


**Pharmaceutical Consultation and
Research Unit (PCRU) &
Laboratory of Marine Biotechnology
and Drug Discovery**

at

**Faculty of Pharmacy Presenting
A Workshop on:**

**One-Dimensional NMR
Spectroscopy**


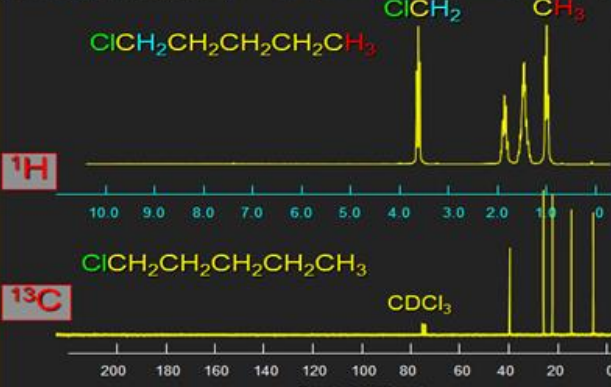
**Fundamentals and Applications in
Structure Determination
of Organic Compounds**




Venue: Faculty of Pharmacy,
King Abdulaziz University, Jeddah

Date: January 15-17, 2019

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Nuclear Magnetic Resonance (NMR) spectroscopy is a powerful, continually evolving analytical technique with wide applications in chemical, biological, pharmaceutical and medical sciences. This technique has made rapid strides over the last two decades, both in theory and in applications, and works in conjunction with modern computer and information technology. There is a growing need for skilled personnel trained in NMR, especially in spectral interpretation, in academia, research centers, and industry. This intensive workshop will give the participants a valuable opportunity to gain knowledge and practical experience in NMR data processing, spectral analysis and interpretation of complex organic compounds. The workshop will include three full days of in-class and hands-on instructions in basic aspects of NMR and spectral interpretations of naturally-occurring organic compounds obtained from marine sponges, bacteria, fungi as well as of terrestrial origin. The workshop will be based on group and individual problem-solving sessions using a combination of 1D (mainly ^1H and ^{13}C) and NMR spectra.

This workshop is designed for everyone. No prior knowledge or experience about NMR spectroscopy is required to attend this workshop.

The main goal of the workshop is to familiarize the participants about the basic aspects and applications of 1D NMR in structure elucidations of compounds.

Thus, the specific aims of the workshop are:

- 1) Understanding of the principles and applications of NMR spectroscopy.
- 2) Providing basic information about NMR spectroscopy and its wide applications in research.
- 3) Application of 1D NMR spectroscopy in structure determination of small molecules using ^1H NMR spectroscopy.
- 4) Application of 1D NMR spectroscopy in structure determination of small molecules using ^{13}C NMR spectroscopy.
- 5) Providing in-class group discussions and hands-on instructions in spectral interpretations of small molecules.
- 6) Supporting group and individual problem-solving sessions using 1D (^1H and ^{13}C) NMR spectroscopy.

Thus, the main target participants are:

- 1) Senior undergraduates of different disciplines in Science.
- 2) Early graduates with chemistry, biology and microbiology backgrounds.
- 3) Graduate students, postgraduates and researchers working in the area of natural products, chemistry, marine chemistry, and drug discovery.
- 4) Junior faculty from colleges/universities/research institutes.

Organizer Short Biography



Prof. Youssef received his advanced education at Assiut University, where he earned a Bachelor of Pharmaceutical Sciences (BPharmSci) with honors in 1984, and a Master of Science (MSc) in Phytochemistry in 1988. In 1995, he received his PhD (magna cum laude) from Albert Ludwigs University of Freiburg in Germany, where he worked for additional year as Scientific Researcher. In 1996, he joined the Faculty of Pharmacy at Suez Canal University (SCU) as an Assistant Professor. He served as an Assistant Professor from 1996 to 2001, as an Associate Professor from 2001 to 2006 and as Professor from 2006 till now.

