The Science of Chemistry

Chemistry is one of the fundamental natural sciences. Its main areas of interest are the study of transformations of matter through chemical reactions (Synthetic Chemistry), and the analysis and understanding of the chemical structure of matter at all scales (Physical and Analytical Chemistry). Chemistry plays a prominent role in many other sciences, such as Medicine and the Health Sciences, the Environmental Sciences and most branches of Engineering. Chemistry is closely interlinked with the other natural sciences, with which it often works cooperatively; Therefore, it is a key science for modern civilization. To achieve its goals, Chemistry has developed synthetic and analytical methodologies, as well as a very broad theoretical basis. In addition, Chemistry works closely with all other natural sciences to solve difficult interdisciplinary problems. Chemistry has offered mankind a wide range of medicines to fight disease, new fuels, new materials, artificial fibers, plastics, detergents, insecticides, etc., which have largely defined modern culture. In recent years, facing a dangerous climate change, Chemistry has been at the forefront of the efforts to develop new, environmentally friendly alternative energy sources. Technologies such as the use of sunlight in new photoelectrochemical cells, as well as the catalytic conversion of biomass to hydrogen, which is used to generate electricity, are some typical examples. At the same time, Chemistry investigates and understands the molecular mechanisms of life processes and chemical reactions in biological systems, contributing catalytically to the development of Molecular Biology and Medicine. Chemistry also studies the pollution of the environment, to the protection of which it contributes not only by recording the different types of pollution, but also by developing new anti-pollution technologies.

Chemistry at the University of Cyprus

Chemistry was first taught in the Department of Natural Sciences of the University of Cyprus, in 1992. The first Chemistry undergraduate students were enrolled in January 1994 and awarded the first degrees in Chemistry in June 1998. Since February 2000, the Department of Chemistry of the University of Cyprus has been operating as an independent entity.

Currently, the Department of Chemistry has sixteen (16) academic faculty and one Special Teaching Staff member. The technical and administrative staff consists of four Laboratory Technicians, two Secretaries, an Accounting Officer and an IT Assistant.

The Department promotes scientific knowledge and research in all areas of Chemistry, and aims to prepare high-level graduates to work in industry, private companies, governmental services and education. Our Chemistry graduates contribute significantly to the technological development of Cyprus. The Department’s intensive research activities are aimed at applications in important fields such as health, energy, environment and have led to a significant production of research publications and success in national and international research programmes.
UNDERGRADUATE Studies

The academic year 2017-2018, an upgraded undergraduate programme was introduced, which leads to the acquisition of a Chemistry Degree (4 years, 240 ECTS). In parallel with this programme, the Department gives students of other departments the opportunity to obtain a minor degree in Chemistry.

The new programme is based on the ECTS system and comprises: (a) introductory courses in Chemistry, Physics, Mathematics and Computer Programming (1st and 2nd semester), (b) basic courses for the Chemistry degree, such as Analytical, Inorganic, Organic, Supramolecular, Physical Chemistry and Biochemistry (3rd - 8th semester), and (c) elective Chemistry courses (7th and 8th semester). In order to graduate with a B.Sc. in Chemistry, students must acquire a total of 240 ECTS.

At the theoretical level, Chemistry is taught through lectures, which are complemented by seminars and problem-solving sessions. Chemistry is by nature an experimental science and therefore, the Department places strong emphasis on Laboratory Courses (eight laboratory courses of 6-7 ECTS each), which are regarded as independent courses, meaning that their grades are not compounded with those of the relevant theoretical courses. In order to complete a Chemistry degree, students must complete three university-wide elective courses (15 ECTS total) from at least three different faculties of the University, as stipulated by the University regulations. In addition, students must acquire 10 ECTS units in foreign language courses. All courses include a written final examination. However, the final grade of a course is calculated based on the student's performance in the final exams, homework, intermediate examination, scientific literature projects, and laboratory reports. There are, usually, prerequisite courses in a series of related courses (e.g. Inorganic Chemistry I, II and III), where level I must precede level II, etc., and it is not possible to enroll in an advanced level course, without having first performed satisfactorily in the lower level course(s) in the series.

