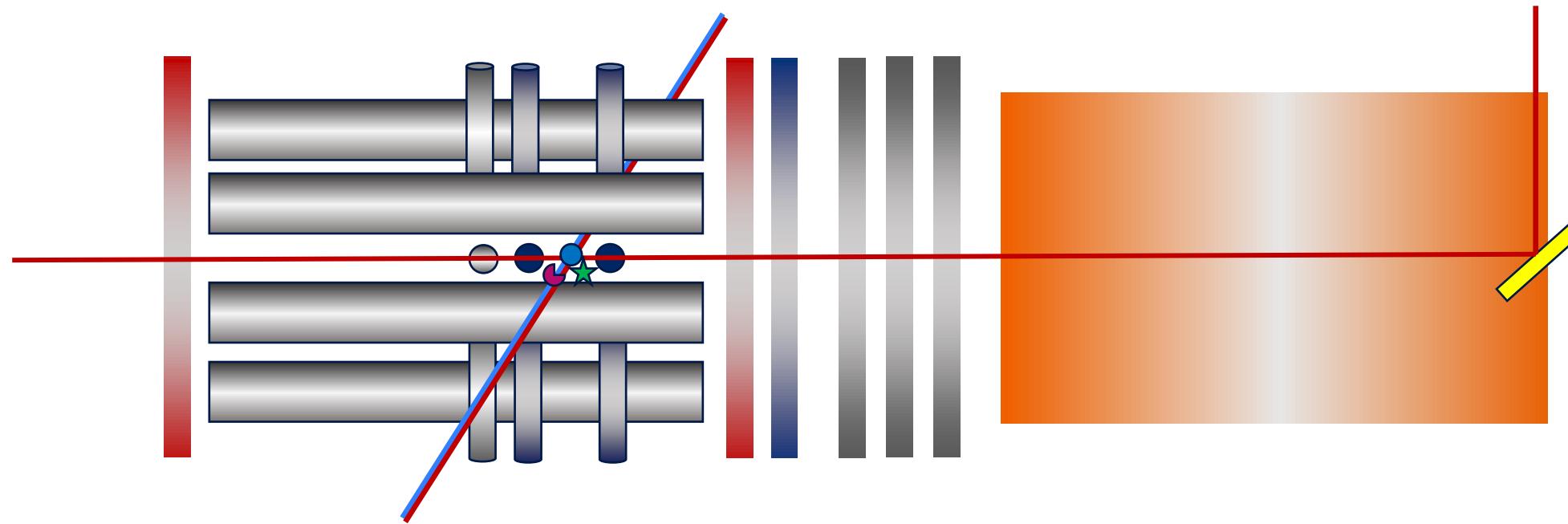


Functional Overview – Transfer between traps

Benzocaine
 $m/z = 166$



Functional Overview – Ejection and Detection



Functional Overview – Ejection and Detection (ideal case)



