Let’s explore a simple model of how oscillation frequency is tied to the wavelength of electromagnetic radiation.

The frequency at which electrons oscillate is essentially set by the temperature of the matter in which the electron resides. Lower temperatures yield lower frequencies of oscillation. Here, we’ve set our temperature on the low side, and you can see the molecule oscillating fairly slowly, or in other words, at a low frequency. The wavelength of the emitted radiation is also relatively long.

But, when temperature increases, the oscillations get faster, which makes for a higher oscillation frequency. This high frequency means that the emitted electromagnetic radiation has a relatively short wavelength. For comparison again, we can decrease our temperature to watch the oscillation frequency slow, and the wavelength of the emitted radiation increase.