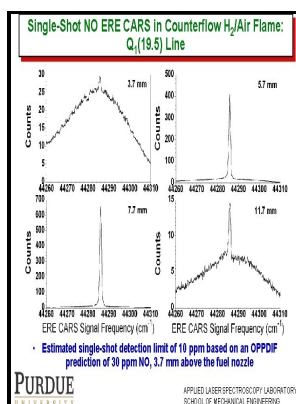


Raman spectroscopic and CARS studies of flames.

- - Raman spectra of gases



Description: -

- Raman spectroscopic and CARS studies of flames.

Theses / University of Bradford Postgraduate School of Studies in Chemistry Raman spectroscopic and CARS studies of flames.

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Coherent Anti Stokes Raman Spectroscopy Spectrum

As mentioned, resonance Raman excitation within the strong absorption of the polymer chains, i. . The CARS temperature measurements are compared with adiabatic flame temperatures calculated by the NASA-Lewis equilibrium code for equivalence ratios from 0.

CiteSeerX — N 2 CARS thermometry and O 2 LIF concentration

As an example, in the right part of Fig. Thermo Scientific proposed a compact hand-held Raman instrument, but it is suitable for only solid and liquid measurements. Coherent anti-Stokes Raman spectroscopy CARS was used to detect oxygen atoms electronic Raman scattering and oxygen molecules rotational Raman scattering in both hydrogen-oxygen and methane-oxygen flames.

Coherent Anti

In addition to temperature measurements the gas-phase CARS technique also provides information on the fluctuating properties occurring for instance in turbulent combustion systems. When the frequency difference of ω_1 and ω_2 , i. Performing an optimization of the Stokes phase shape resulted in dramatic changes of the anti-Stokes spectra.

Application of Laser Techniques for Combustion Studies

OH, CN, CH and c2 as well as relative concentration profiles for different radicals as a function of height above the burner. The bands lie very close to the exciting line because the energy of rotations is very low.

Spontaneous Raman

Temperature measurement techniques for gas and liquid flows using thermographic phosphor tracer particles. As such, it is invaluable for researchers wishing to adopt the methods directly, to those interested in assessing the accuracy, advantages, and limitations of specific techniques, and to those seeking a starting point for new ideas toward advances in combustion diagnostics. During combustion soot goes through different molecular structures.

Coherent anti

Since the latter methods are in any case much easier to perform than CARS or other nonlinear Raman techniques, they are to be preferred. Previous studies used N₂ coherent anti-Stokes Raman spectroscopy CARS temperature measurements to show that a region exists in which the temperature profile corresponds to that of a spherically symmetric diffusion profile, as would be expected in a true microgravity environment. As an example of resonance CARS studies in solids, for which a linear resonance Raman study has been impossible to perform because of simultaneous strong luminescence, we considered here investigations on colour zones in substituted diacetylene crystals originating from partial polymerization.

Picosecond time

The results demonstrate that temperature measurements in transient, turbulent flames can be made using CARS. Although many techniques exist for this type of analysis, Raman is proving its value especially as the cost of Raman modules reduces.

Cars Spectroscopy for Temperature and Concentration Measurements in a Spark Ignition Engine

HPP, High-pressure capstan pump; V, Valve; P, Pressure transducer; VP, Vacuum pump; FSC, Fused-silica capillary. The CARS technique has also been used for simultaneous detection of several species e.

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