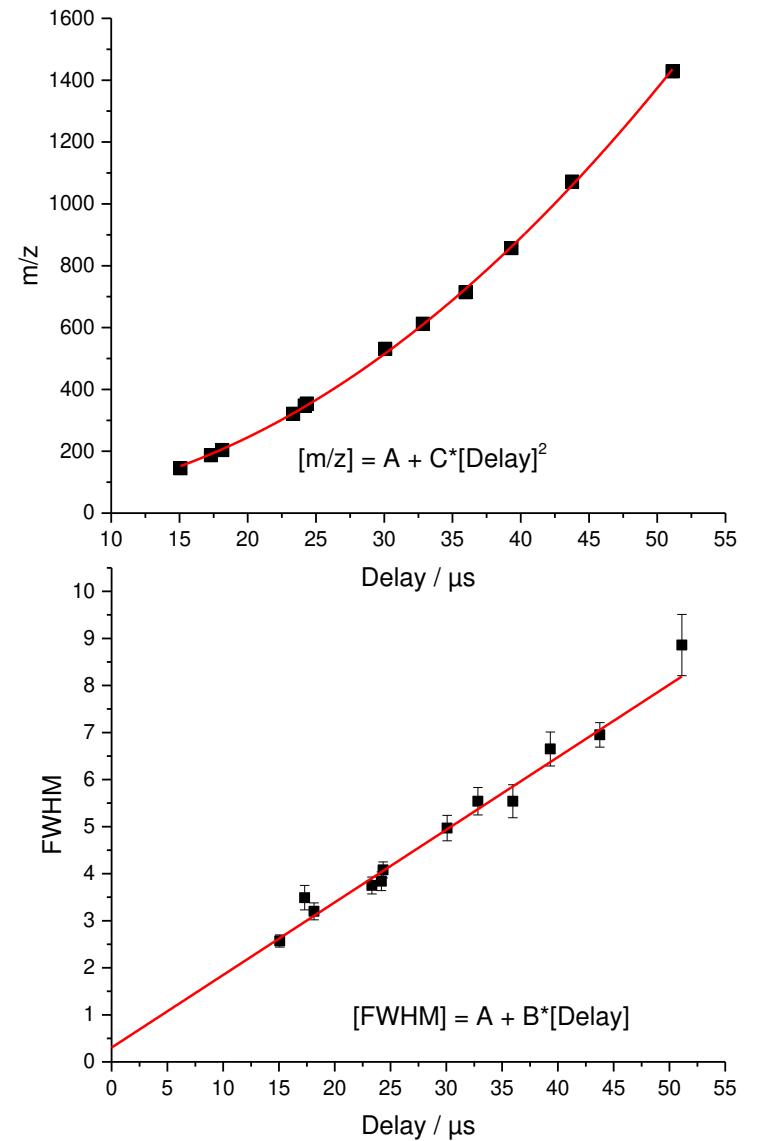
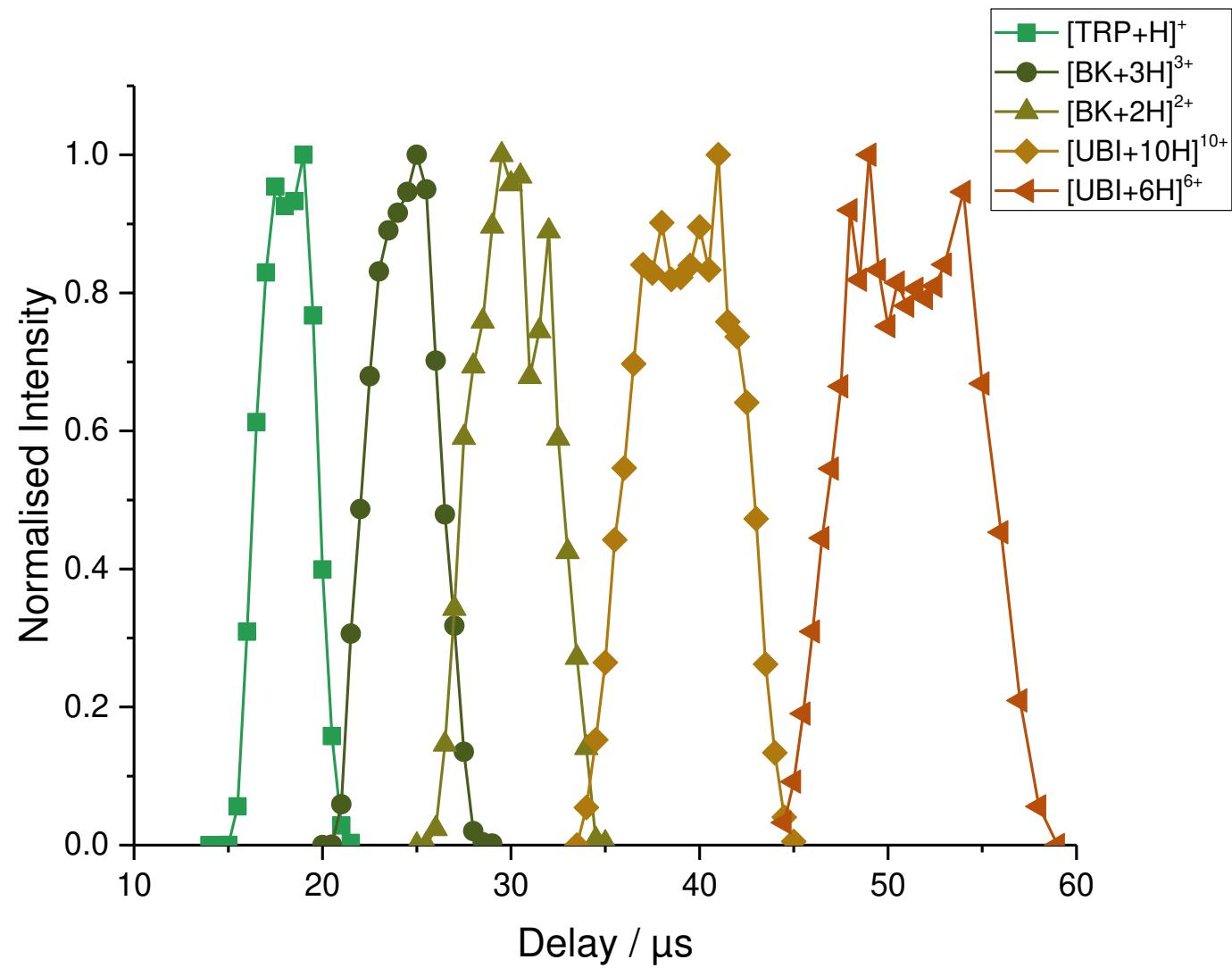
Functional Overview – Ejection and Detection (real case)



