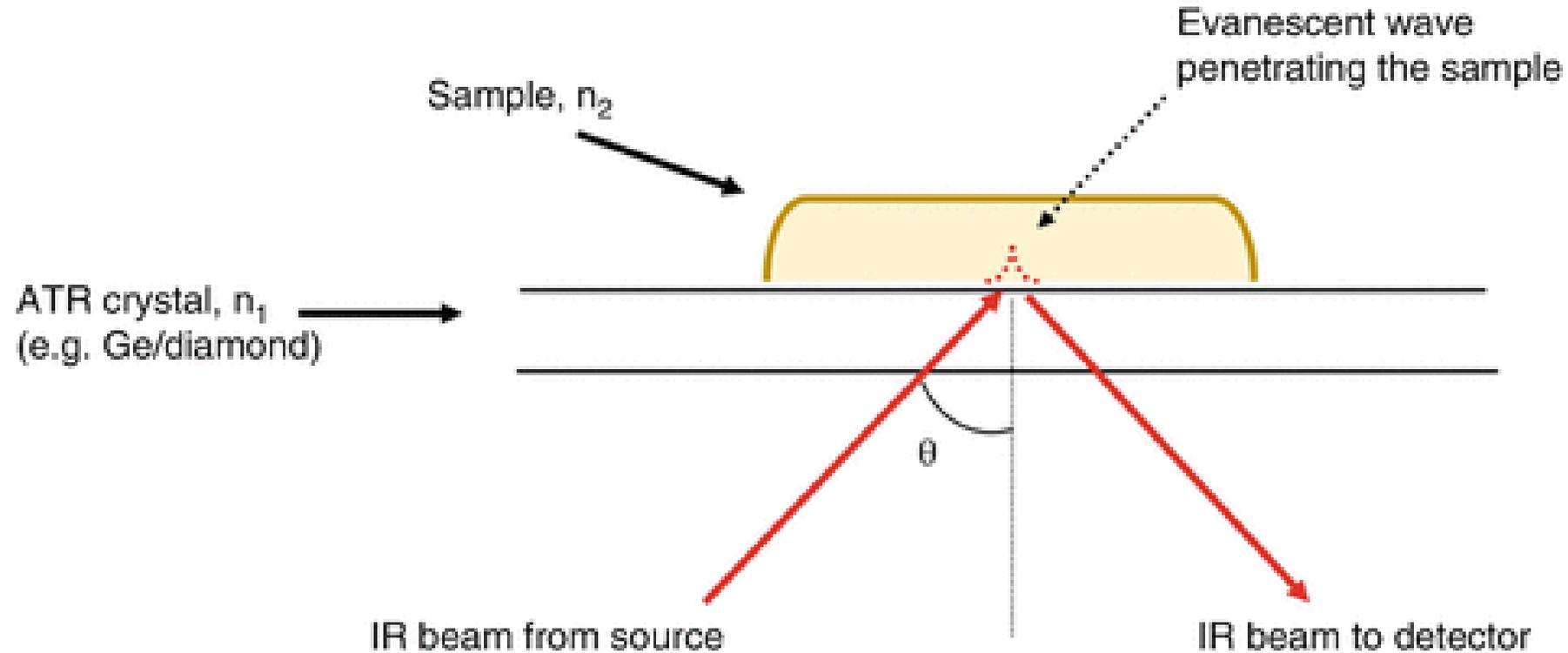


# Fourier transform infrared spectroscopy

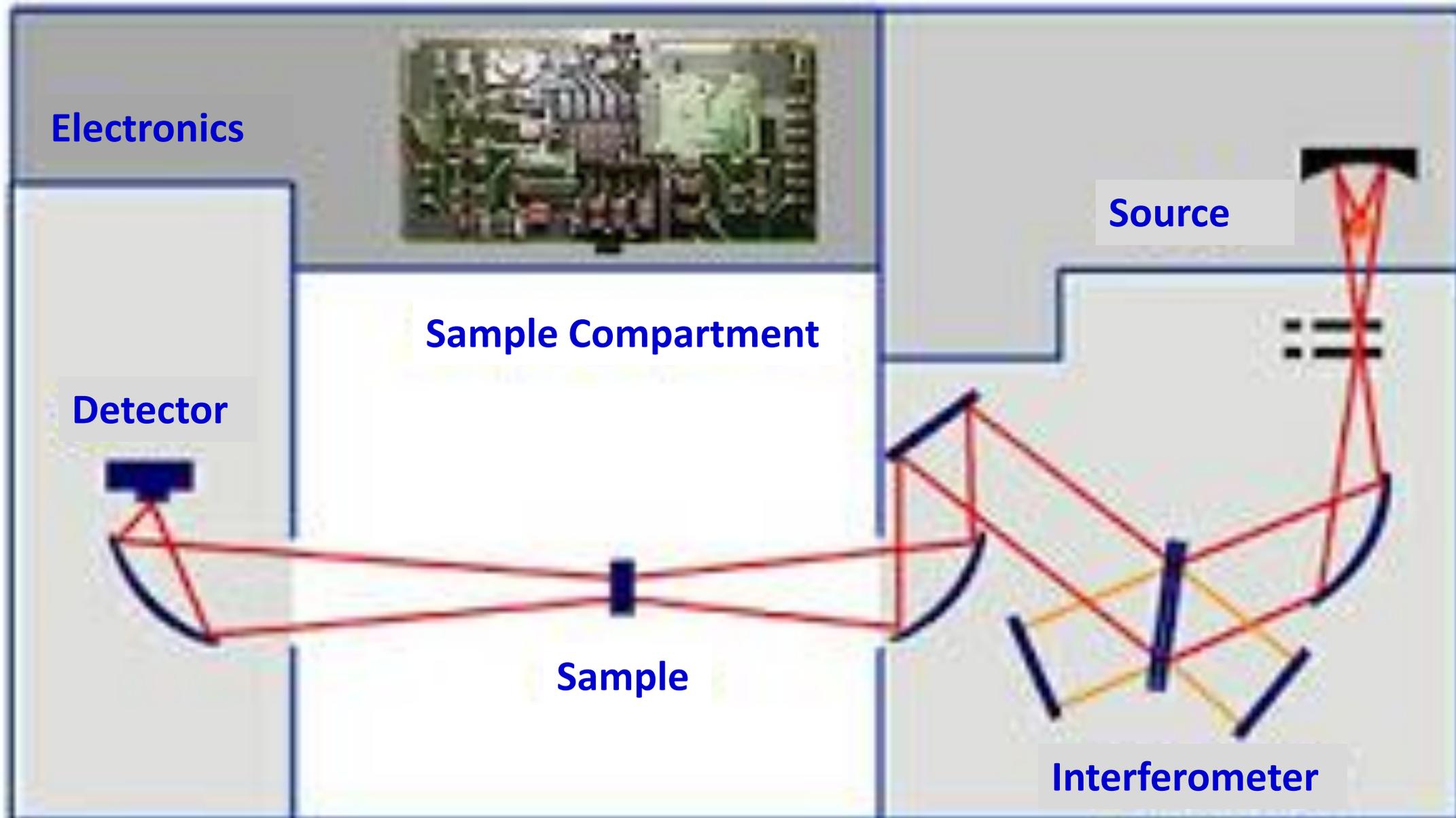
# FTIR spectrometers: ATR and transmission



# Attenuated total reflection (ATR)



The condition for ATR is also known as total internal reflection. When p-polarized light has an incident greater than the critical angle it is 100% reflected. This means that there is no transmitted wave. However, there is an exponentially damped, evanescent wave.

