Chemistry in Poland

Students, scientists and industrial partners…

The Jagiellonian University (JU) is the oldest in Poland, and one of the oldest in Europe. It was founded almost 650 years ago in Krakow, the former Polish capital. Today JU employs about 4,000 academic teachers and has about 50,000 students. In 2012, it was ranked as the best university in Poland.

The first chair of chemistry at JU was established in 1782. A notable member of the chemistry staff was Karol Olszewski (1846-1915), who was the first to liquefy oxygen, nitrogen and carbon monoxide in 1883.

Nowadays, the Faculty of Chemistry is one of the 15 faculties of JU. In 2010, it was awarded Excellence Rating status from the Centre of Higher Education and Development (CHE), an independent, implementation-oriented think tank with an international outlook.

Together with other members of the Marian Smoluchowski Kraków Research Consortium 'Matter-Energy-Future', the faculty has been awarded the status of a Leading National Research Centre (KNOW) for the years 2012-2017.

The Faculty of Chemistry currently numbers 201 teachers and researchers, and about 1,240 students: 660 candidates for Bachelor's degrees, 430 for Master's, and 150 for PhD.

Education

JU has always played a leading role in introducing educational reforms and has promoted the Bologna Process among Polish chemistry faculties. The JU Faculty of Chemistry offers courses in two main fields: chemistry and environmental protection. A combination of the offered educative issues related to these two domains addresses one of

the most important societal challenges for chemical faculties – emphasising a positive role of green chemistry.

Together with other university units, the Faculty of Chemistry also offers unique courses in the fields of biochemistry, advanced materials and nanotechnology. Interdisciplinarianism also characterises the wide range of specialisation available for Master's students in chemistry.

Courses at the Faculty of Chemistry (at Bachelor's, Master's and PhD levels) are offered to ambitious people with an intense curiosity about the world. The studies are an extraordinary adventure, preparing students to meet the challenges of the dynamic and ever-changing labour market. They are characterised by: up-to-date curricula, research-based teaching, access to leading-edge scientific equipment, individualised programmes for outstanding students, an experienced and competent teaching staff, and an extensive range of international cooperation.

The faculty was also among the leaders in the internationalisation of Polish chemistry studies. It was the first Polish faculty to become, in 1997, a member of the European Chemistry Thematic Network (ECTN, later EC2E2N) and is also active in other European projects, such as Tuning Educational Structures in Europe, CHEMPASS, FACE and CHLASTS.

The Faculty of Chemistry has been awarded the certificate of the European Chemistry Thematic Network (ECTN) – Eurobachelor and Euromaster Labels. Studies in biological chemistry, advanced spectroscopy in chemistry and environmental protection are connected with international learning paths, leading to a diploma from two universities: Jagiellonian and a partner institution from an EU country.

In the years 2009 to 2012 more than 80 of our students went abroad to take courses at European universities within the framework of ERASMUS student exchange programmes. At the same time, more than 50 ERASMUS students from other European universities studied at the faculty in Krakow.

Since 2009, the number of international doctoral projects at the Faculty of Chemistry has risen thanks to EU Structural Funds. These projects have been conducted in collaboration with foreign partners.

Modern information and computer technology (ICT) helps to greatly enhance the quality of teaching. Therefore, education at the faculty is increasingly supported by e-learning resources. Examples of this include the EChemTest Testing Centre, which is one of eight such sites in Europe.

At the Faculty of Chemistry, particular attention is paid to contacts with schools and promotion of chemistry in the society. Every year a number of events open to public, in particular to young people, is organised by the staff, with a great help from students.

Organisation of research

The faculty's research covers all major aspects of modern chemistry. Research groups have access to modern facilities and state-of-the-art experimental techniques. Funding for these research activities is obtained from Polish and European Community sources.

A substantial amount of new equipment has been purchased thanks to the ATOMIN project financed using EU Structural Funds. This equipment is used in four inter-team laboratories: Advanced Materials, Nanotechnology and Surface Science, Biomedical Applications of Physics and Chemistry, Photonics, Laser Spectroscopy and Quantum Technologies, and The Centre for Advanced Computational Methods.

Research topics

Chemistry is a discipline of science that has had a major influence on the development of civilisation over the past 200 years and thus on our everyday life. Accordingly, research in chemistry has always been aimed at ultimate practical applications. A large part of the research activity in the Faculty of Chemistry is basic research, focused on the acquisition of new knowledge, understanding the fundamentals of observed phenomena and rationalisation of experimental facts. However, even basic research at the JU is often strictly related to developments of

practical importance, or is followed by applied research, often done in collaboration with industrial partners. The scientific activities at the JU Faculty of Chemistry are conducted in the three main fields:

- TECHNO – new compounds, advanced materials, new chemical processes and technologies, crystal engineering, catalysis and photocatalysis, nanotechnology, spectroscopy and physicochemical methods in forensic sciences;
- BIO – biochemistry and nano-biotechnology, bioengineering; environmental protection, biomaterials, and medical, biological and forensic chemistry;
- INFO – computational methods of quantum chemistry; molecular modelling of reactions, catalytic processes and new materials; theoretical studies of optical and electro-optical properties of organic materials; information theory of molecular systems.

In the years 2006 to 2011 research groups of JU Faculty of Chemistry conducted a large number of scientific projects. As a result of these activities about 1,350 scientific papers, 30 books and over 300 chapters in scientific books have been published. Scientists from the faculty are the authors of more than 4000 contributions to international and national conferences.

The JU Faculty of Chemistry has a long tradition of collaborating with industry. A few solutions to crucial environmental problems are being implemented. In recent years, several Polish and international patents have been obtained. Efficient platform of cooperation with industry has been substantially strengthened by our activities in the framework of the KIC InnoEnergy Consortium, in which the faculty has participated since 2010.

Together with global industrial players, we work under the auspices of the European Institute of Innovation and Technology on vital environmental problems. In parallel, we develop the new tools for exchanging ideas within knowledge triangle: students, scientists and industrial partners. Close cooperation with industry is one of our priorities for the near future, also in the framework of the new initiatives: KIC Healthy Living and Active Ageing and KIC Raw Materials. Together with excellent science, this is our challenge for the European Horizon 2020 Strategy.

JAGIELLONIAN UNIVERSITY IN KRAKOW

Professor Grażyna Stochel
Dean

Faculty of Chemistry
Jagiellonian University

Tel: +48 12 6632243
+48 12 6632215

sekretar@chemia.uj.edu.pl
www.chemia.uj.edu.pl