The Diploma Thesis (10 ECTS) is an important feature of the undergraduate programme. During the fourth year of studies, each student works independently for two semesters under the supervision of a member of the academic staff, studying one of the special experimental projects proposed. During the course of their Diploma work, students learn how to work independently, solve laboratory problems, search, study and analyze scientific literature, give seminars to their fellow students in a clear and comprehensive way, and present the results and conclusions of their Thesis work. In the context of the Diploma Thesis, students work on truly original research related to the research interests of their supervisors.

POSTGRADUATE Studies

The Postgraduate Programme of the Department offers the possibility of obtaining a Master's degree (M.Sc.) and a Doctorate (Ph.D.) in almost all fields of Chemistry.

Research

The Department of Chemistry faculty are very active in cutting-edge research fields of Organic, Inorganic, Physical and Analytical Chemistry, that include Chemical Biology, Supramolecular Chemistry, Coordination Chemistry, Molecular Spectroscopy, Heterogenous Catalysis, Computational, Polymer and Food Chemistry. The Department’s intensive research activities are aimed at applications in important fields such as health, energy, environment and have led to a significant production of research publications and success in national and international research programmes. In a recent publication, the journal Nature announced that Chemistry is the "strong" research field of Cyprus, considering the publications of the academic members of the Department in the most popular journals of Chemistry (http://www.ucy.ac.cy/chem/el/department-achievements/9-gr-articles/139-natureindex 2014). Finally, it is noted that many academic members of the Department are members of the editorial boards of internationally renowned scientific journals.
Awards - Distinctions

The significant research activity of the Department of Chemistry is recognized on a regular basis, with the awarding of prizes to undergraduate students and postgraduate students at the M.Sc. level, for their diploma thesis research projects by ΙδΕΚ ("FOITO" awards), as well as to postgraduate students for presenting their work at international Chemistry conferences. In addition, academic members of the Department are awarded for their research contribution either in conferences or by research and innovation organizations. For detailed information, you may visit the website of the Department www.ucy.ac.cy/chem.

Social Contribution

Members of the academic staff of the Department of Chemistry participate in the following committees: 1) Secondary Education Curriculum Committee, 2) Examination Committee for the Appointment of Teachers in Secondary Education, 3) Pancyprian Examinations Committee, 4) Pancyprian Union of Chemists (PUC), 5) Radiation Protection Council, 6) Reliability Audit Committee, 7) Evaluation Committee at the Limassol Water Supply Council, 8) Cyprus Council for the Recognition of Higher Education Qualifications, 9) Quality Assurance and Accreditation Study Committee EuCheMS-DAC (European Association for Chemical and Molecular Sciences-Division of Analytical Chemistry), 10) Division of Quality Assurance of the PUC, 11) Cyprus National Bioethics Committee, 12) Cyprus Organization for the Promotion of Quality.

International Collaborations

The Department of Chemistry has signed formal cooperation agreements with the "Particle Technology Laboratory", Department of Mechanical & Process Engineering, ETH Zurich, (SWITZERLAND) and the “Advanced Light Source”, Lawrence Berkeley National Laboratory (U.S.A.), while maintaining a wide, active network of collaborations with the following universities: University of Florida (U.S.A.), Georgia Tech., Atlanta (U.S.A.), University of Texas A&M (U.S.A.), University of Laval (CANADA), Institute of Chemistry, Chinese Academy of Sciences, Beijing (CHINA), Friedrich-Alexander Universität Erlangen-Nürnberg (GERMANY), University of Regensburg (GERMANY), Marcoule Institute for Chemical Separations, Marcoule (FRANCE), SOLEIL synchrotron, Paris (FRANCE), Imperial College London (U.K.), University of Sheffield (U.K.), University of Bern (SWITZERLAND), University of Mons (BELGIUM), Technion (ISRAEL), National Hellenic Research Foundation, Athens (GREECE), University of Crete (GREECE), University of Patras (GREECE). Also, the Department of Chemistry actively participates in the Erasmus + Programme, providing the possibility of hosting students as well as academics, within the framework of this programme.
Testimonials of Students/Alumni

DR. ELENI MOUSHI, Postgraduate Alumni (B.Sc., M.Sc., Ph.D.), Assistant Professor, European University of Cyprus