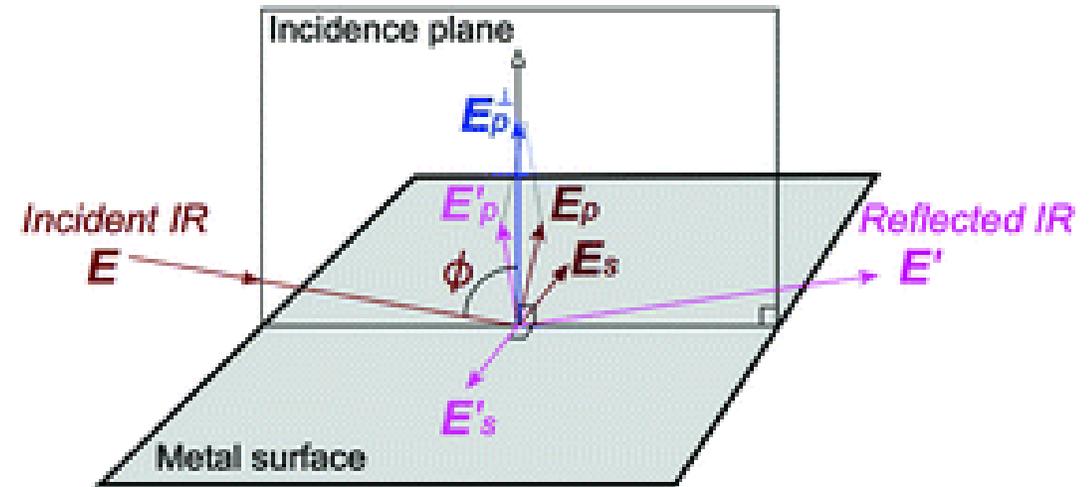
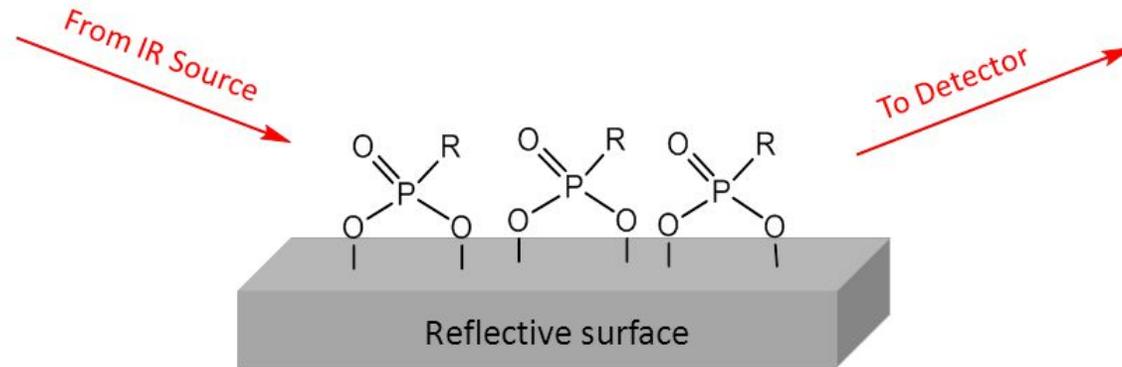


