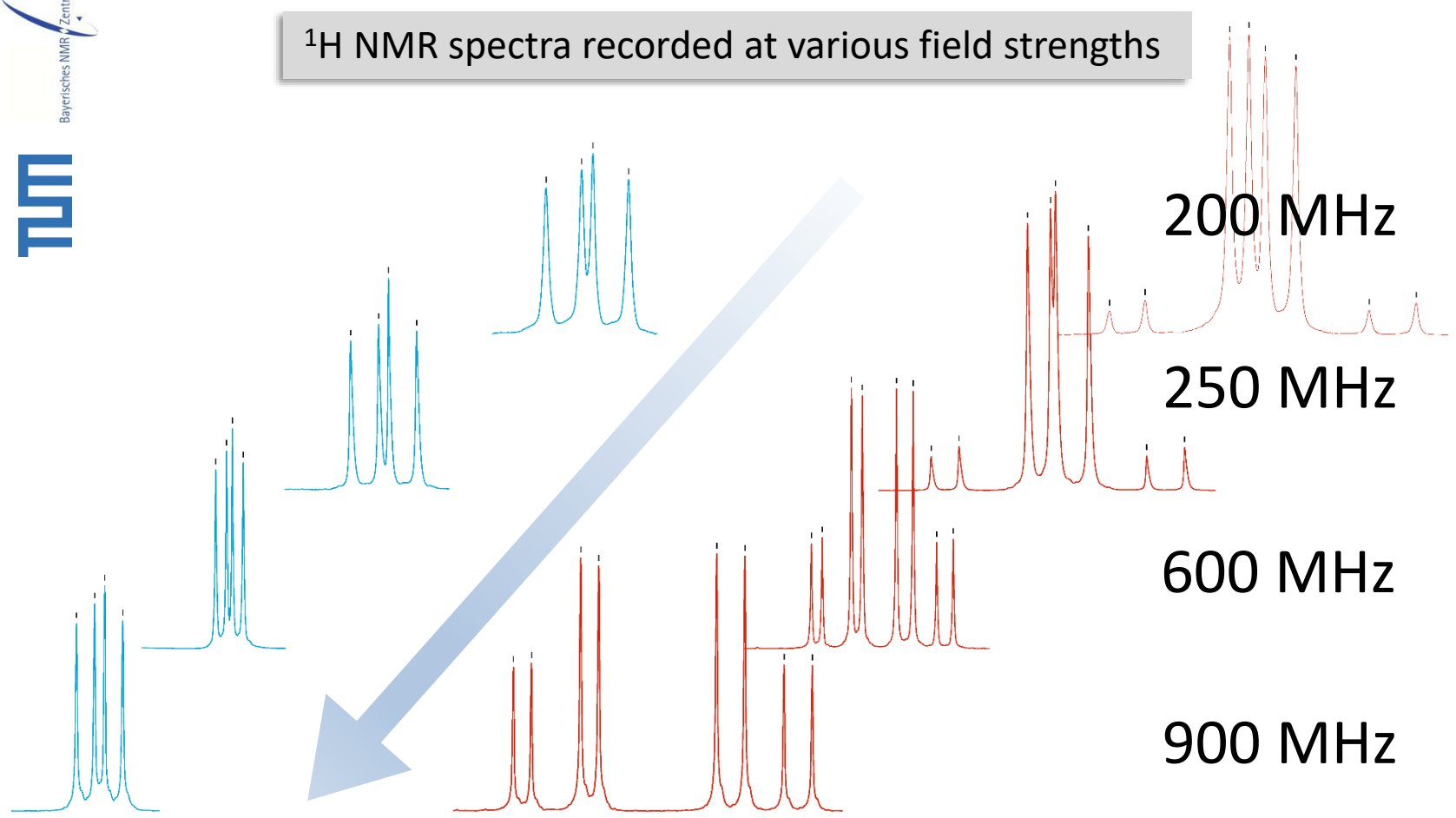
# Problem of the Month:

