

Applications in several fields including defense and security, environment and geology require sensors with state-of-the-art sensitivity and capabilities. Among these sensors, the imaging spectrometer is a remote sensing instrument providing a large amount of rich information about the measured scene. The thermal infrared region of the electromagnetic spectrum hosts the fingerprint signature of many molecules of interest for these applications. Moreover, this spectral region is where is located the peak intensity of the self-emission of any objects at room temperature. This presentation introduces the principle of passive remote sensing in the thermal infrared region using the spectroscopy as the basic physics principle. We present the imaging FTS from the instrumentation point of view, including the data processing portion. Measurement examples will be presented for both ground-based and airborne configurations. Applications covered include gas detection and identification, mineral mapping and methane leak measurement.