# Historical method: KBr pellets



# Infrared reflection absorption spectroscopy (IRRAS)

## Grazing angle FTIR



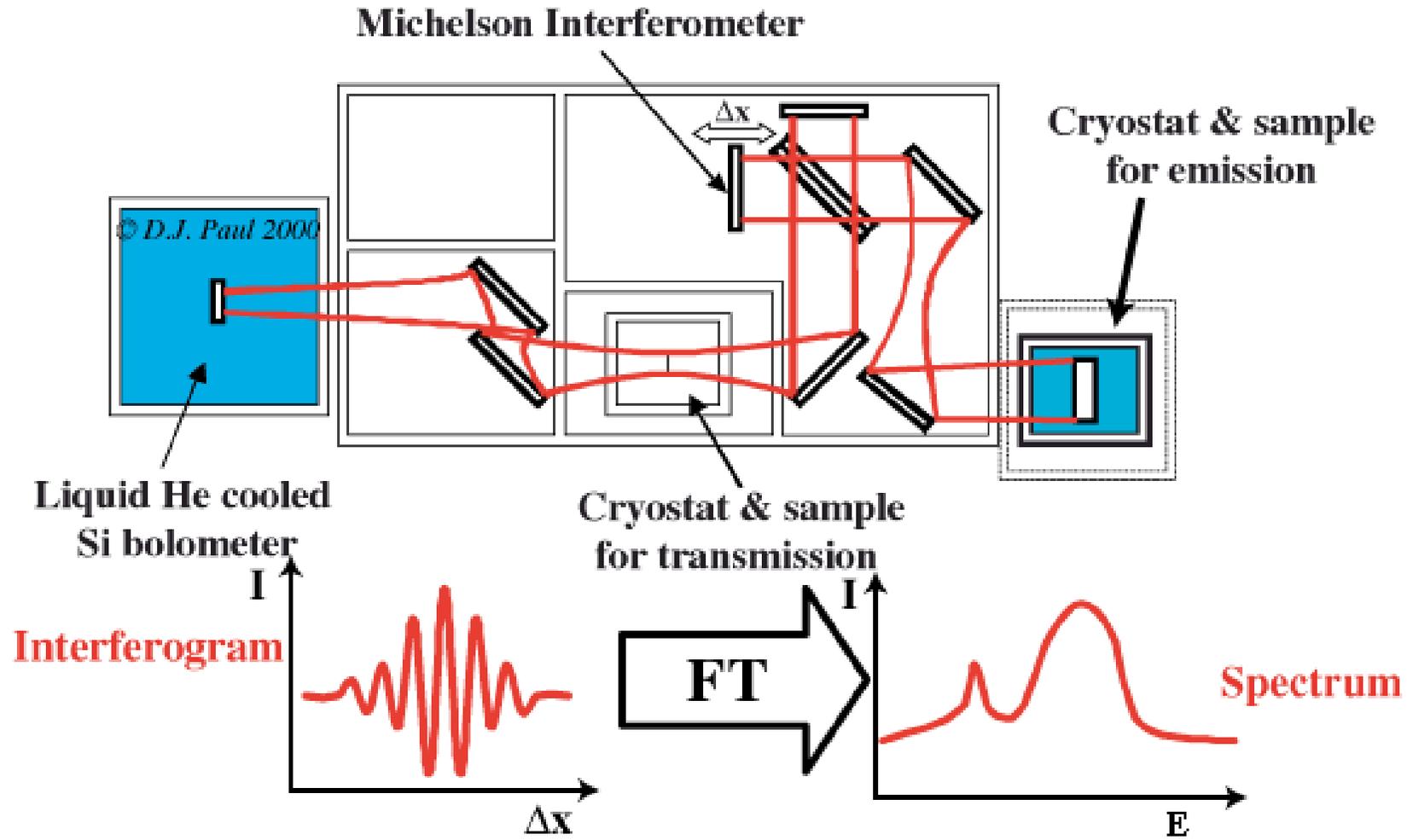
### Requirements

- Highly Reflective  
Metals, glass, semiconductor
- Planar
- Typically monolayers