## June 2020

$^{1}$H NMR spectra recorded at various field strengths



# Problem of the Month:

## June 2020

## $C_4H_6O_5$ measured in $D_2O$

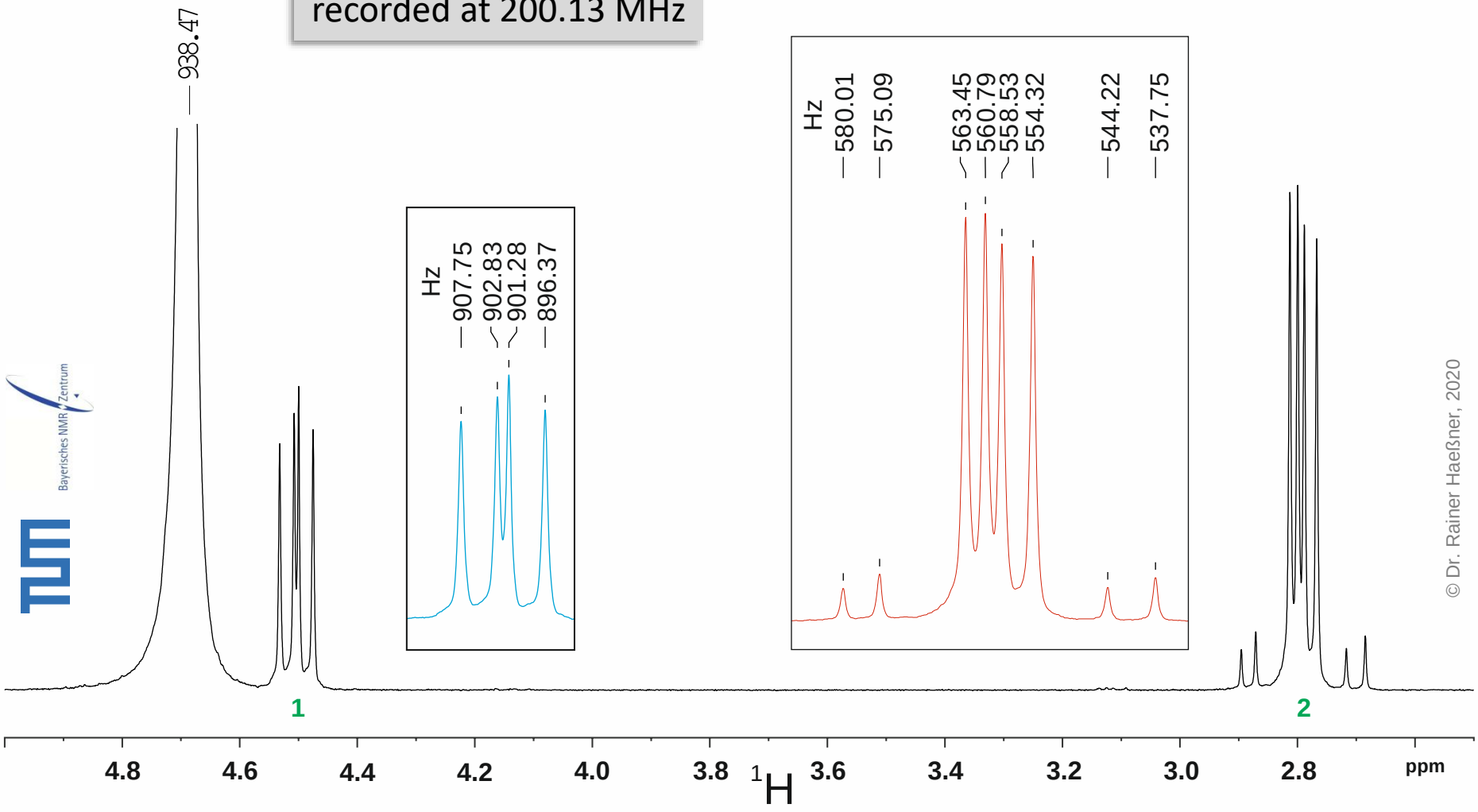
**First steps and a „curiosity“**

The proton spectrum is very similar to that of April 2020.