Functional Overview – Ejection and Detection (real case)



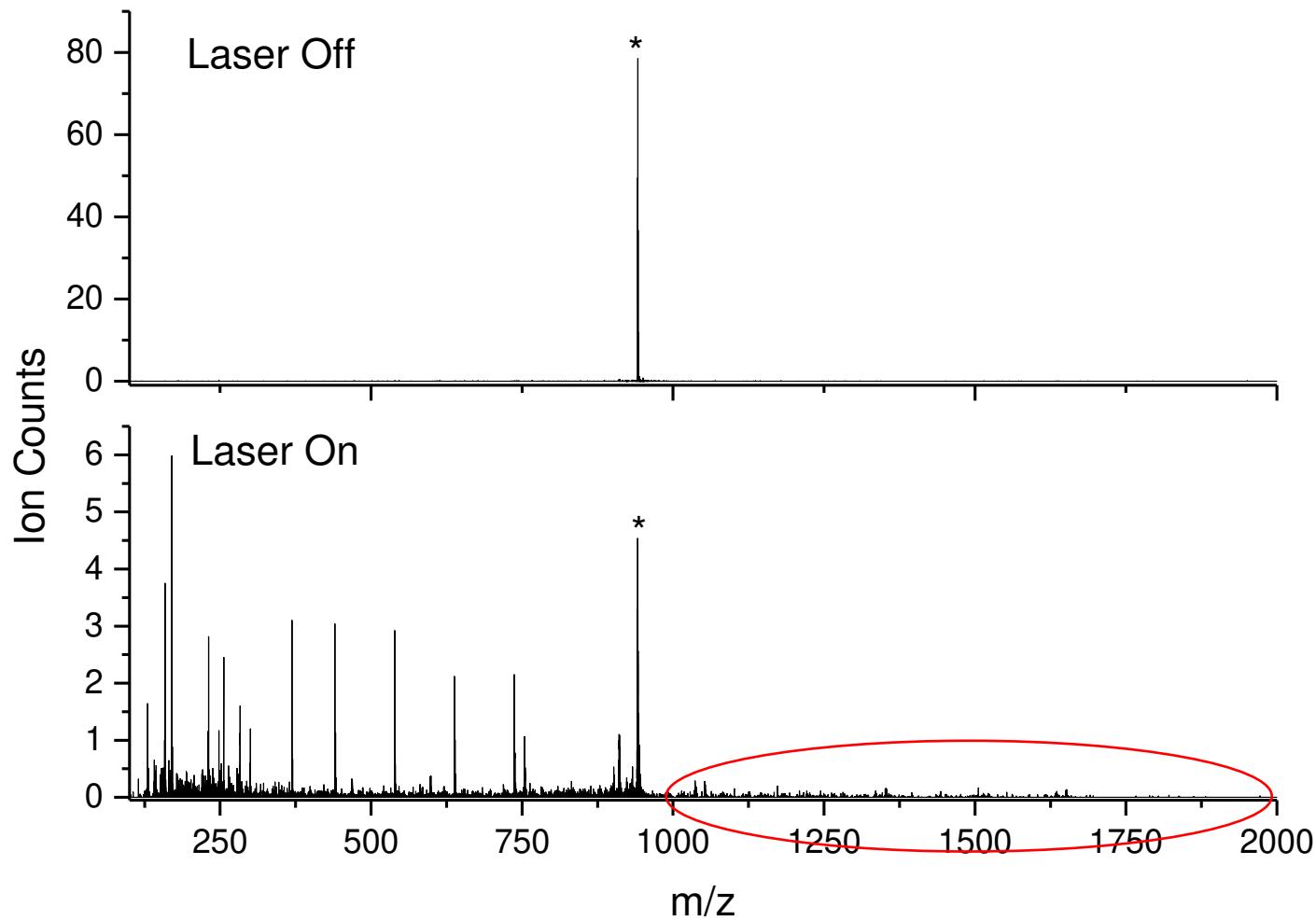
Functional Overview – Ejection and Detection



