



Issues and highlights with the new L-ToF-AMS

AMS USERS' MEETING 2016

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L-ToF-AMS: "Combining W-mode resolution and V-mode sensitivity"

- "Who needs an L-ToF-AMS?"
 - The higher resolution and sensitivity could provide more detailed information about aerosol chemical composition (organic nitrogen and other?).

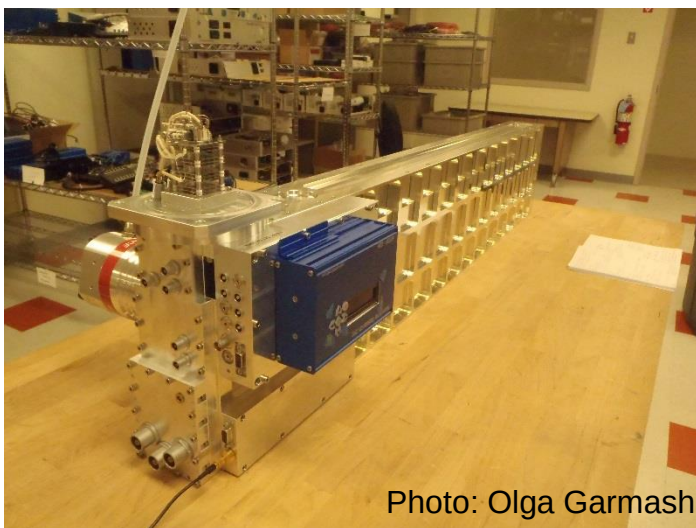


Photo: Olga Garmash

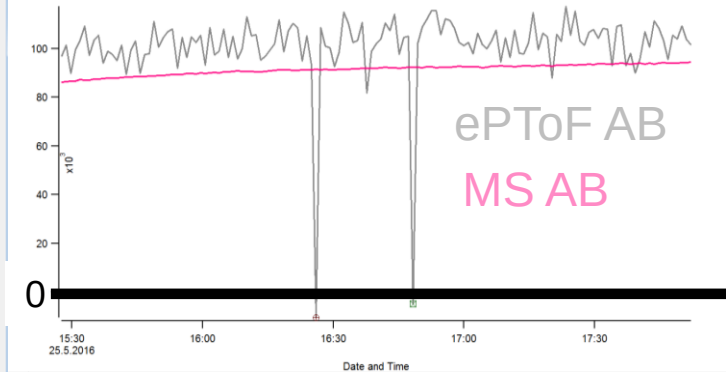
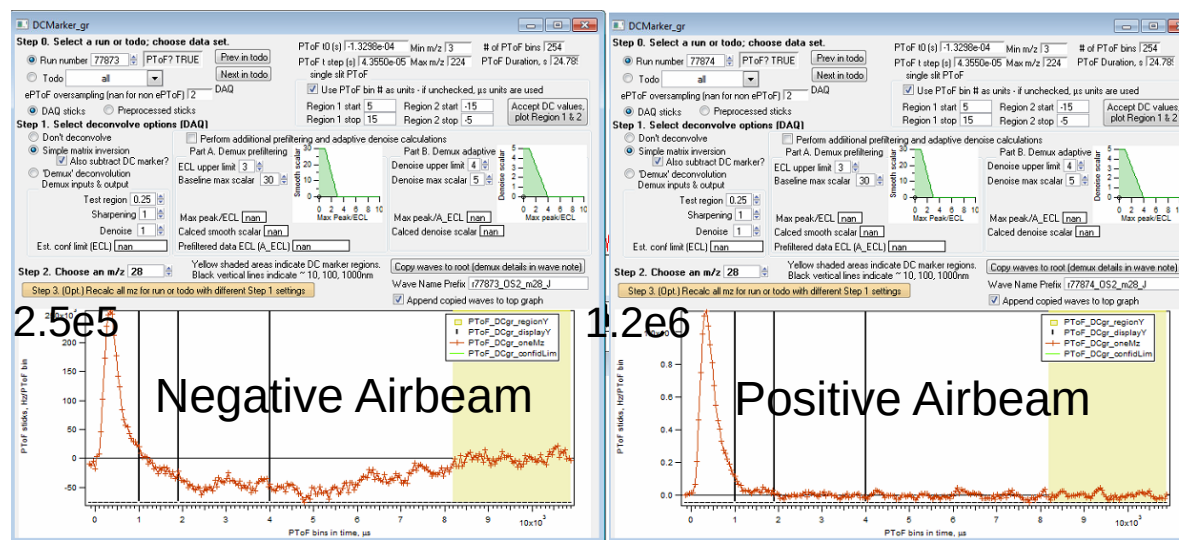


Photo: Liine Heikkinen



ePToF issues...