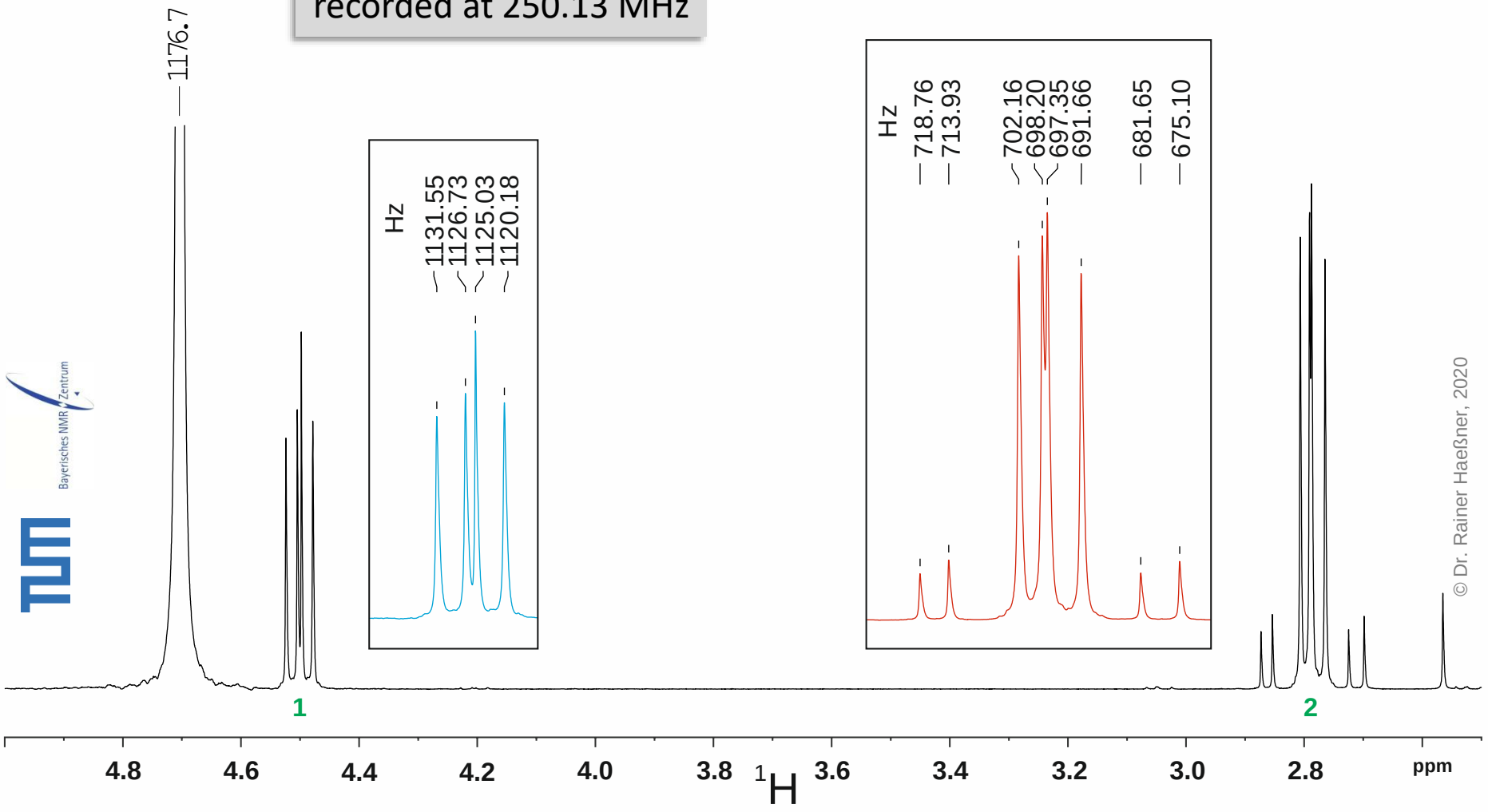
That’s why it might be a good idea to start with the assignment of two carbon and three proton signals.

Analyze the “coupling constants” in the proton spectra measured at different field strengths. Something is strange there …