He served as Chair of the Department of Pharmacognosy and Phytochemistry from 2001 to 2008 and as Vice Dean of the College of Pharmacy for Graduate Studies and Research Affairs from 2007 to 2010 and as Acting Dean of the College of Pharmacy in 2008 and 2010. At SCU, he established the first laboratory in the Middle East for Drug Discovery and Biotechnology from marine organisms. He is a US Fulbright Fellow in 1999-2000 at University of Hawaii in the US and a 2002 long term Fellow of the Japan Society for the Promotion of Science (J.S.P.S.) at The University of Tokyo. From 2004 through 2007, he was a Visiting Professor at several US universities including University of California at San Diego (UCSD), Oregon State University (OSU), University of Michigan (UM), University of Utah (UU) and Josephine Ford Cancer Institute and Henry Ford Hospital, Michigan.

In 2003, he received the prestigious State of Egypt Incentive Award in Medicine. In 2008, he was elected to organize and chair the 1st Euro-Mediterranean Conference on Marine Natural Products in Sharm El-Sheikh and was reelected as chair and organizer of the 2nd Euro-Mediterranean Conference on Marine Natural Products in 2010 in Cairo.

In 2010, he joined the Faculty of Pharmacy at King Abdulaziz University (KAU). At KAU, he founded and supervised the first Laboratory of Marine Biomedicine and Biotechnology in Saudi Arabia. The lab's mission was focusing on building human capacity and development, establishment of new areas of research, transfer and localization of new technologies in KSA and the region and supporting young researchers and students with sophisticated trainings. At SCU and KAU, he received several research excellence awards for his pioneer work in drug discovery and biotechnology.

During the last 20 years on the faculty he has established himself as a world leader in the field of drug discovery from natural sources. Dr. Youssef's research program has focused on the discovery of antibiotics and antitumor drug leads from natural product sources including marine sponges and other invertebrate animals, marine-derived fungi and bacteria. He and his co-workers have published 120 peer-reviewed research papers and one patent. He served as a principal investigator of more than 25 research projects and raised more than \$5.5M in extramural research funding from prestigious international agencies. He has trained more than 50 undergraduate students, 20 graduate students (MSc & PhD) and postdoctoral fellows and hosted many visiting researchers in his lab. His research accomplishments and international reputation have been acknowledged in the form of numerous invitations to speak at national and international symposia, workshops and US and European universities on natural products research, antitumor and antibiotics drug discovery and marine biotechnology. Dr. Youssef has received additional recognition by serving as a member of the review panels at the "Sixth and Seventh Framework Programme of the European Commission" (FP6 & FP7) including sections of Food, Agriculture and Fisheries, and Biotechnology.

Dr. Youssef also serves as a member of the editorial boards for several scientific journals and as a reviewer for more than 30 international reputable peer-reviewed journals in pharmacy, chemistry, natural products chemistry, ecology, marine biotechnology and drug discovery. He also serves as a research project consultant, external evaluator and reviewer for many national and international funding agencies. Over the years, he built a solid collaboration with pioneer scientists across Europe and the US and with experts in international pharmaceutical companies and industry.

The major focus of Dr. Youssef's current research is the discovery of novel marine-derived chemical entities as potential drug leads and pharmaceuticals for the treatment of human tumors, infectious diseases, and many others.

Contact Information

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27 (according to SCOPUS) with total Citations of 1877

29 (according to Google Scholar) with total Citations of 2419

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<https://scholar.google.com/citations?user=FsQnCogAAAAJ&hl=en&oi=ao>