→ no ePToF-data so far...



Screenshots of two sequential runs (Phil Croteau)

- All this because of broken or almost broken wires?

Chopper positions being randomly skipped + ePToF AB often negative + PToF timeout messages

→ Testing chopper unit no. 3 next



Chopper positions being skipped

Menu Design:

Closed 5s }
Open 5s } X 3

ePToF 30 s

Positive AB

C O C O C ePToF

Time spent in Open < Time spent in Closed

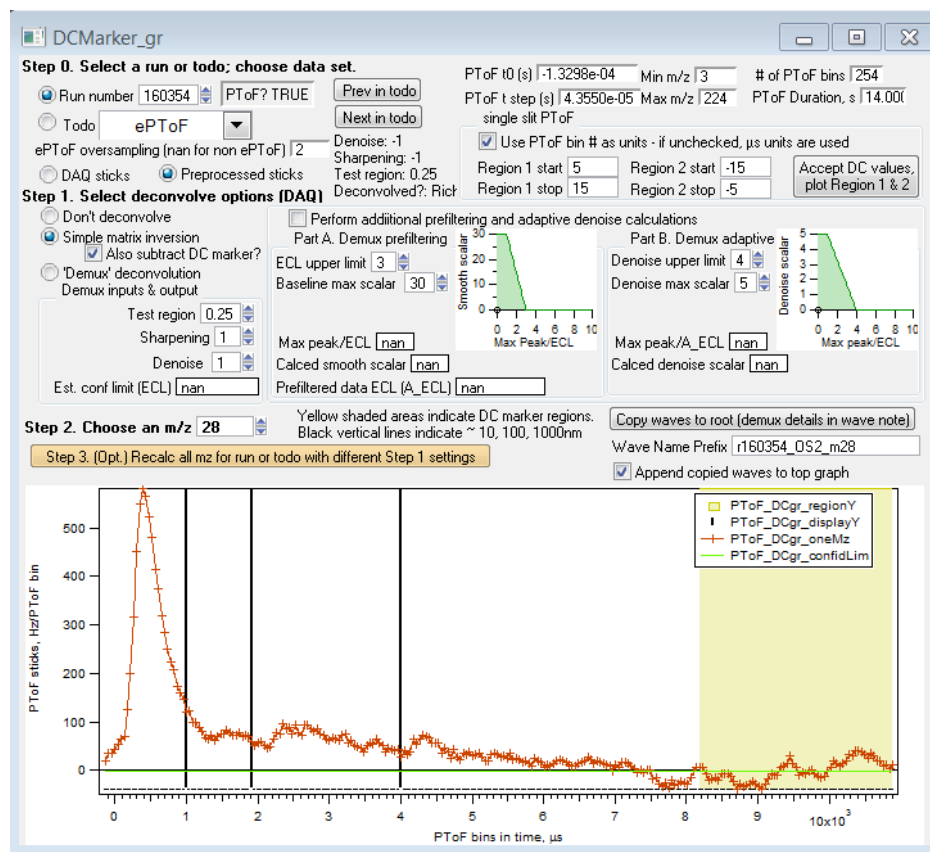
Negative AB

C O C O C **O** ePToF

