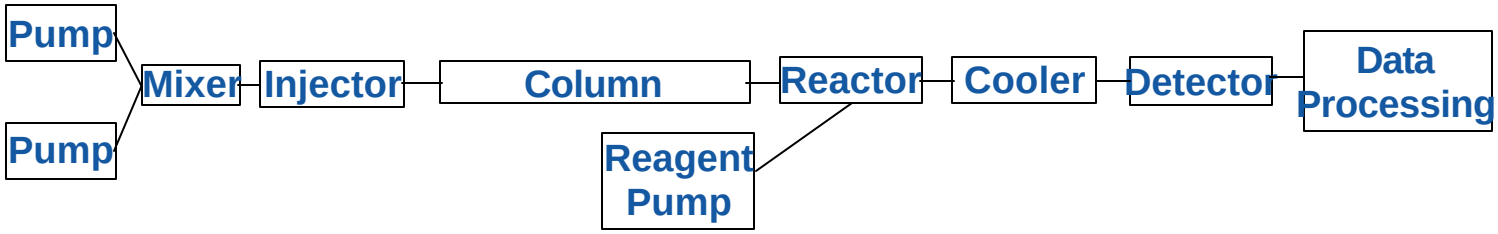
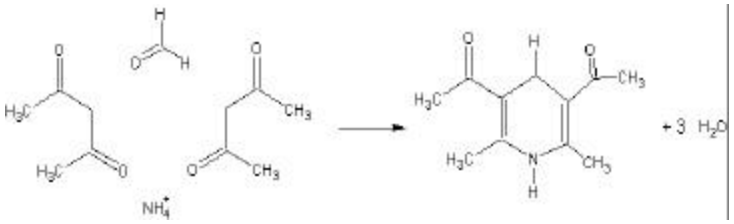
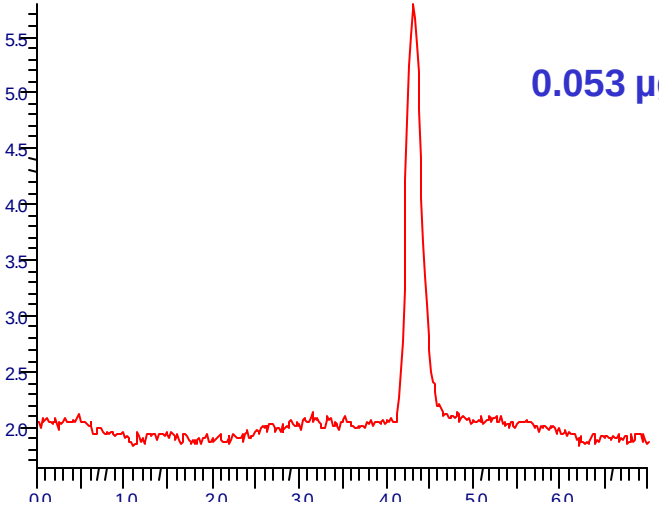
HPLC – an example



Isocratic HPLC determination of formaldehyde with post column-derivatization with acetylacetone according to the Hantzsch reaction:



Column:	RP-18
Mobile phase:	Water
Flow rate:	0.9 ml/min
Injection:	100 µl
Detection:	Fluorescence



0.053 µg HCHO/ml

HPLC, detectors at Analyscentrum

	Uses	Sensitivity	Comments
Refractive index (RI)	Universal, all compounds are detectable.	Relatively low	Baseline drift with temperature changes. Should be turned on one day before measurement. Cannot be used for gradient elution (due to different refractive indices of the solvents).
UV/Vis	Compounds with no chromophores are not detected.	Good	The mobile phase must not be absorbing. The "cut-off" wavelength for different solvents are given in the literature.
Diode Array (UV/Vis)	As ordinary UV/Vis but in addition: (see comments).		Peak purity check. Identification of peaks (However, UV/Vis spectra are unfortunately not very specific). Makes wavelength optimization easy.
Fluorescence	Compounds must be fluorescent. Pre- or post-column derivatization is often used.	Very sensitive (in the ppm - ppb area).	Examples of derivatisation: * OPA (o-phtalaldehyde) for amines. *Acetyl acetone for formaldehyde (post column). * DNF (dinitrofenyl hydrazine) for formaldehyde (pre column).
Evaporative light scattering	Universal; all compounds are detectable. The compounds must stay in liquid or solid phase while the mobile phase is evaporated.	Relatively low. Often a little higher than RI.	In contrast to RI, it can be used for gradient elution. A drawback is that the response is not linear.
Conductivity	Used mainly in ion chromatography.	Good sensitivity (in the ppm area).	
Electrochemical detection	May be used for samples that can be oxidized or reduced.	Very sensitive (in the ppm - ppb area).	A drawback is that it often requires a lot of method development work.
Mass Spectrometry		Extremely sensitive (down to ppb-ppt).	Can be used for identification of peaks.