

Gas pulses

EC-MS Technical Note #1

last updated 08-03-2022

As an application example of the gas exchange system, this section will describe how gas pulses can be sent to the sample. In Figure 1, a plot of two Ar gas pulses is shown. In order to minimize switching time, a few tricks are described in the following.

The described procedure assumes that He is flowing in **MFC2**, and that **line #1** is prepared as described in the user manual, i.e. a second gas (e.g. Ar in the present example) is connected to the EC-MS and the tubing has been evacuated and re-filled with gas.

- (i) Go to main tab in Zilien.
- (ii) Set **MFC2** flow to 1 mL/min.
- (iii) Set **MFC1** flow to 10 mL/min but do not press enter or click outside of the setpoint field yet.
- (iv) Click on **V8** to switch gas line. Clicking on **V8** simultaneously activates the new flow setting on **MFC1**.
- (v) Set **MFC2** flow to 0 mL/min. It is important to always remember to set the flow to 0 to avoid gas build-up between **MFC2** and **V8**.
- (vi) Wait until the desired purity is achieved.
- (vii) As shown in Figure 11, when switching from He to Ar, it takes approximately 20 seconds for the M4 signal to drop by two orders of magnitude.
- (viii) When switching from Ar to He, it takes approximately 50 seconds for the M40 signal to drop by two orders of magnitude.

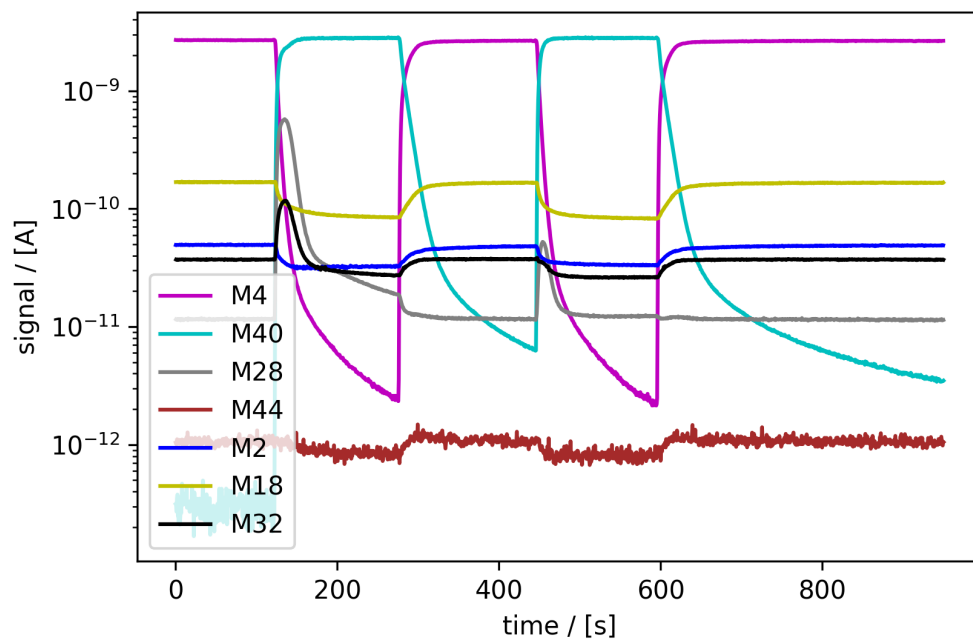


Figure 1: Argon (M40) gas pulses sent via the gas exchange system to the sample quickly replacing He (M4). EC-cell mounted and filled with 0.1 M aqueous perchloric acid electrolyte. When switching to Ar, initially, also air signals M28 and M32 increase, as a small amount of air was trapped between **V8** and the chip. This can be avoided by preparing the line according to the manual directly before performing the gas exchange.