**Setup $^{13}$C {${^1H,^{19}F}$} 1d NMR experiment**: (See as well manual experiment setup)

- Load your sample

* Start by acquiring a $^1$H spectrum (useful 1) to check your samples 2) to cross reference the spectrum)
- Command : newnmr (create a $^1$H dataset)
- Command : atma (tuning); rsh (read standard shim file); lock (solvent); topshim (shim)
- Command : zg (start the experiment)
* Setup $^{19}$F experiment

- Command : edc (create a new dataset); rpar refe* (read pre-set experiment) → choose refe_1d_$^{19}$F_zg_${^1H}$ in user
- Command : atma ($^{19}$F tuning as it was not done before)
- Command : zg (start the experiment)

* Setup $^{13}$C {${^1H,^{19}F}$} experiment

- Command : edc (create a new dataset); rpar refe* (read pre-set experiment) → choose refe_1d_13C_zg_${^1H,^{19}F}$
- Command : atma ($^{13}$C tuning as it was not done before)
- Command: o3p set the carrier of $^{19}$F as centred as possible on your $^{19}$F peaks (default is -100ppm) (see notes)
- Command : zg (start the experiment)

You can eventually change some parameters:

- ns : change number of scans.
  Rem : The signal to noise (SNR) accumulate proportionally to the square root of the number of scans (ns)
  Ex: if 1024 scans are needed to have a SNR of 5, 4096 scans will be needed to have a SNR of 10
- O1P and SW : the centre and the width (in ppm) of the spectral window
Note on $^{19}$F decoupling bandwidth:

$^{19}$F decoupling bandwidth do not cover the entire $^{19}$F spectral width (as $^{19}$F spectral width is large in ppm and thus in Hz). It cover only about 80 ppm in the current setup. Setting o3p, the $^{19}$F carrier frequency, centred on the $^{19}$F peaks will improve its decoupling efficiency.

$^1$H $^{19}$F decoupled:

It is as well possible simplify $^1$H 1d spectra of fluorinated compounds decoupling $^{19}$F. This experiment can be done on any standard NMR probe.

* Setup $^1$H ($^{19}$F) experiment
- Command : **edc** (create a new dataset); **rpar refe** (read pre-set experiment) → choose **refe_1d_1H_zg_{19F}**
- Command: **o2p** set the carrier of $^{19}$F as centred as possible on your $^{19}$F peaks (default is -100ppm) (see notes)
- Command : **zg** (start the experiment)

$^{19}$F $^{13}$C HSQC: (see dedicated SOP)