Time spent in Open = Time spent in Closed



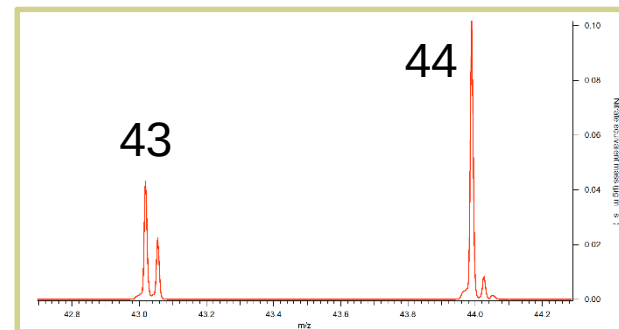
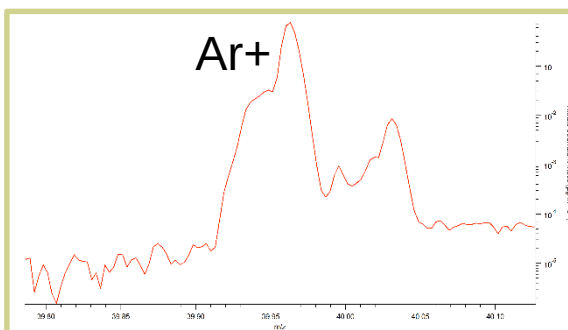
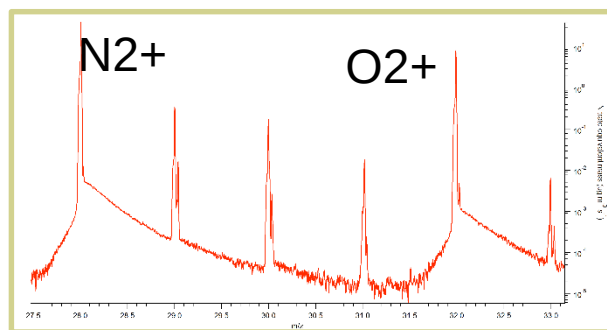
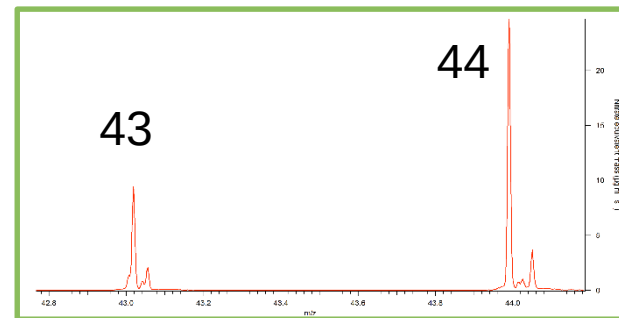
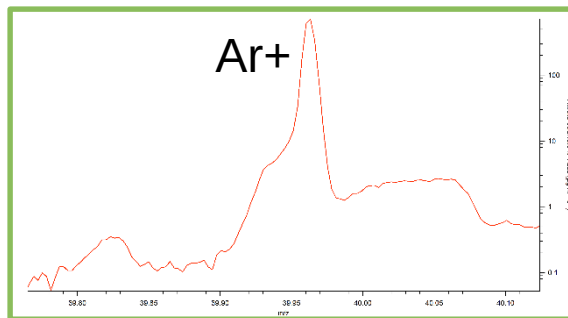
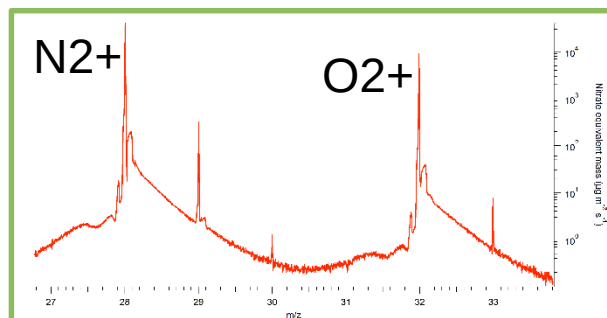
ePToF unit no. 2 before its wires broke – good?





Peak shape issues, higher m/z 's seem OK

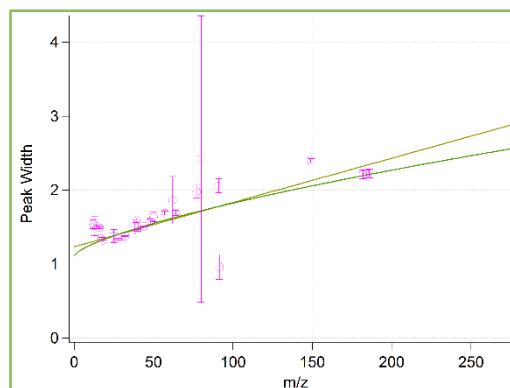
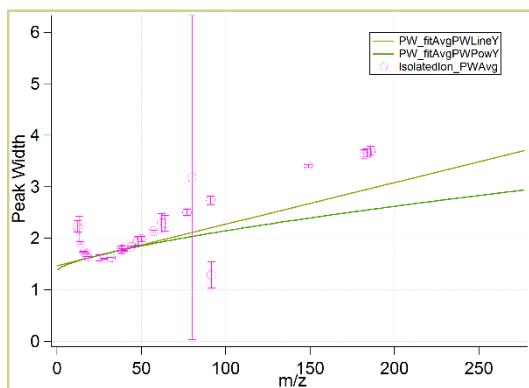
UHEL AMS (chamber) raw ms