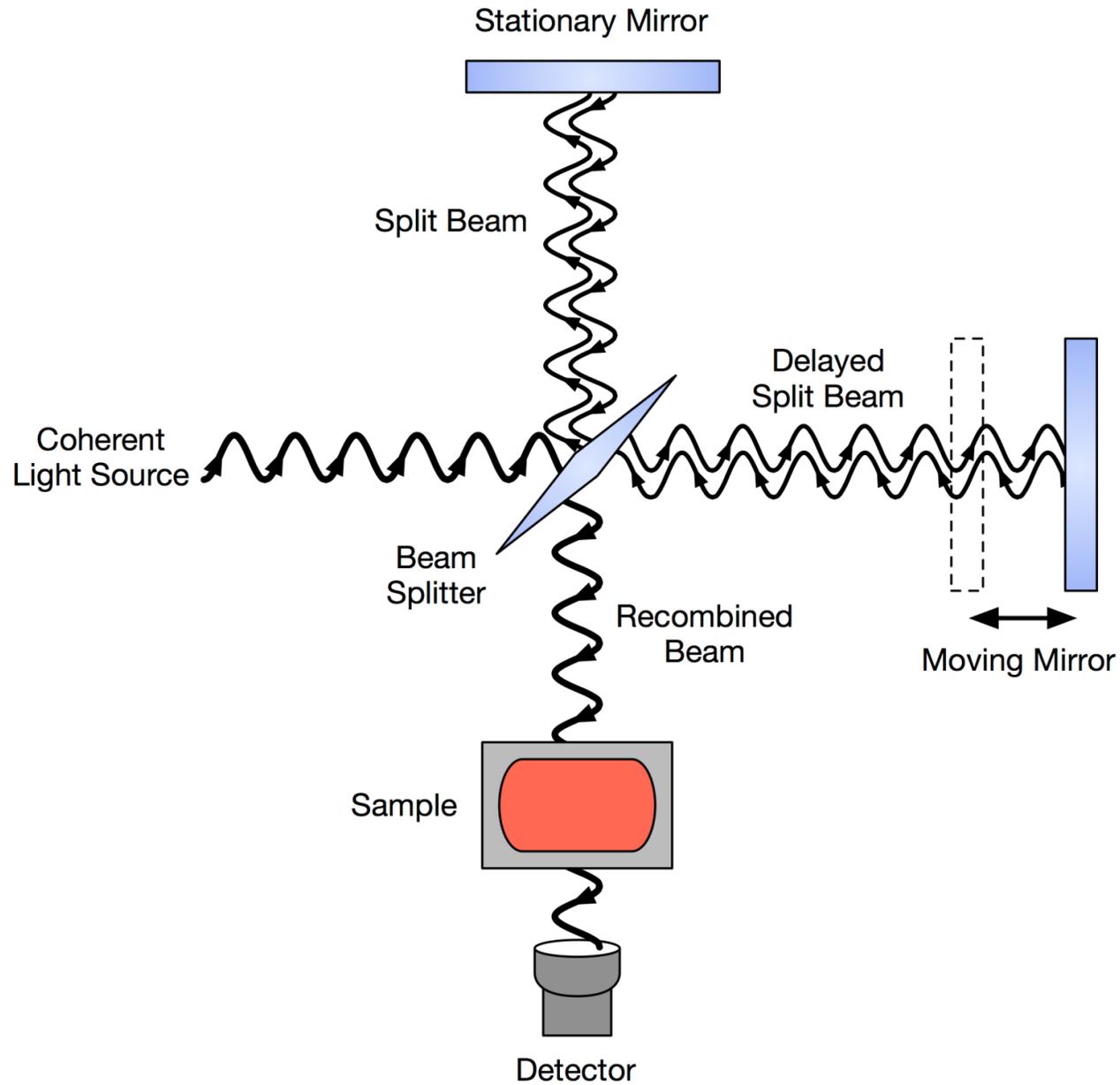
### Disadvantages

- Weak Signal ( $<2\% \Delta T$ )
- No solvent
- Accessory

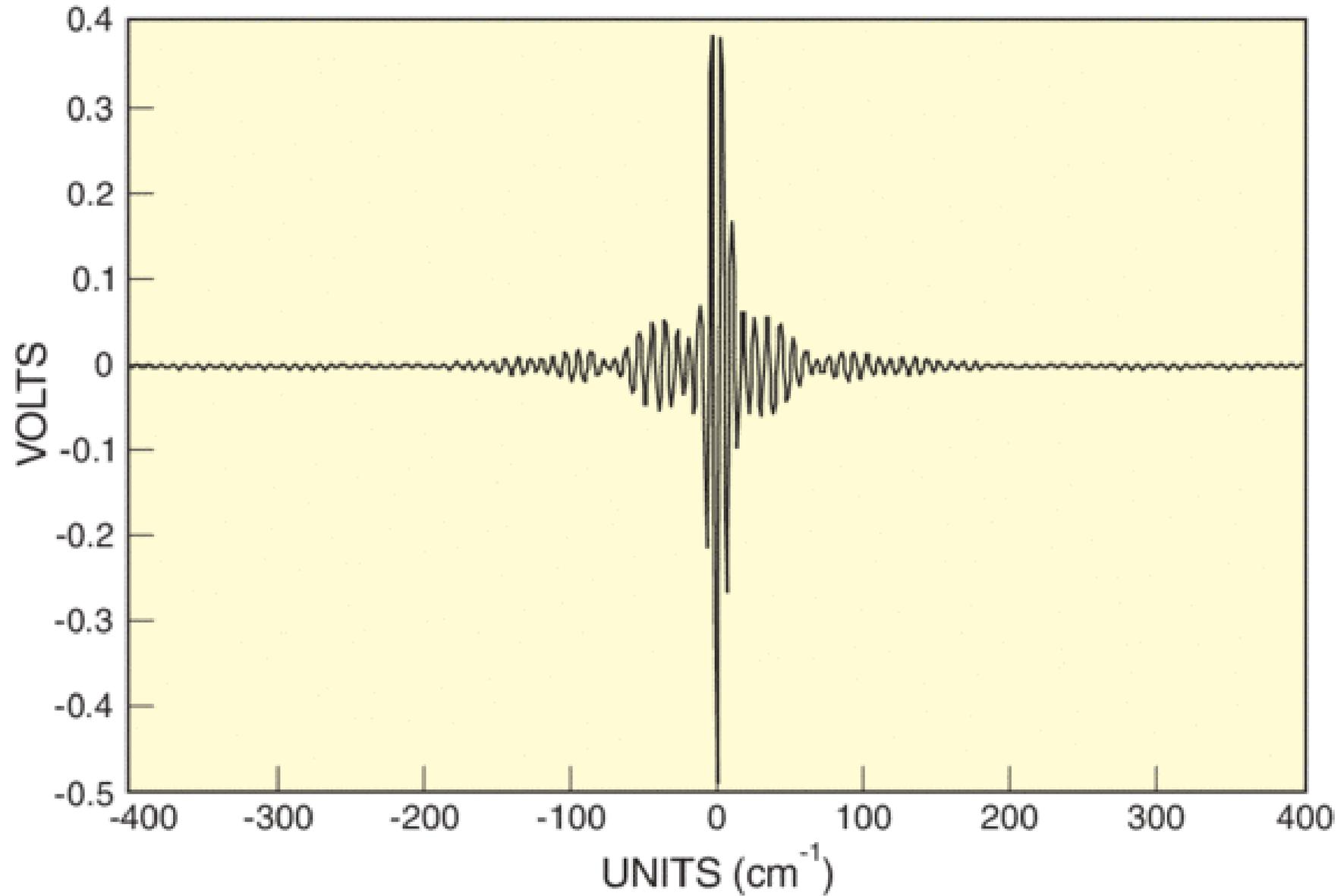