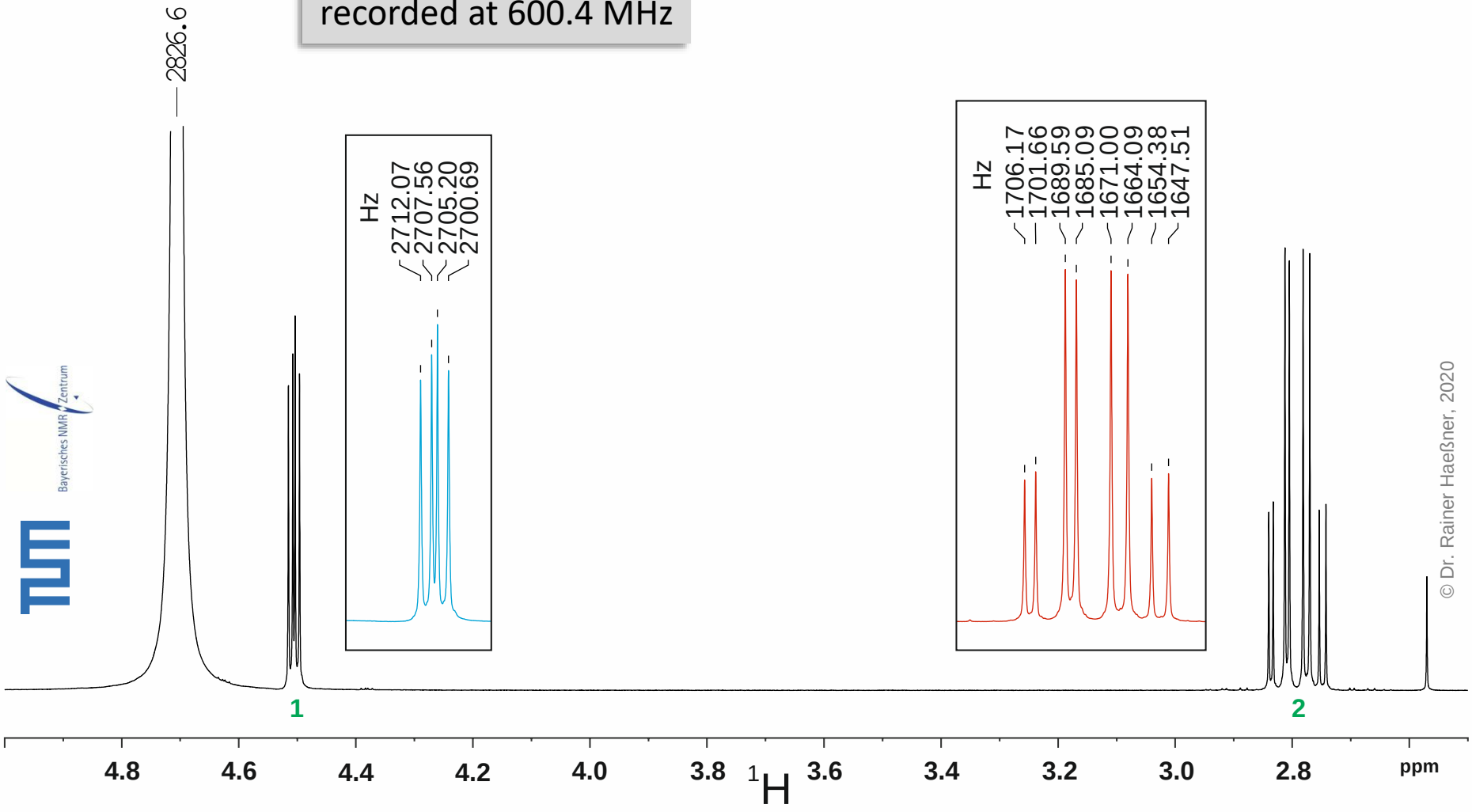
# $^1$H NMR spectrum recorded at 200.13 MHz