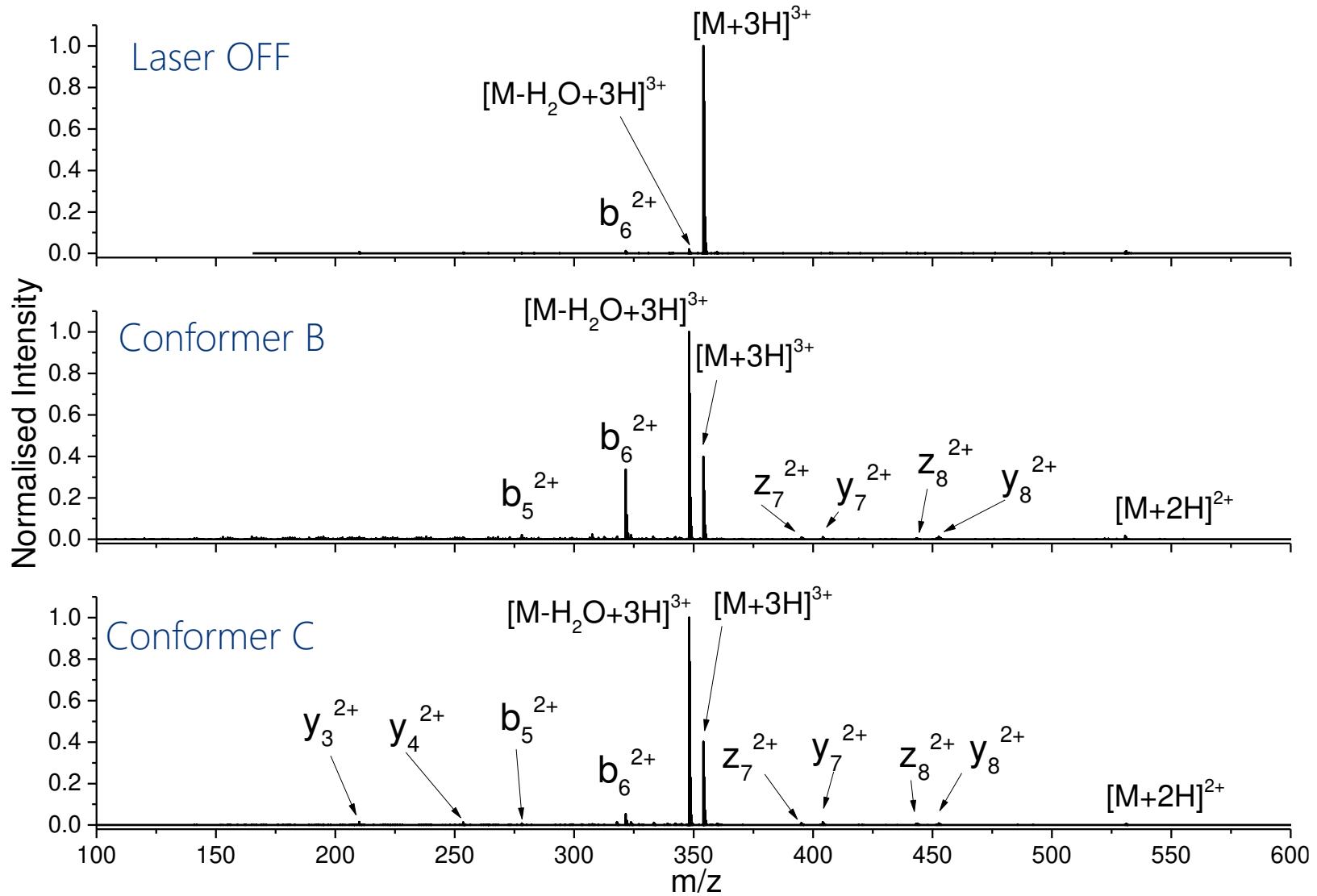
