

This project studies mixtures of helium, nitrogen and carbon dioxide, widely used in so called CO<sub>2</sub> lasers. These lasers are classified as discharge lasers. In the case of low output lasers is often used a DC glow discharge. We can find bands so called first and second positive systems of a dinitrogen molecule in an emission spectrum of the glow discharge. It is possible to deduce energetic balance and a vibrational temperature from these bands. The vibrational temperature was studied by the vibrational spectroscopy of dinitrogen molecule for various discharge currents and pressures and for various distribution of nitrogen in the mixture (we will start with an industrial mixture LASAL 63).