



A one week short term course on

VIBRATIONAL SPECTROSCOPY AND THE MOLECULAR VIBRATIONS

(Sponsored by Ministry of Human Resource Development (MHRD), Under the Scheme 'GIAN')
(15 January 2018 to 19 January 2018)

Overview

Spectroscopical techniques are nowadays fundamental tools for the understanding of physical, chemical and biological systems and processes. The development of sophisticated instruments, sampling techniques, and software for analysis and/or prediction of the data obtained experimentally has been enormous in the last few decades, and spectroscopic methods are now extremely powerful, amenable to use, and of general application in many scientific and practical domains. The methods of vibrational spectroscopy (infrared absorption and Raman scattering) are extremely sensitive to fine details of the molecular structure, molecular interactions (both intra and intermolecular in nature), and chemical reactivity. Besides, their use as analytical tools has also been receiving great impulse, such as in the forensic chemistry or cultural heritage domains. Coupled to sophisticate sampling methods, like matrix isolation or supersonic jets, for example, both infrared and Raman spectroscopies can probe individual molecules, as well as small clusters and large molecular aggregates, providing unique information on these systems. The training of a contemporary chemist, physicist or biologist must nowadays certainly include a strong component on spectroscopy, and in particular on modern techniques of vibrational spectroscopy.

Modules	A: THE VIBRATIONS OF A MOLECULE : Jan 15 - Jan 17 B: EXPLORING IR and RAMAN EXPERIMENTAL TECHNIQUES: Jan 17 – Jan 19 Number of participants for the course will be limited to Thirty.
You Should Attend If...	<ul style="list-style-type: none">▪ You are a B. Tech. / M. Tech. or M. Sc. with broad domain of materials sciences with focus on spectroscopy.▪ You are a Post-doctoral fellow or Ph. D. scholar in Chemistry, Physics or Materials Sciences.▪ You are a faculty member of an academic institution or a researcher/scientist from industry interested in learning about vibrational spectroscopy.
Fees	The participation fees for taking the course is as follows: Participants from abroad : US \$100 Industry/ Research Organizations: ` INR 3000 Academic Institutions (Faculty members): ` INR 1000 Ph. D. and M. Tech. Students: INR 500 The above fees include all instructional materials and assignments, laboratory equipment usage charges. The participants will be provided with accommodation on payment basis.

Registration Process

Registration for GIAN courses is not automatic because of the constraints on maximum number of participants allowed to register for a course. In order to register for one or multiple non-overlapping courses, you have to apply online using the following steps:

Stage1:

Web (Portal) Registration: Visit GIAN Website at the link:

<http://www.gian.iitkgp.ac.in/GREGN/index> and create login user ID and Password. Fill up blank registration form and do web registration by paying Rs. 500/- on line through Net Banking/ Debit/ Credit Card. This provides the user with life time registration to enroll in any no. of GIAN courses offered.

Stage2:

Course Registration (Through GIAN Portal): Log in to the GIAN portal with the user ID and Password created. Click on "Course Registration" option given at the top of the registration form. Select the Course titled "**VIBRATIONAL SPECTROSCOPY AND THE MOLECULAR VIBRATIONS**" from the list and click on "Save" option. Confirm your registration by Clicking on "Confirm Course".

Only Selected Candidates will be intimated through E-mail by Course Coordinator. They have to remit the necessary course fee in the form of DD drawn in favor of "The Director, NIT Kurukshetra-136 119" payable at NIT- Kurukshetra.

The last date of registration is 10 January 2018.

The Faculty



Rui Fausto is full Professor and Head of the Chemistry Research Centre of the Department of Chemistry of the University of Coimbra, Portugal, where he is also the coordinator of the Laboratory for Molecular Cryospectroscopy and Biospectroscopy. He is member of the European Academy of Arts, Sciences and Humanities, American Chemical Society, and European Photochemistry Association, President of the permanent Steering Committee of the EUCMOS (European Congress on Molecular Spectroscopy) series of meetings, and the main Editor of the JOURNAL OF MOLECULAR STRUCTURE (ELSEVIER AMSTERDAM). He belongs to the editorial boards of ten additional scientific journals.

He is a specialist on molecular spectroscopy, quantum chemistry and solid state photochemistry. Along his career he has occupied many different positions in administration and scientific management in the University of Coimbra, including the presidency of the

Academic Council and the Vice-presidency of the Scientific and Directive boards of Faculty for Sciences and Technology and the presidency of the Institute for Interdisciplinary Research. He was also until very recently the President of the Physical-Chemistry Division of the Portuguese Chemical Society. In 2002 he received the RSC Journals Grant for International Authors Prize and in 2004 and 2005 he was one of the 12 Portuguese scientists awarded with the *Excellence Prize* of the Portuguese Science Foundation. He is author or editor of 25 scientific books and author of over 350 scientific papers in high impact factor chemistry journals. He has been the coordinator of many national and international research projects, which as a whole collected several millions of Euros of funding, and has organized more than 50 international scientific congresses. Rui Fausto has also been acting as evaluator for many Scientific International Institutions, including the European Research Council and the National Science Foundation of USA. He is the Coordinator of the Directorate for High-Education of the International Observatory of Human Rights, and Honor Member of the Portugal – Latvia Association.

Course Co-ordinators



Dr. Chetti Prabhakar is an Assistant Professor at the Department of Chemistry, National Institute of Technology Kurukshetra, India. His research interests are in the areas of functional organic materials, electronic structure and properties of organic materials, computational design and synthesis of optoelectronic materials, Near Infrared (NIR) absorbing dyes and molecular docking.



Dr. J. K. Kapoor is an Associate Professor and Head of the Department of Chemistry, National Institute of Technology Kurukshetra, India. His research interests are in the areas of organic synthesis particularly heterocyclic synthesis and its biological applications.

Course Co-ordinators & Contact Address

Dr. Chetti Prabhakar
Assistant Professor
Department of Chemistry
NIT Kurukshetra
PIN 136 119, India
Email; chetti@nitkkr.ac.in

Dr. J. K. Kapoor
Associate Professor
Department of Chemistry
NIT Kurukshetra
PIN 136 119, India
Email; jkkapoor11@gmail.com