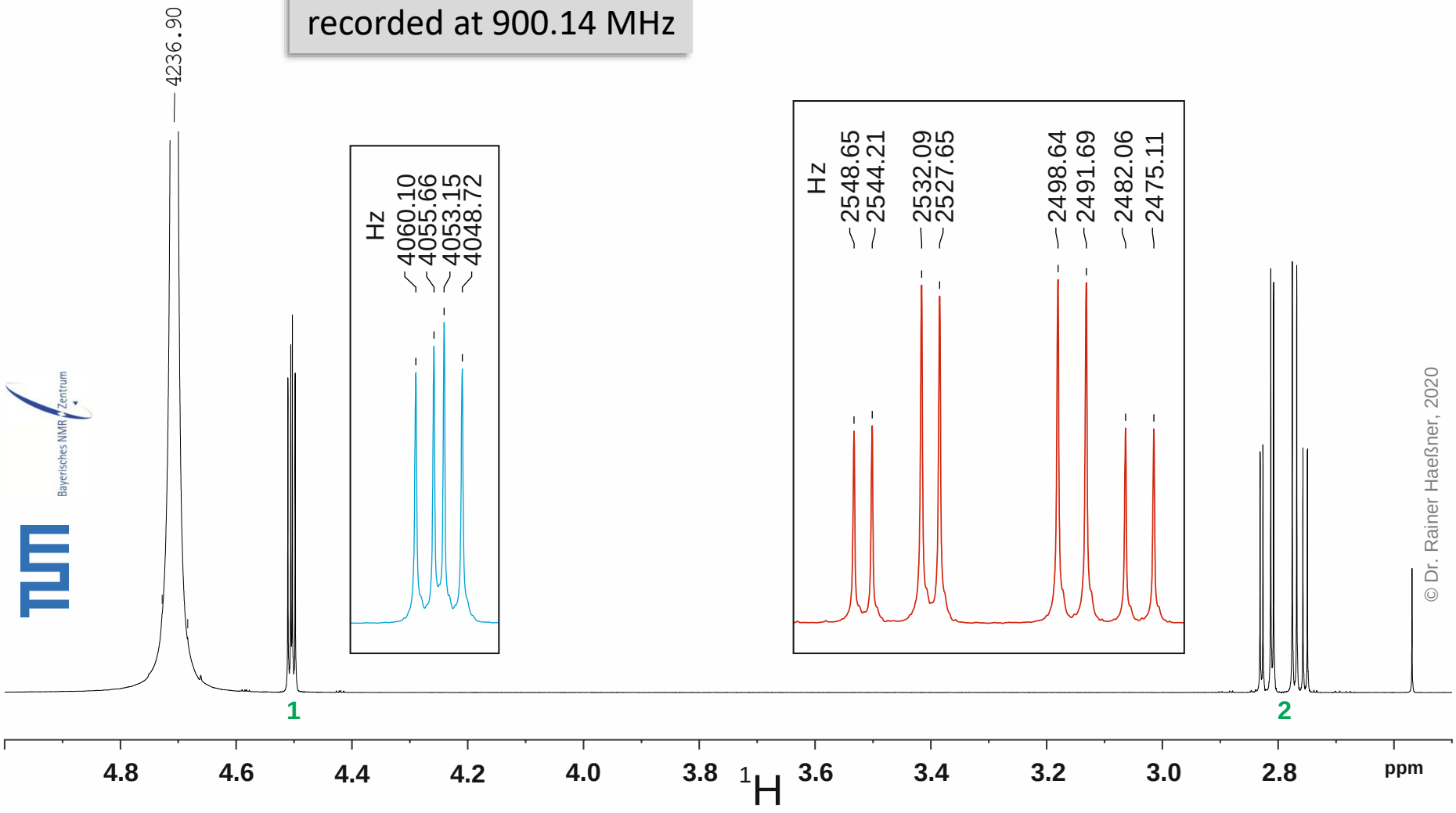
# $^1$H NMR spectrum recorded at 250.13 MHz



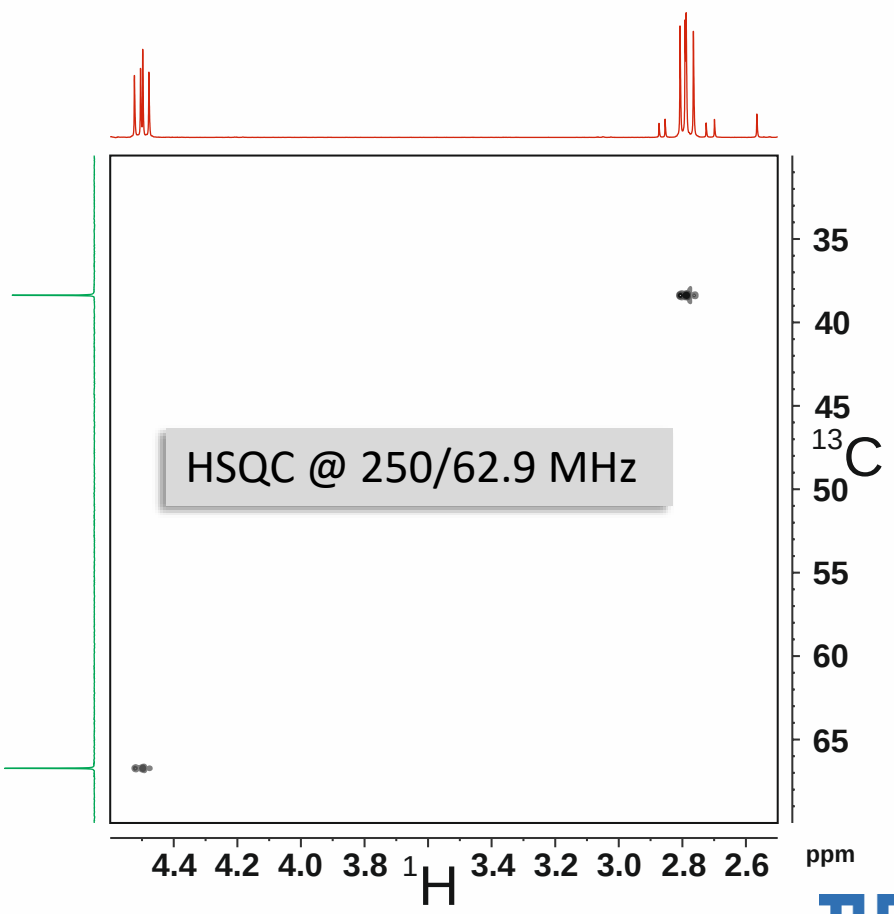
# $^1$H NMR spectrum recorded at 600.4 MHz