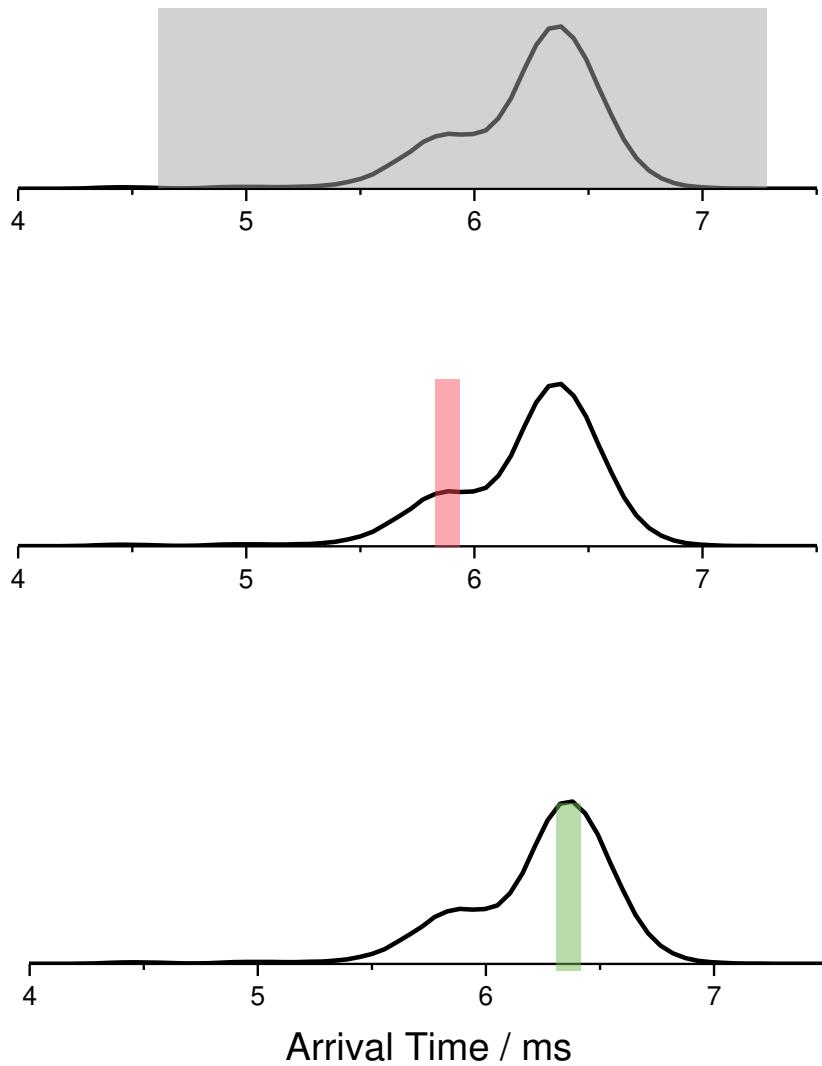
Results – UVPD @ 213 nm

