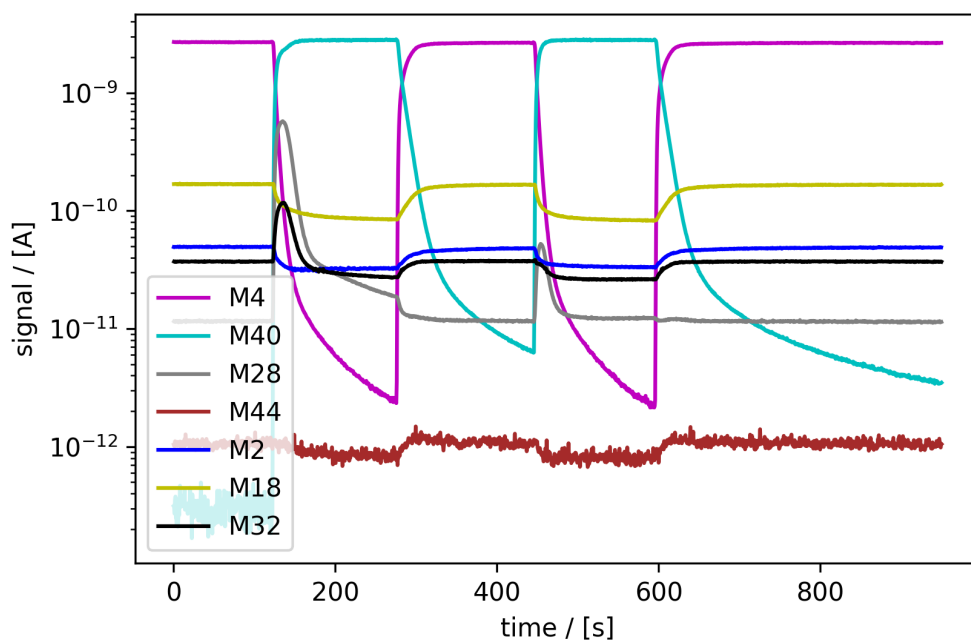# Gas pulses

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.