

# COHERENT ANTI-STOKES RAMAN SCATTERING (CARS) SPECTROSCOPY FOR DIAGNOSTIC APPLICATIONS

**Innovations and Benefits** - Measurements of chemical-physical parameters of solids, liquids or gases by means of non-invasive optical analysis.

**Uses** - Spectral analysis where the molecular response is selectively excited by means of calibrated combinations of three laser pulses. The spectral features taken from the optical response provide information about the chemical-physical parameters (for example, gas temperature or chemical bonds in liquids and solids, etc.).

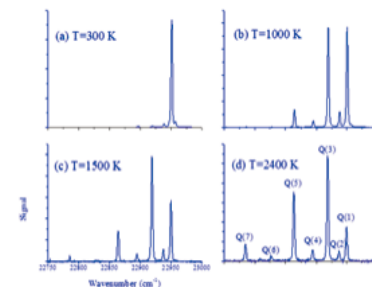
Applications are known in production and control of energy (mainly, combustion), or in studies of biological and biochemical samples, matter science and environmental research.

All the applications make use of high spatial and temporal resolution in addition to the high chemical selectivity.

**Past and present activities** - Thermometric measurements in reacting gases during combustion.



CARS thermometry on the simplest molecule:  $H_2$



Variation of the CARS signal of hydrogen when temperature is changed

Characteristics: CUSTOM

Thanks to its flexibility, the service can be adjusted to different needs and contexts