International Organization for Chemical Sciences in Development

Promoting the chemical sciences for sustainable human development and economic growth

Organization Outline and Strategy 2017-2020

IOCD builds on more than 35 years of achievement in promoting the chemical sciences for sustainable, equitable human development and economic growth. We seek to help build capacity in the chemical sciences; and to collaborate with other organizations to advance sustainable development globally through strengthening and repositioning research, practice and education in the chemical sciences.

Established[1] in 1981 at UNESCO through the leadership role of Pierre Crabbé, IOCD was ***the first international non-governmental organization devoted to enhancing the role of the chemical sciences in development*** and involving chemists in low- and middle-income countries, enabling them to contribute to key science and technology areas for development.[2,3]

Pierre Crabbé
1928- 1987

Chemist, humanitarian and founder of IOCD[4]

IOCD
Namur, Belgium
2017

www.iocd.org

International Organization for Chemical Sciences in Development (IOCD)

Chemistry is a 'platform' science

Chemistry provides **understanding** of the physical and chemical properties of atoms and molecules and **practical methods** for **creating new** substances **with useful applications.**

It also contributes to **fundamental aspects of a range of other sciences, underpinning the dramatic advances** seen in recent decades in such fields as **biotechnology, energy, environment, genetics, materials and medicine**

Role of the chemical sciences in development

During the last two centuries, the chemical sciences have contributed enormously to **broad improvements in human well-being** (including enhancements in health and life expectancy) and to **wealth creation** for individuals and nations.[5] Landmark examples include:

- **Innovations in the generation, storage and use of energy**
- **Creation of new materials**
- **Advances in agriculture, food and nutrition**
- **Better health**
- **Economic growth**

The UN Sustainable Development Goals (SDGs), adopted in 2015, reflect a new global vision of shared responsibility for global development. Achieving the SDGs requires collective global effort – including harnessing science, technology and innovation for development. **IOCD's action group, Chemists for Sustainability, has highlighted the roles that chemistry must play in achieving the SDGs.**[6]

IOCD's Mission and objectives

IOCD's mission is to promote the pursuit and application of the chemical sciences for sustainable, equitable human development and economic growth, especially in low- and middle-income countries (LMICs), through:

- **Raising the profile** of the chemical sciences in sustainable development;
- **Promoting capacities** to conduct and use the chemical sciences to advance sustainable development and meet other global challenges;
- **Promoting greater participation** by those working in all aspects of the chemical sciences in global priority areas, including attaining the SDGs and advancing the domains of better health and a better environment.

IOCD's Strategy 2017-2020

To fulfil its mission and contribute to the achievement of the SDGs, IOCD is focusing on ***two strategic priorities***:

A: Chemistry for better health and a better environment

B: Capacity building in chemistry education

The work undertaken under each priority is accomplished through IOCD's Action Groups and Projects.

Complementing its work in these focal areas, IOCD utilises meetings, publications and media opportunities to **promote the role of the chemical sciences in development**.

Chemistry for better health and a better environment

IOCD aims to foster expanded use of the chemical sciences: to improve health by promoting the uptake and application of relevant techniques for discovery, analysis, synthesis and manufacture of health-related products; and to contribute to a better environment through strengthening sustainable approaches to generating and using clean energy and materials.

IOCD has long supported capacity building for medicinal chemistry. The current work focuses on provision of on-line training in medicinal chemistry, through an open and distance learning package created by IOCD scientists at the University of Kansas.

IOCD supports a Working Group on Materials for Energy Conversion, Saving and Storage (MATECSS).[7] The group is chaired by Prof. Federico Rosei, who holds the Canada Research Chair in Nanostructured Organic and Inorganic Materials and the UNESCO Chair in Materials and Technologies for Energy Conversion, Saving and Storage at the INRS, Montreal.

Capacity building in chemistry education

IOCD aims to strengthen chemical sciences education by developing and disseminating knowledge and learning tools. Activities include the provision of **web-based resources,** e.g.: **on-line tutorials** in organic chemistry, available in Spanish[8] and **training in practical medicinal chemistry**. A suite of **on-line chemistry lectures**, ***ChemCourse*** is in preparation. The **Chemistry Education Action Group** helps to push forward this area.

Chemists for Sustainability (C4S)

This IOCD Action Group was formed by an international group of chemists who believe that ***chemistry and related sciences have indispensable roles to play in helping the world to achieve the SDGs***. The group has served advocacy and think-tank roles through written articles, lectures and web materials.

There are currently four core members: **Henning Hopf, Alain Krief, Stephen Matlin and Goverdhan Mehta**. Others are co-opted to bring additional perspectives to the work.

The ***C4S*** group argues that chemistry as a discipline needs redesign and reform, in order to ensure that it is attractive and productive as a science and relevant to solving 21st century challenges. The group has presented the concept of **'one-world' chemistry** – a new orientation for the discipline which emphasises the need for chemistry to be a science for the benefit of society, embracing the understanding that human health, animal health and the environment are all interconnected.[9] This requires ethical behaviour at all times, the employment of **systems thinking** in relation to all aspects of the practice of chemistry, and strengthening the capacity of chemistry for **cross-disciplinary working**.

Details of all these and other activities of IOCD can be found on the website:

www.iocd.org

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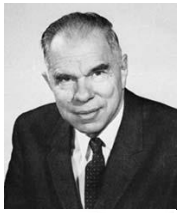
Impact of IOCD

IOCD has helped raise awareness of the importance of the chemical sciences nationally and internationally and the profile of chemists and their contributions to development. This was aided by success in attracting prominent chemists to IOCD's cause, including the Presidents (two Nobel laureates), Council (included four additional Nobel laureates) and leaders and members of its Senior Advisory Council, action groups and projects.



Glen T. Seaborg
Nobel Laureate in Chemistry

IOCD President 1981-1995

Jean-Marie Lehn
Nobel Laureate in Chemistry

IOCD President Since 1995

General Assembly 2017

Members:
Berhanu Abegaz (Ethiopia)
Jean-Pierre Décor (France)
Henning Hopf (Germany)
Alain Krief (Tunisia/France/Belgium)
Jean-Marie Lehn (France)
Stephen Matlin (United Kingdom)
Goverdhan Mehta (India)
Vivian Yam (China)
Observers:
Carlos Rius (Mexico)
Michael Tempesta (United States)

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2. D.A. O'Sullivan, *Group to use chemistry to solve developing countries' ills*. **Chem. & Eng. News**, 1983, 21-24.
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7. Materials for Energy Conversion, Saving and Storage (MATECSS). http://matecss.org
8. Organic chemistry tutorials in Spanish: www.iocd.unam.mx/nomencla/nomencla.htm
9. S. A. Matlin, G. Mehta, H. Hopf, A. Krief. *'One-world' chemistry and systems thinking.* **Nature Chemistry** 2016, 8, 393-6.

For further information and details of IOCD's programmes

Visit IOCD's Website:
www.iocd.org

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