My undergraduate studies at the Department of Chemistry of the University of Cyprus were the reason for me to embark on the exciting journey of research in the field of Inorganic Chemistry, followed by the beautiful years of my postgraduate and doctoral studies in the same Department. During those years, I had acquired solid knowledge, while, at the same time, through the international scientific conferences, in which I had the opportunity to participate, I contacted several well-known scientists. The skills and expertise that I gained, led to the publication of a significant number of research articles (40) in high impact international scientific journals. In fact, some of my publications were featured in the cover of scientific journals. Moreover, during my postdoctoral research at the Department of Chemistry, I was granted with the Young Researcher Award (2016) by the Cyprus Research Promotion Foundation, for the thematic unit "Natural Sciences and Engineering". Today, I am an Assistant Professor and Coordinator of the Pharmacy Programme of the European University Cyprus, while I continue my collaboration with the Department of Chemistry of the University of Cyprus.

MICHALIS CONSTANTINOU, Postgraduate Alumni (B.Sc., M.Sc.), General Manager MC ANALYSIS CENTER LTD (2015-today)

My studies in the Department of Chemistry provided me with all the necessary skills and knowledge that helped me shape my professional identity. During my undergraduate studies at the Department of Chemistry, I realized my interest in Analytical Chemistry and its huge importance in ensuring health and safety. All the above led me to the decision to further expand my knowledge in this field, through my postgraduate studies at the University of Cyprus. The experiences and knowledge I gained during my studies provided me with the required skills and expertise to start my own business in the field of microbiological and chemical analysis in food, water, medicinal and environmental samples. Today, our laboratory employs 6 young scientists with the primary goal of providing reliable services.

DR. MARIA RIALA, Postgraduate Alumni (B.Sc., Ph.D.), Regulatory Affairs Associate, Medochemie Ltd

My studies in the Chemistry Department of the University of Cyprus at undergraduate and postgraduate level, as well as my time as a postdoctoral associate, have been a magical journey for me, through which I gained valuable skills, experiences and memories for life. During my stay at the University of Cyprus, I had the opportunity to participate in several international conferences, publish my research results in high impact international scientific journals and meet well-known scientists around the world. In addition, I had the honor to receive one of the eight awards for young researchers during one of the largest European organic chemistry conferences. Today, I work as a Regulatory Affairs Associate in one of the largest generic pharmaceuticals manufacturing industries worldwide, Medochemie Ltd.
I am a fourth-year student of the Department of Chemistry. The Department of Chemistry of the University of Cyprus offers a high standard undergraduate programme of study. With the help of academics, I have developed my critical thinking, as they always urge us to cross-reference information, especially in research, as well as to thoroughly read all the sources and the information given to us. In addition, with their experience and knowledge, they have provided me powerful tools and a solid background to deal with possible difficulties that may arise in my future career in Chemistry. In these four years, this Department has made me love the science of Chemistry even more.

EVA EFSTATHIOU, Undergraduate Student

I have obtained both my Degree and my Ph.D. from the Department of Chemistry of the University of Cyprus. My Degree offered me a broad knowledge in all the basic branches of Chemistry, while during my diploma thesis, and later my Ph.D., I devoted myself to Organic Chemistry. Acquiring a wealth of practices and other skills, as well as publications in internationally recognized journals, I competed for a post-doc fellowship abroad. I worked as a post-doc researcher at the Chemistry Research Laboratory of the University of Oxford, and later at the Center for Molecular and Macromolecular Studies, at Łódź, Poland, gaining additional valuable experiences and knowledge. At present, I have received funding through the DIDACTOR Programme, and I have been working as a Project Coordinator and Researcher in the Department of Chemistry. A small island like Cyprus needs to produce research activity with international recognition, and the Department of Chemistry provides the means and tools to achieve this.