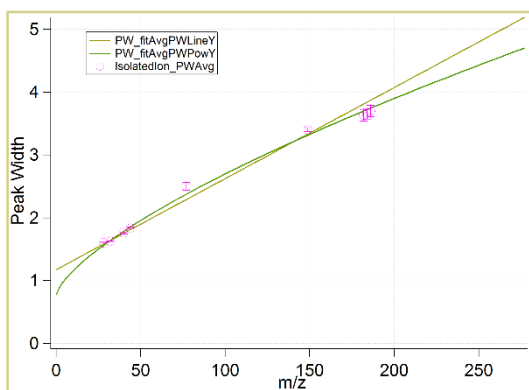
Aerodyne AMS (02/2016, ambient) raw ms



Peak width issues

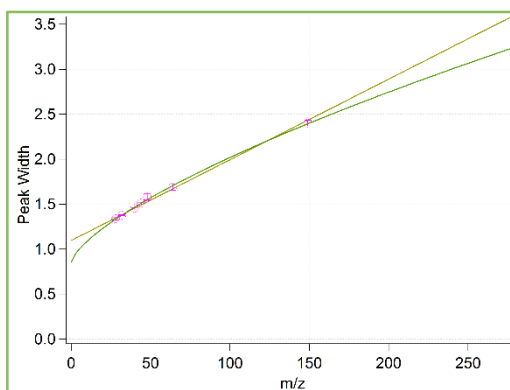


All ions



AERODYNE

Best fits?



UHEL

- Why do small ions behave like this?
- Is this related to the prev. slide?
- Could this be tuned out? Or is it "an L-ToF feature"?
- Pika: freedom to modify the curve parameters more



