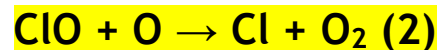


3) *Rotationally resolved vibrational spectroscopy of CFC replacement molecules*

CFC's have been implicated in polar ozone depletion ("the ozone hole") as the source of chlorine atoms. Replacements for CFC's have focused on molecules which are inert enough to be used for the same purposes as CFC's but reactive enough to break down in the troposphere rather than reaching the stratosphere before breaking down like CFC's. Release of Cl in the decomposition of CFC's in the lower stratosphere results in catalytic destruction of ozone:



This project will measure and analyze the rotationally resolved spectrum of replacement molecules such as HFC-125 ($\text{C}_2\text{F}_5\text{H}$) for reasons similar to those in project 2. CFC replacements could potentially be used in large amounts and are more stable than many pollutants and therefore reach concentrations in the atmosphere greater than that of a pollutant like methyl nitrite. An additional concern with these CFC replacements beyond pollutants like methyl nitrite is their absorption of IR radiation in the atmosphere. Changes in the absorption of IR radiation in the atmosphere (the greenhouse effect) can affect global climate.