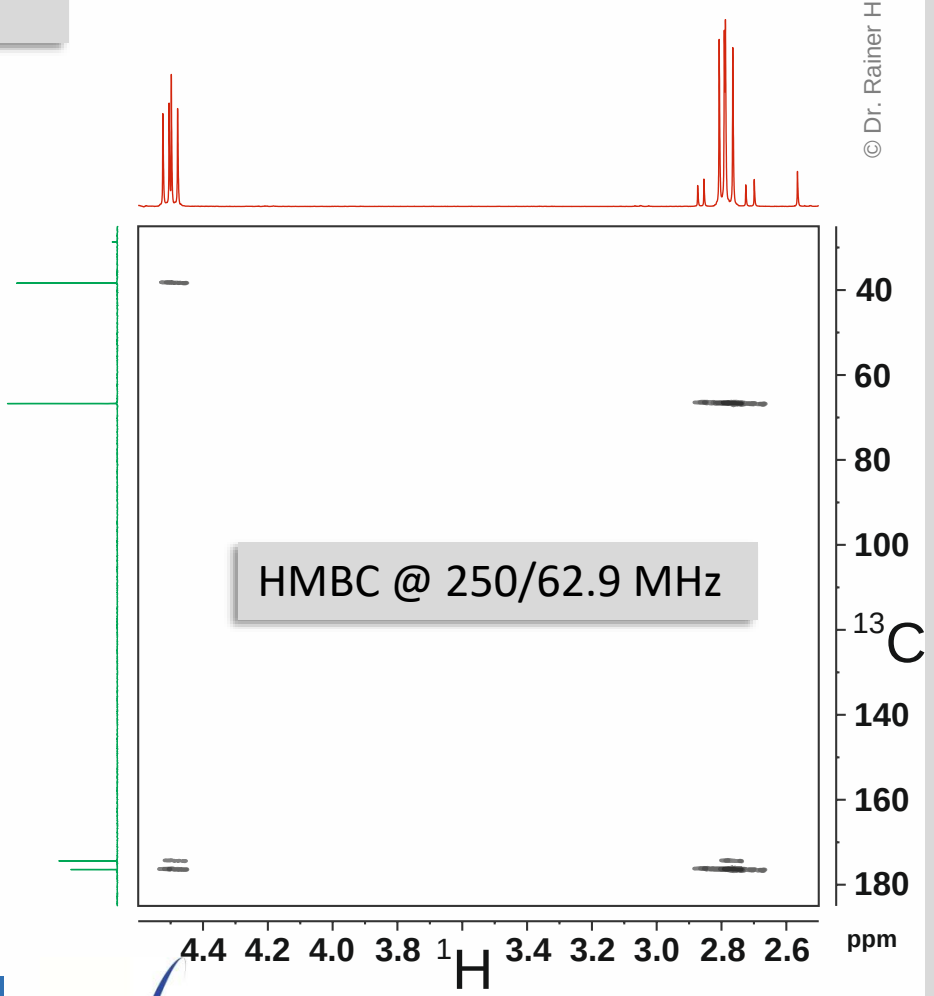


# $^1$H NMR spectrum recorded at 900.14 MHz



Only two peaks from the $^{13}C$ NMR spectrum are needed to evaluate the HSQC spectrum.






Bayerisches NMR Zentrum

**Some remarks**

The enlarged $^{13}C$ signals include $^{13}C$-$^{13}C$ coupling constants.

The enlarged signal at 174.3 ppm contains impurities. How could the impurities be excluded?