



training, consultancy and software for  
infrared & raman spectroscopy

## Vibrational Spectroscopy

VibSpec is set up to meet the demands in the field of vibrational spectroscopy as regards training, consultancy and software services. Over 1600 people from industry, academia and the public sector have attended our courses on infrared and Raman spectroscopy, started in 1965 by the Infrared and Raman Spectroscopy Department of Utrecht University. Since 2004 we assisted many companies and institutions on vibrational spectroscopy related projects.



## About VibSpec

**VibSpec** is a company set up in 2004 by Peter de Peinder in collaboration with Professor dr. J.H. (Joop) van der Maas to meet the demands in the field of Vibrational Spectroscopy as regards training, software and consultancy services.

**Dr. Peter de Peinder** has worked at Utrecht University and Philips Research. He is a board member of the Dutch Infrared & Raman Discussion Group, the Section Analytical Chemistry (SAC) of the Dutch Royal Chemical Society (KNCV) as well as of the Editorial Board of the journal "Vibrational Spectroscopy".

**Professor dr. J. H. (Joop) van der Maas** is active in vibrational spectroscopy at Utrecht University for more than 40 years. He served in many scientific committees, and he is founder of the journal "Vibrational Spectroscopy".

**Dr. Tom Visser** started his career in vibrational spectroscopy in 1968 at Utrecht University and worked at the RIVM from 1987 to 2000. He retired from Utrecht University in 2010, but gladly continued his involvement in VibSpec as consultant and tutor.

We have a long-standing international history in arranging for (dedicated) IR and Raman courses on location at institutes and companies, as well as in participating in courses organised elsewhere (Europe, USA and Asia).

A close cooperation exists with the Inorganic Chemistry and Catalysis group of Utrecht University. This valuable link warrants access to relevant equipment and facilities, but also involves guest lecturing, knowledge exchange and collaboration on a wide variety of scientific projects.

VibSpec is partner in the research programs of CatchBio, NanoNextNL, TASC and SuBiCat.

# Courses and Training Vibrational Spectroscopy 2015

## **Multivariate Analysis of Vibrational Spectra**

24 March 2015

This one-day course will focus on the practical aspects of applying multivariate data analysis to vibrational spectra (quantitative and explorative). Techniques like MCR, PCA and PLS will be dealt with.

The course aims for people who have to handle large data sets (e.g. imaging) and those planning to perform quantitative measurements in (N)IR and/or Raman.

The training consists of interactive lectures and examples in the field of pharmaceuticals, oil, polymers etc. will be discussed while performing the multivariate analysis during the sessions.

## **Interpretation of Infrared Spectra**

20 – 22 April 2015

This course consists of computer lessons, specifically designed to effectively teach basic principles and the use of empirical data.

The lessons provide continuous feedback to the student, allow for different rates of progress, and give adequate time to assist with individual queries. The computer lessons are interspersed by supervised work sessions to practice the freshly gained experience.

## **Raman Spectroscopy Course**

19 – 20 May 2015

Raman spectroscopy is a powerful identification and structural tool, which has gained ground in recent years. This two-day course focuses on the practical aspects of this technique as complementary to infrared. There will be ample time for informal discussions, and participants are encouraged to consult the staff on problems of particular interest.

The course is beneficial to both, beginning as well as more experienced spectroscopists.

## **International Infrared Course (IRC)**

29 June – 1 July 2015

The primary aim of the course is to familiarise participants with the capabilities and limitations of infrared spectroscopy, and to discuss how this technique can be successfully applied. The course has proved to be beneficial to both, beginners as well as experienced spectroscopists.

The lectures are interspersed with practical sessions for small groups illustrating instrument operation & control, various accessories and sampling techniques. A broad range of equipment will be kindly supplied by the instrument manufacturers and at least three experienced tutors are available during the course.

## **Infrared Reflection Techniques**

10 November 2015

Reflection techniques like ATR, DRIFT, RAIRS and specular reflection are currently widely used by infrared spectroscopists. Each technique has its own merits, and adequate background knowledge is required to know when and where to use it and how to evaluate the different spectra. This one day course consists of lectures and experiments that will improve the understanding of reflection spectra.

**For more information on the courses and registration forms please visit;  
[www.vibspec.com](http://www.vibspec.com).**



### **In-company training**

In-company training, tailored to the requirements of the company/institution, can be arranged for. So if you would like us to organise a course for your employees, we will come to you with a customised course. Like to learn more about our in-company training please do not hesitate to contact us at [info@vibspec.com](mailto:info@vibspec.com) or +31 (0) 643 044 247.

# VibSpec Consultancy

**VibSpec** is gladly available to advise on subjects in the field of near-, mid- or far-infrared and Raman spectroscopy.

We offer our expertise on the use of accessories, software, multivariate data analysis (PCA, PLS, MCR etc.) and the interpretation of infrared and Raman spectra.

Also it is possible to employ a consultant at your laboratory to perform measurements and method development on specific spectroscopic and/or chemometric subjects. These projects can vary from days up to months.

The on hand equipment at Utrecht University covers the complete vibrational spectrum from 10,000-100  $\text{cm}^{-1}$ . Gases, liquids as well as solids can be analysed in infrared and Raman by a variety of techniques such as ATR, DRIFT, specular reflection and emission. Infrared microscopy allows the analysis of samples well below 50  $\mu\text{m}^2$  and in ATR imaging mode characterisation of details in the order of 5  $\mu\text{m}$  can be achieved.

A dispersive system with a probe head and a 532 nm laser, and a Raman microscope equipped with a 785 nm laser form part of the standard equipment as well as an FT-Raman instrument with a 1064 nm laser.

Examples of representative projects are:

- Interpretation of IR and Raman spectra and expert statements.
- Prediction of properties, e.g. density, viscosity and sulphur content, of crude oils from (N)IR spectra by chemometrics for Shell.
- Pilot studies for process control with NIR and/or Raman spectroscopy.
- Contamination and failure analysis.
- Tailor-made courses on location (e.g. basic IR and Raman training).
- Lipitor® Counterfeit research by means of NIR, Raman and chemometrics for the RIVM.
- Performing measurements and developing (quantitative) vibrational spectroscopy methods at research laboratories.

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