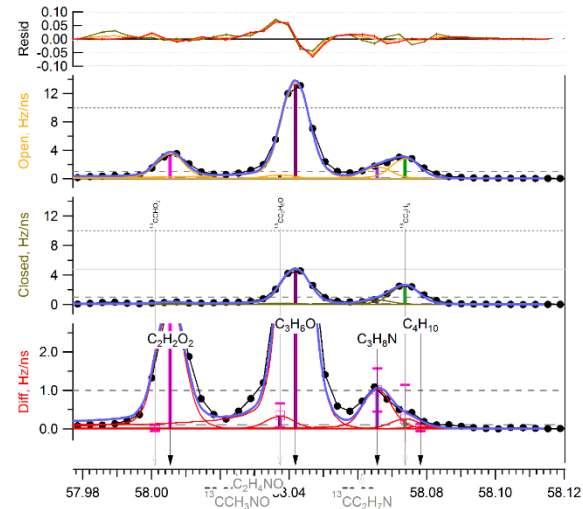
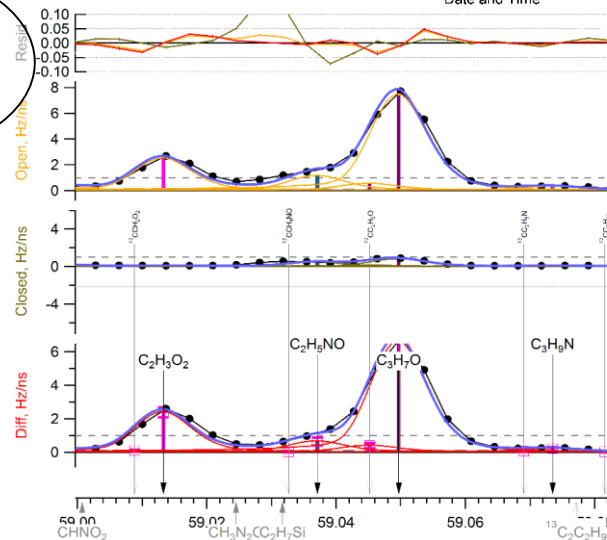
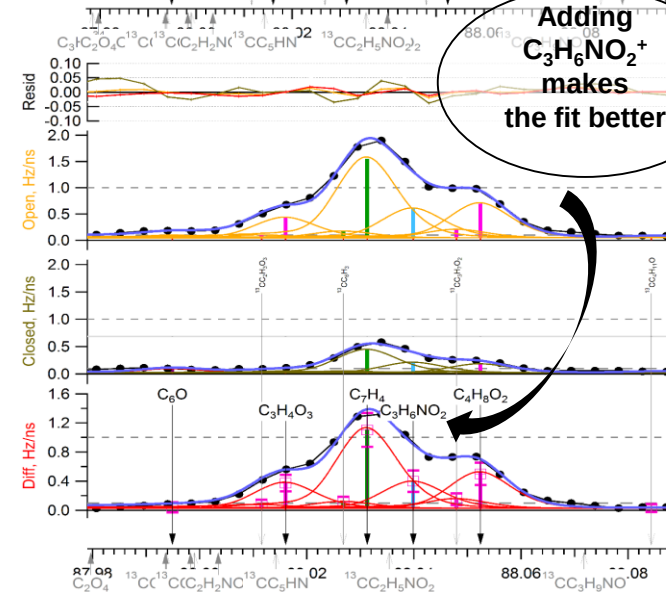
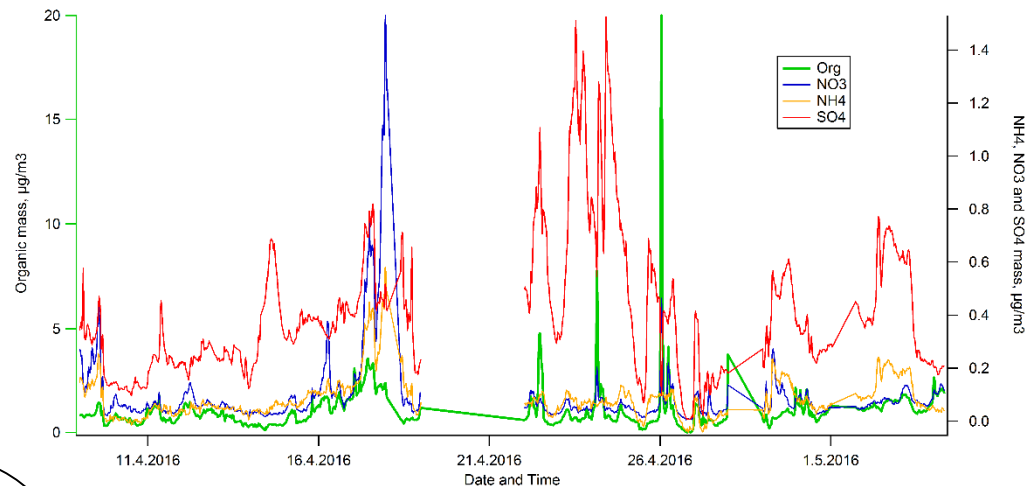
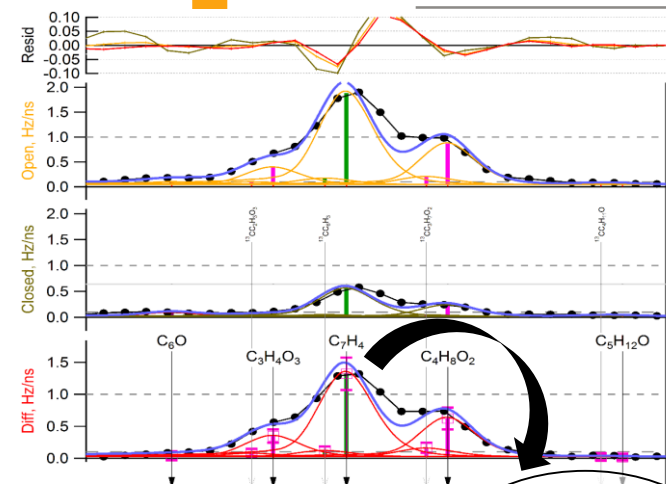
Three campaigns

- **Spring campaign:** March – May 2016
 - Relatively high N-peaks observed in Hyytiälä during early spring: trying to catch them with the L-ToF
 - Hyytiälä, SMEAR II
- **COALA 1:** June- July 2016
 - Role of NO_x and aerosol seed acidity in SOA formation from α -pinene ozonolysis
 - 2 m³ Teflon reaction chamber
- **IBAIRN:** September 2016
 - Together with MPI measuring reactive nitrogen in all of its forms
 - Hyytiälä, SMEAR II