No mobility selection
1 second trapping time

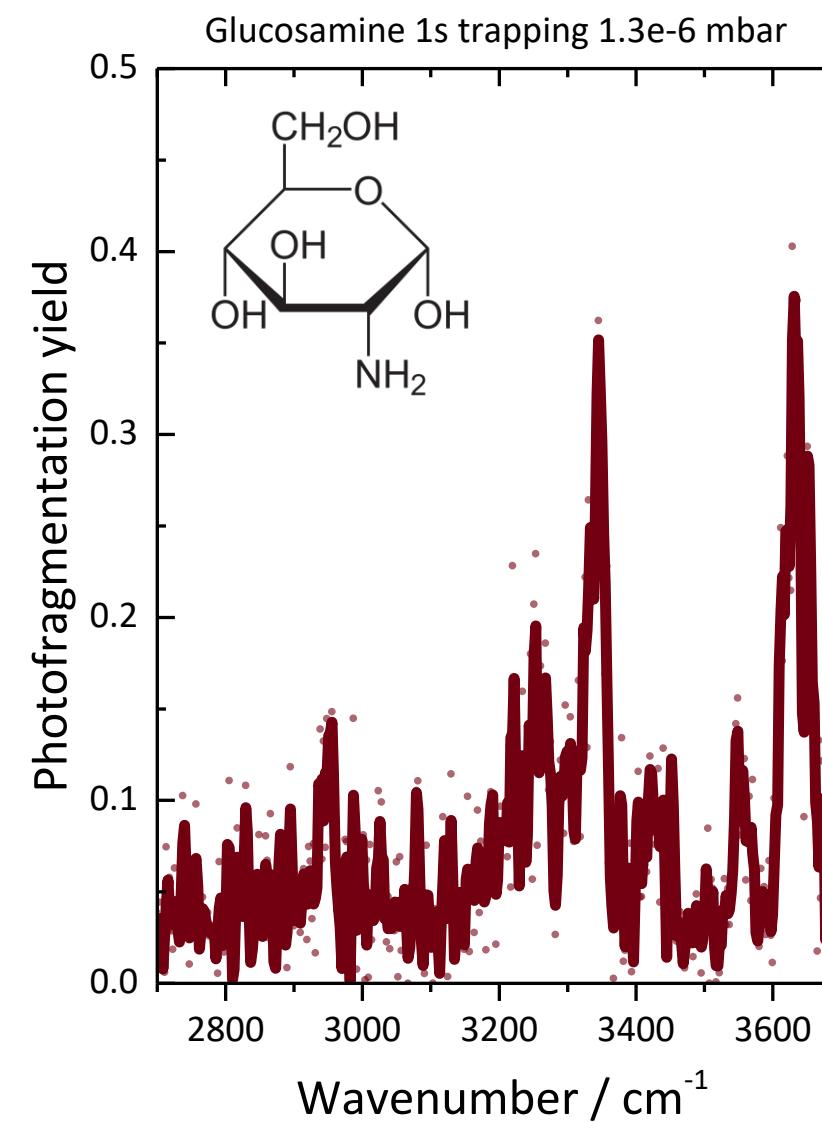
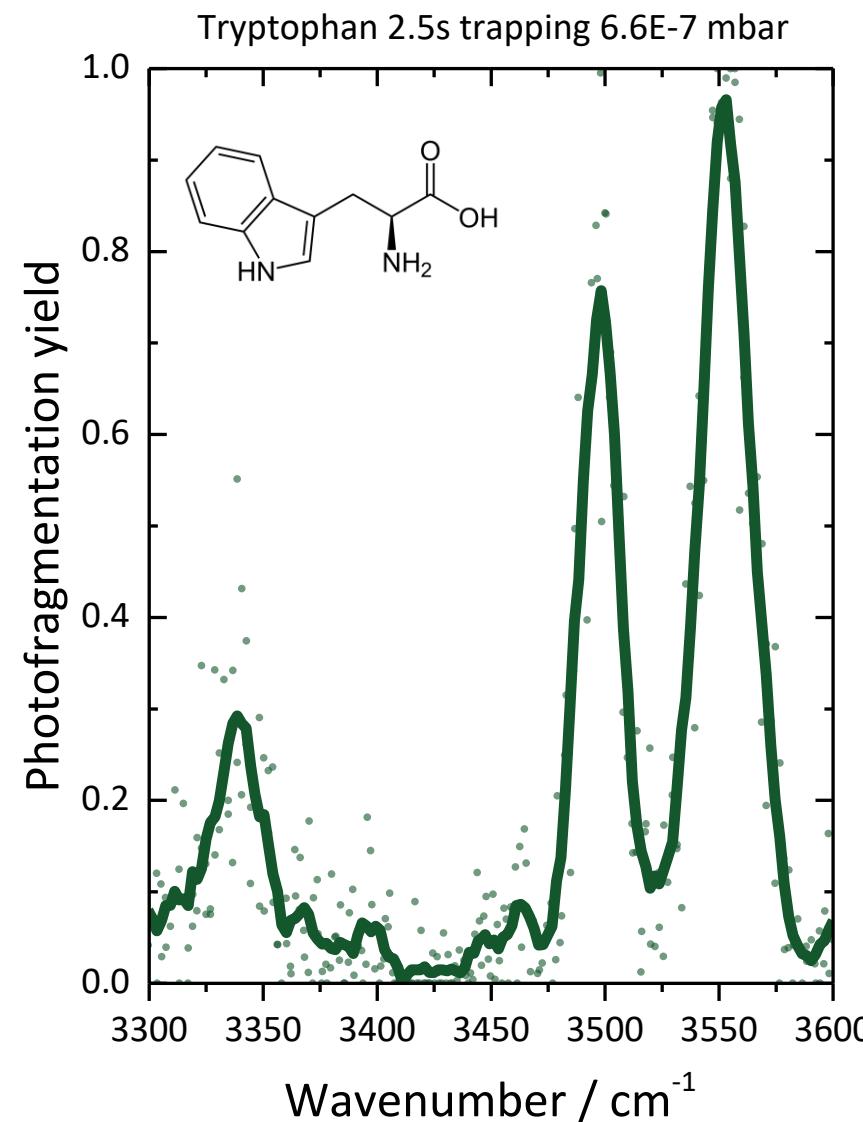
Gramicidin 2+