# FTIR spectrometer layout



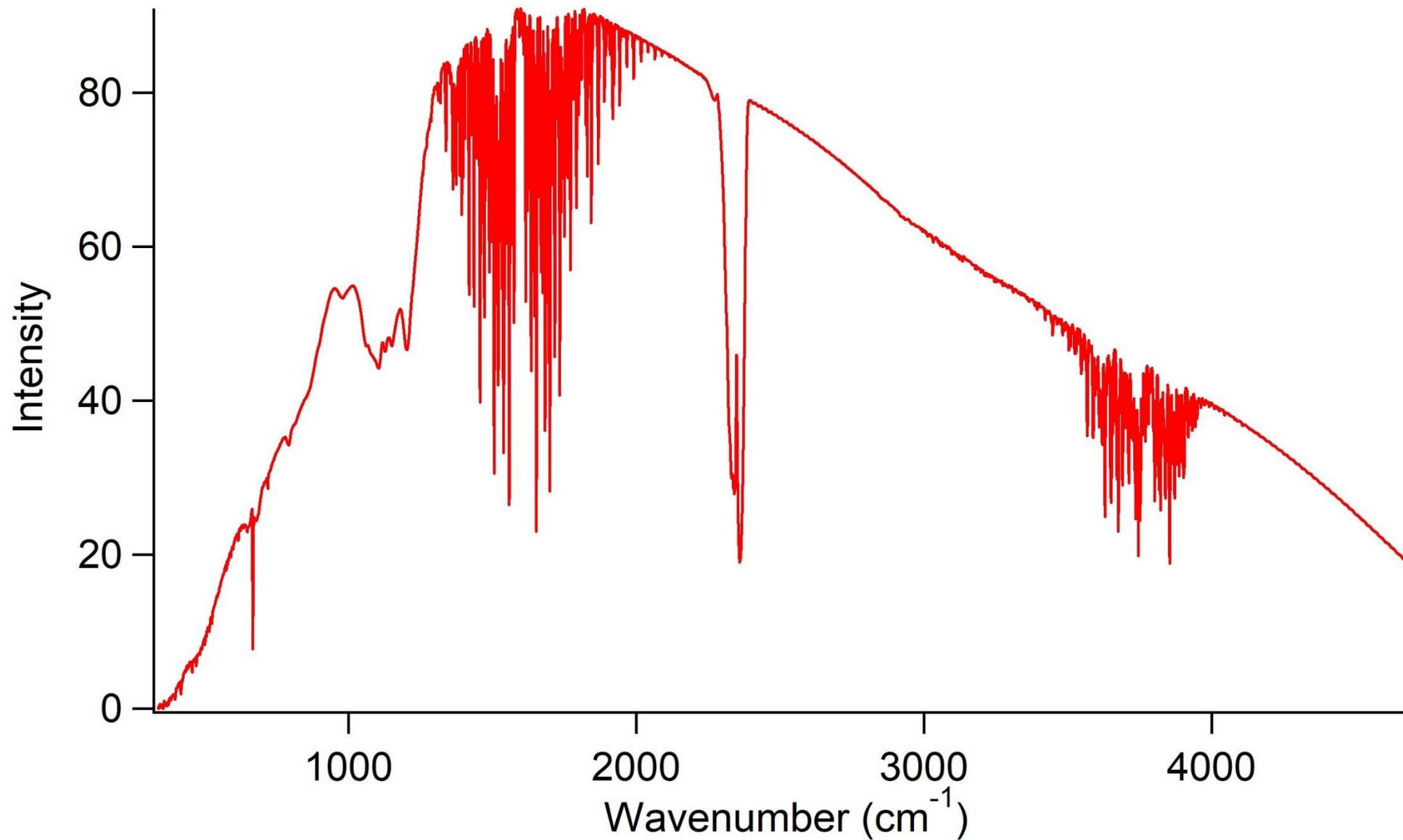
# Interferometer



# Interferogram



# “Single beam” background: no sample



# “Single beam” background: unpurged