Spring campaign (ambient)

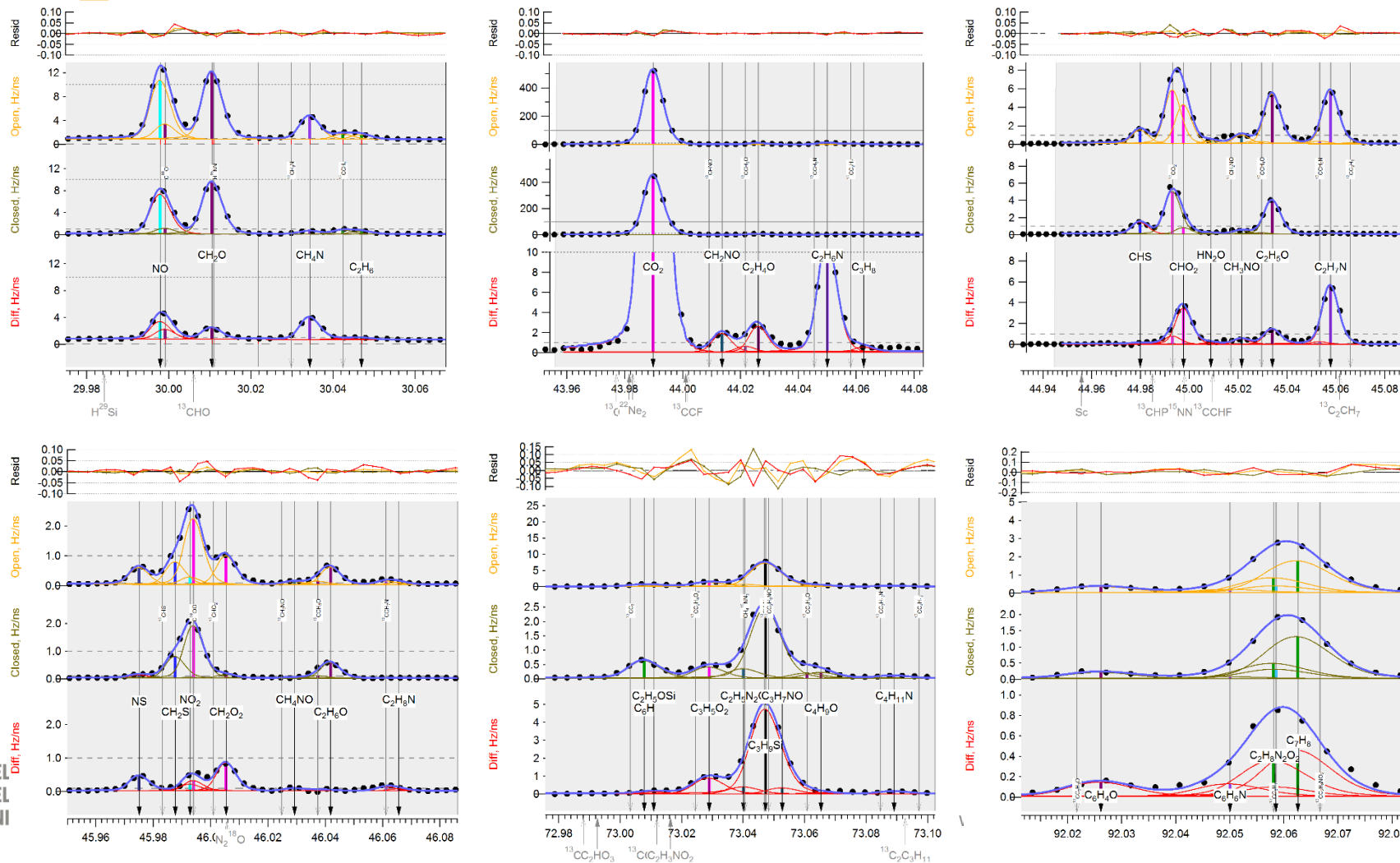
PIKA fits





COALA 1 (chamber: $[\text{NO}_x] = 10 \text{ ppb}_v$)

PIKA fits



Thank you for your attention!