DR. MARIA KOYIONI, Postgraduate Alumni (B.Sc., Ph.D.), Project Coordinator and Researcher at the Department of Chemistry (DIDACTOR Programme)

My professional career was largely determined by the knowledge and research experience I gained during my years of study at the Department of Chemistry of the University of Cyprus, both at the undergraduate and postgraduate levels. The choice of studies in the field of Chemistry was the result of my love for this science since school years. Immediately after obtaining the Degree in Chemistry, I continued my studies at the Ph.D. level in the Laboratory of Heterogeneous Catalysis at the Department of Chemistry, where I was awarded in 2006 the Ph.D. Degree in Chemistry. My Ph.D. was a journey of knowledge and development, both as a human and as a scientist. It has resulted in the publication of a large number of scientific articles, my participation in conferences and research projects, and my association with outstanding scientists. All these were life experiences, but also a solid background, on which I gradually built my professional career. I have also met people, with whom I have had a close and sincere friendship since then. Since 2006, I have been working at the Ministry of Energy, Trade, and Industry in the field of hydrocarbons and energy, a field directly related to my studies. This area is also highly demanding, and full of various challenges given the discovery of natural gas deposits in the exclusive economic zone of the Republic of Cyprus. Looking back, I realize that the qualifications and knowledge I have acquired during my studies, are now a large part of my cognitive and empirical toolkit, that helped me respond adequately and successfully in a very difficult profession.

DR. YIOTA LAMBROU, Postgraduate Alumni (B.Sc., Ph.D.), Senior Industrial Applications Officer (Energy & Hydrocarbons), Member of the Board of Directors of the Cyprus Hydrocarbon Company

EVA EFSTATHIOU, Undergraduate Student

I am a fourth-year student of the Department of Chemistry. The Department of Chemistry of the University of Cyprus offers a high standard undergraduate programme of study. With the help of academics, I have developed my critical thinking, as they always urge us to cross-reference information, especially in research, as well as to thoroughly read all the sources and the information given to us. In addition, with their experience and knowledge, they have provided me powerful tools and a solid background to deal with possible difficulties that may arise in my future career in Chemistry. In these four years, this Department has made me love the science of Chemistry even more.

EVA EFSTATHIOU, Undergraduate Student

I have obtained both my Degree and my Ph.D. from the Department of Chemistry of the University of Cyprus. My Degree offered me a broad knowledge in all the basic branches of Chemistry, while during my diploma thesis, and later my Ph.D., I devoted myself to Organic Chemistry. Acquiring a wealth of practices and other skills, as well as publications in internationally recognized journals, I competed for a post-doc fellowship abroad. I worked as a post-doc researcher at the Chemistry Research Laboratory of the University of Oxford, and later at the Center for Molecular and Macromolecular Studies, at Łódź, Poland, gaining additional valuable experiences and knowledge. At present, I have received funding through the DIDACTOR Programme, and I have been working as a Project Coordinator and Researcher in the Department of Chemistry. A small island like Cyprus needs to produce research activity with international recognition, and the Department of Chemistry provides the means and tools to achieve this.

DR. MARIA KOYIONI, Postgraduate Alumni (B.Sc., Ph.D.), Project Coordinator and Researcher at the Department of Chemistry (DIDACTOR Programme)

My professional career was largely determined by the knowledge and research experience I gained during my years of study at the Department of Chemistry of the University of Cyprus, both at the undergraduate and postgraduate levels. The choice of studies in the field of Chemistry was the result of my love for this science since school years. Immediately after obtaining the Degree in Chemistry, I continued my studies at the Ph.D. level in the Laboratory of Heterogeneous Catalysis at the Department of Chemistry, where I was awarded in 2006 the Ph.D. Degree in Chemistry. My Ph.D. was a journey of knowledge and development, both as a human and as a scientist. It has resulted in the publication of a large number of scientific articles, my participation in conferences and research projects, and my association with outstanding scientists. All these were life experiences, but also a solid background, on which I gradually built my professional career. I have also met people, with whom I have had a close and sincere friendship since then. Since 2006, I have been working at the Ministry of Energy, Trade, and Industry in the field of hydrocarbons and energy, a field directly related to my studies. This area is also highly demanding, and full of various challenges given the discovery of natural gas deposits in the exclusive economic zone of the Republic of Cyprus. Looking back, I realize that the qualifications and knowledge I have acquired during my studies, are now a large part of my cognitive and empirical toolkit, that helped me respond adequately and successfully in a very difficult profession.

DR. YIOTA LAMBROU, Postgraduate Alumni (B.Sc., Ph.D.), Senior Industrial Applications Officer (Energy & Hydrocarbons), Member of the Board of Directors of the Cyprus Hydrocarbon Company

EVA EFSTATHIOU, Undergraduate Student