Chemistry – a central science and a platform science

Chemistry provides understanding of the physical and chemical properties of atoms and molecules and their interactions and practical methods for creating new molecular structures and materials 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. 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) for 2030 reflect a new global vision of shared responsibility for global development. Achieving them requires 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.

IOCD’s Mission and objectives

Launched at UNESCO in 1981 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.

IOCD’s current mission is to promote the pursuit and application of the chemical sciences for the benefit of society, especially in sustainable development.

IOCD’s objectives are to champion the achievement of the multiple potentials of chemistry to serve as a creative fundamental science; as a central science contributing to developments in adjacent sciences; as a source of highly valuable applications; and as a science that can contribute to solving major global challenges including sustainability.

IOCD’s Strategy 2020-2021

The focus of IOCD’s work in the period is on promoting the chemical sciences for development and especially for global sustainability.

IOCD fosters and highlights the contributions that the chemical sciences can make, in education, research and practice, to sustainable, equitable human development and to tackling emerging global challenges, including those contained in the UN Sustainable Development Goals.
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.

This requires ethical behaviour at all times, the employment of systems thinking in relation to all aspects of chemistry education and practice, and strengthening the capacity of chemistry for cross-disciplinary working.

Capacity building in chemistry education

IOCD’s Chemistry Education Action Group aims to strengthen chemical sciences education by developing and disseminating knowledge and learning tools.

IOCD has closely collaborated in a project of the International Union for Pure and Applied Chemistry (IUPAC), working with a global group of chemistry educators to develop chemistry education concepts, tools and content for infusing systems thinking into chemistry education.

Chemistry for better health and a better environment

IOCD aims to foster expanded use of the chemical sciences; to improve health and to contribute to a better environment through strengthening sustainable approaches to generating and using clean energy and materials.

The IOCD Working Group on Materials for Energy Conversion, Saving and Storage (MATECSS) is chaired by Prof. Federico Rosei, who holds the UNESCO Chair in Materials and Technologies for Energy Conversion, Saving and Storage at the INRS, Montreal.

Impact of IOCD

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

References


General Assembly 2020

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 (USA)

For further information and details of IOCD’s programmes

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