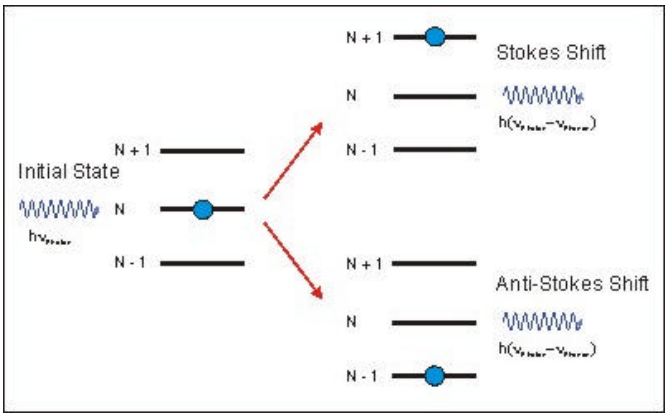
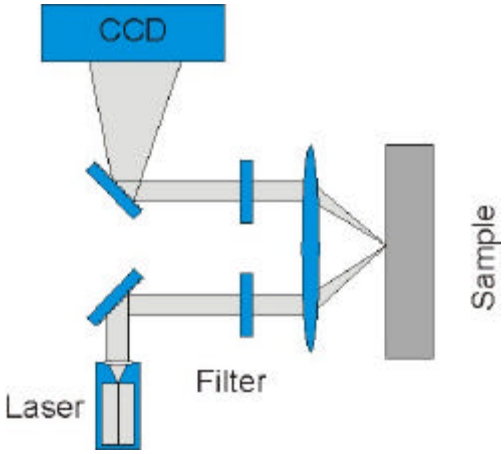
Technical Note – No. 18

Raman Spectroscopy is a very powerful method for measuring charbo-hydrates concentrations like Gas Oil or Glucose over distances or within difficult enviroments. It works best for large molecules like carbo-hydrates. For atoms or small molecules, please check for Absorption Spectroscopy.



When the light (photon) interacts with the molecular structure of the sample, energy is transferred into grating vibrations (phonon) of the molecule. Depending on the absorption or the emission of a phonon, a characteristic energy is reduced or added to the photon energy. This characterisitic energy shift is called Stokes or Anti-Stokes Shift. The Stokes and Anti-Stokes Shift can be detected experimentally. The exact value of the shift allows a unique identification of most charbo-hydrates.



For applying this detection method a fixed wavelength laser system with an excellent side mode suppression and a spectrometer is required as shown. The purity of the laser light is increased by a notch filter before it is coupled to the sample. There it interacts with the sample and in result, the signal according to the Stokes and Anti-Stokes Shift is generated. With removing the central wavlength of the laser light by an optical filter, the shift of the raman signal can be determined by the spectrometer. The absolute value of the shift allows the identification of the sample material.

Application Examples are given on this website for various carbo-hydrates. Please contact us for more detailed information

Sacher Lasertechnik GmbH
Hannah Arendt Str. 3-7
D-35037 Marburg, Germany
Tel.: +49 6421 305290
Fax: +49 6421 305299
Email: contact@sacher.de

Sacher Lasertechnik, LLC
5765 Equador Way
Buena Park, CA 90620, USA
Tel.: 1-714-670-7605
Fax: 1-714-670-7662
Email: sales@sacher-laser.com