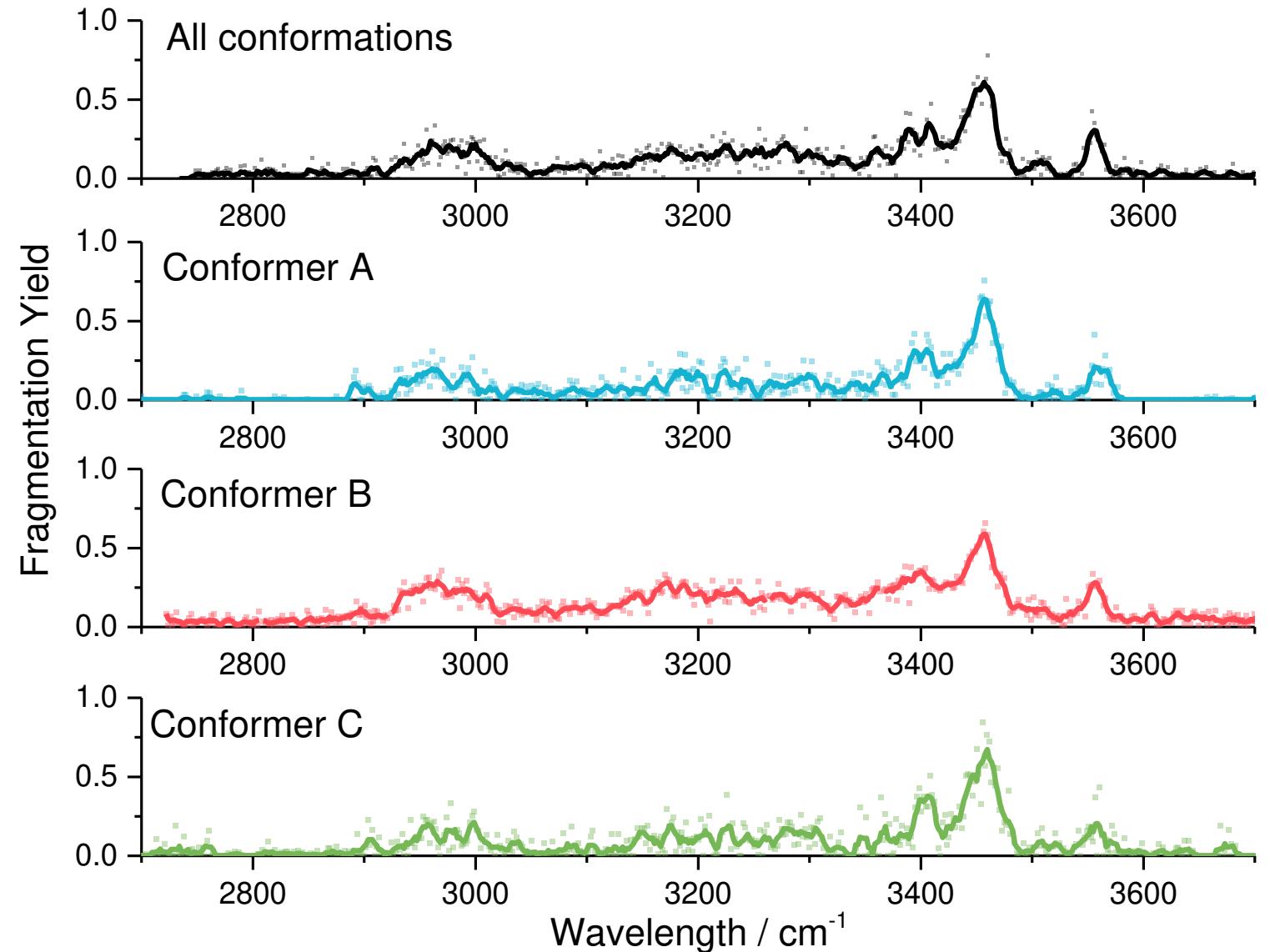
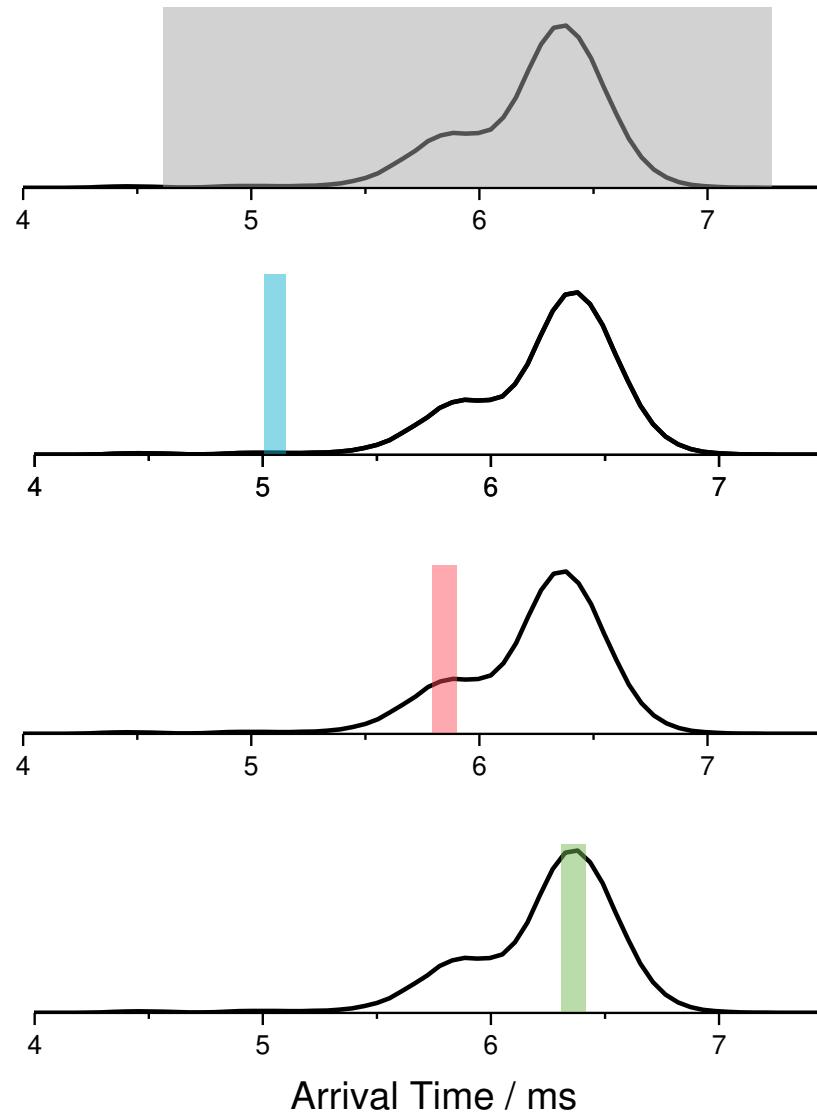
Results – Mobility Resolved UVPD @ 213 nm



Results – IRMPD



Results – IRMPD of Bradykinin 3+ conformations



Conclusions and Perspectives

- Fully functional modified synapt G2 capable of:
 - Ion mobility slicing.
 - Trapping ions for up to 10 seconds in pin traps (and probably longer if we desired).
 - Ion spectroscopy of mass and mobility resolved ions.
- All the desired operational modes have been demonstrated:
 - Transmissions
 - Ion trapping
 - Spectroscopy of mass and mobility resolved ions.
- Still some work to do to get to where we want to be:
 - Improve optical access within pin traps.
 - Improve ion trapping and extraction.
 - Improve higher m/z trapping and sensitivity.
- Do some interesting science!
 - Sjors Bakels – Poster#953 for more on the ion spectroscopy with this instrument.

Acknowledgments and shameless plugging

Thanks to:

Jan Commandeur

Jerre Van der Horst

Lars Könemann

Berk Dogan

Anouk Rijs

Sjors Bakels

John Orphanopolous

For more information on the PhotoSynapt:

- Sjors Bakels: Poster#953 – Learn more about the spectroscopy results from this lovely instrument.

To talk to me about the design and implementation of the PhotoSyanpt and to also learn about compact ESA TOF

- Poster#1008 – It is right next door to Sjors' poster!