https://www.researchgate.net/profile/Diaa_Youssef/info

Workshop Schedule

Day 1: Tuesday, January 15, 2019

Time	Activity
8.15 – 8.45	Registration
8:45 – 9:00	Welcoming and introduction speech by the Vice Dean for Graduate Studies & Scientific Research
9:00 – 9:45	<u>Structural Analysis using Spectrometry Methods:</u> <ul style="list-style-type: none">• Ultraviolet-Visible Spectroscopy (UV-Vis)• Infrared Spectroscopy (IR)• Mass Spectroscopy (MS)• Nuclear Magnetic Resonance (NMR)
9:45 – 10:30	<u>Nuclear Magnetic Resonance (NMR):</u> <ul style="list-style-type: none">• What is NMR?• Principles of NMR• Applications of NMR• ^1H and ^{13}C NMR techniques• Group discussion
10:30 – 11:00	Coffee Break
11:00 – 12:15	<u>Proton (^1H) NMR Spectroscopy:</u> <ul style="list-style-type: none">• How looks ^1H NMR spectrum?• What's important?• Why are protons different?• What does NMR tell you?• Types of protons• Chemical shifts• Integration• Group discussion
12:15 – 13:00	Prayer Break
13:00 – 13:45	<u>Proton (^1H) NMR Spectroscopy:</u> <ul style="list-style-type: none">• Coupling between protons• Multiplicity of signals• Splitting pattern of coupled protons• Coupling constants• Group discussion
13:45 – 14:30	<u>Proton (^1H) NMR Spectroscopy:</u> <ul style="list-style-type: none">• Group discussion• ^1H NMR Problem solving

Day 2: Wednesday, January 16, 2019

Time	Activity
9:00 – 10:30	Proton (^1H) NMR Spectroscopy: <ul style="list-style-type: none">Group discussion^1H NMR Problem solving
10:30 – 11:00	Coffee Break
11:00 – 12:15	Proton (^1H) NMR Spectroscopy: <ul style="list-style-type: none">Group discussionNMR Problem solving (Group)NMR Problem solving (Individual)
12:15 – 13:00	Prayer Break
13:00 – 14:00	Carbon (^{13}C) NMR Spectroscopy: <ul style="list-style-type: none">How looks ^{13}C NMR spectrum?What's important?Why are carbons different?What does ^{13}C NMR tell you?Types of carbonsChemical shifts^1H-Coupled ^{13}C NMR spectrum^1H-Decoupled ^{13}C NMR spectrumGroup Discussion
14:00 – 14:30	Carbon (^{13}C) NMR Spectroscopy: <ul style="list-style-type: none">NMR Problem solving (Group)NMR Problem solving (Individual)

Day 3: Thursday, January 17, 2019

9:00 – 10:30	Proton (^1H) and Carbon (^{13}C) NMR Spectroscopy: <ul style="list-style-type: none">Interpretation of ^1H SpectraInterpretation of ^{13}C Spectra
10:30 – 11:00	Coffee Break
11:00 – 12:15	Proton (^1H) and Carbon (^{13}C) NMR Spectroscopy: <ul style="list-style-type: none">Interpretation of combined ^1H and ^{13}C NMR spectraGeneral NMR problems
12:15 – 13:00	Prayer Break
13:00 – 14:15	Proton (^1H) and Carbon (^{13}C) NMR Spectroscopy: <ul style="list-style-type: none">How to predict ^1H NMR spectrum of a known compoundHow to predict ^{13}C NMR spectrum of a known compound
14:15 – 14:30	Closing Remarks and Issuing of Certificates



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APPLICATION FOR TRAINING COURSE

Course Title: One-Dimensional NMR Spectroscopy			
Note: Please enclose the following with your application: 1- CV summary 2- Proof of deposit. (Copy of deposit slip) of the course fee of 1200 SR in Faculty of Pharmacy – King Abdulaziz university in Samba bank ,(IBAN # SA414000000004701731382) Account # 470173138			
Surname	First Name	Middle Name	Sex
Date of Birth	Place of Birth		Nationality
Name of Office and Address:		E-mail Address:	
Mobile Number :		Telephone Number:	
Job title:			
Educational Attainment Degree _____ School _____ Year Graduated: _____ Others _____			
Training and Experience in Research (state nature and duration)			
Brief statement of purpose in applying for the course			
_____		_____	
Date		Signature	

Please fax the completed Form to :+9662 6404113 or E-Mail to : akammoun@hotmail.com