How do you convert from microns to wavenumbers and vice versa?

Wavelengths in the mid-infrared are typically expressed in micrometers, commonly called microns, where one micron is 10^{-6} meters. Another typical unit in the mid-infrared is the wavenumber. Having units of cm^{-1}, the wavenumber is the number of waves in cm and is proportional to frequency.

Converting microns to wavenumbers is simple:

$$Wavenumbers = \frac{10{,}000}{Wavelength\ in\ microns}\, cm^{-1}$$

For example, if you have a wavelength of 2.5 microns, and want to know the equivalent wavenumbers, then:

$$Wavenumbers = \frac{10{,}000}{2.5}\, cm^{-1} = 4000 cm^{-1}$$

Converting wavenumbers to microns is also straightforward:

$$Wavelength\ in\ microns = \frac{10{,}000}{Wavenumbers\ in\ cm^{-1}}\, microns$$

For example, if you have a wavelength in wavenumbers of 900 cm^{-1}, and want to know the equivalent wavelength in microns, then:

$$Wavelength\ in\ microns = \frac{10{,}000}{900}\, microns = 11.11\ microns$$