



High Resolution FTIR for investigations and space monitoring of the Earth climate-forming factors

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As well-known IR spectra of the greenhouse gases in the troposphere and lower stratosphere should be measured precisely enough with spectral resolution up to $\sim 0.01 \text{ cm}^{-1}$. So an advanced high resolution FTIR with such spectral resolution is developed as an onboard satellite sensor for investigations of the global Earth climate factors: greenhouse gases and aerosols. Than a universal “forward” model that simulates signals from high resolution sensors is also described. In this model all sort of crucial processes that affect solar and thermal radiation (including scattering) are meticulously treated by means of unique line-by-line and Monte Carlo technique.