

Sustainable Energy for All

Energy is central to nearly every major challenge, and opportunity, the world faces today. Be it jobs, security, climate change, food production, or increasing incomes, access to sustainable energy for all is essential for strengthening economies, protecting ecosystems, and achieving equity.

In fact, more than 1.4 billion people worldwide have no access to electricity, and 1 billion more only have intermittent access. Some 2.5 billion people—almost half of humanity—rely on traditional biomass for cooking and heating.

United Nations Secretary-General Ban Ki-Moon made sustainable energy one of the five priorities that will guide his second five-year term. Specifically, he will direct the UN to extend energy's reach in order to combat endemic poverty. Universal access to energy, improved efficiency, and enhanced deployment of renewable sources are ambitious goals, and the Secretary-General is leading a Sustainable Energy for All initiative to make them achievable.

This initiative will call for private-sector and national commitments and attract global attention to the importance of energy for development and poverty alleviation. The goal is to meet three objectives by 2030:

- ensuring universal access to modern energy services
- doubling the rate of improvement in energy efficiency
- doubling the share of renewable energy in the global energy mix

In recognition of the importance of energy access for sustainable economic development and supporting achievement of the Millennium Development Goals, the UN General Assembly has designated 2012 as the International Year of Sustainable Energy for All.

 sustainableenergyforall.org



A family in Tarialan, Mongolia, uses a solar panel to generate power for their ger. (UN Photo)

The 2012 International Chemistry Olympiad (IChO) Comes to Washington, D.C.

The American Chemical Society will host the International Chemistry Olympiad (IChO) from 21–30 July 2012. IChO provides chemistry students the opportunity to compete at the highest levels and establish networks that go beyond cultures and borders. As part of its ongoing commitment to science, technology, engineering and math education, The Dow Chemical Company is investing \$2.5 million to bring the IChO to the USA for the first time since 1992.

The International Chemistry Olympiad is an annual competition for the world's most talented chemistry students at the secondary school level. Nations around the world send a team of four students, who are tested on their chemistry knowledge and skills in a five-hour laboratory practical and five-hour written theoretical examination. Through a special donation, IUPAC offers support for the participation of countries with limited financial resources. The priorities for the use of this support are: bringing additional students if there are less than four in the team, bringing an additional mentor if there are less than two, or support to reduce the participation fee of a country.

 www.icho2012.org



InChI 1.04

In September 2011, version 1.04 for Standard and Non-Standard InChI/InChIKey was released, which now supports the chemical elements up to 112, copernicium. The inchi-1 executable (both Windows and Linux versions) now allows the processing of multiple input files in a single run (common file name wildcards are recognized). In addition, version 1.04 also fixes a number of minor bugs.

The 2011 annual InChI meeting was held 28 August during the ACS National meeting in Denver. The proceedings were led by Jason Wilde (publishing director at Nature Publishing Group and chairman of the InChI Trust) and Alan McNaught (secretary, IUPAC Division VIII InChI Subcommittee, secretary, InChI Trust). Trust members attending included Accelrys, ACD/Labs, Elsevier, FIZ CHEMIE Berlin, RSC, Springer, and Wiley. After taking care of several administrative votes, the committee provided updates on the various InChI activities underway:

- **InChI (v 1.04)** is being released under more liberal licensing terms to alleviate concerns brought to the Trust by corporate participants.
- **Member and Supporter Logos** are now available for posting on member and supporter websites.
- **The InChI Validation program** has been launched allowing users to certify their implementation of InChI. The programs test the installation against a broad set of structures (which are provided with the suite). Once the programs are run and the results sent back to the Trust, an "InChI certified" logo is sent to the organization.
- **InChI Extensions:** Under the guidance of IUPAC, several sub-teams are now working on expanding InChI to new areas of chemical representation:
 - **Reaction InChI (RInChI):** the reaction working group has completed its recommendations, and work is ready to begin.
 - **Polymers/Mixtures:** The polymers/mixtures working group also has submitted its recommendations, and work to incorporate the new representations should begin once version 1.04 is released.
 - **Markush:** This project is the most complex undertaken to date. The initial recommendations have been submitted, but financing of the work still needs to be sorted out.
 - **Upcoming reports:** IUPAC has two more working groups underway, focusing on organometallics and electronic states, whose reports are due over the next year.

Update provided by Carmen Nitsche.

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 www.inchi-trust.org/

InChI in San Diego

Plan to participate in the next INCHI Symposium to be held during the Spring 2012 ACS in San Diego, 25–29 March 2012. A whole day program, including a FLASH session, is being organized by Antony Williams and Alex Tropsha

Possible Changes to The International System of Units

At its 24th meeting, held 21 October 2011, the General Conference on Weights and Measures (CGPM) adopted Resolution 1: "On the possible future revision of the International System of Units, the SI." Resolution 1, available at www.bipm.org/utils/en/pdf/24_CGPM_Resolution_1.pdf, is succinct and written for specialists.

Final approval of the New SI with a date for its implementation will be made by the CGPM after its prerequisite conditions have been met; this will not be before 2014.

The SI is the system of measurement units used in most of the world. Its building blocks are seven "base" units: the second, the metre, the kilogram, the ampere, the kelvin, the mole, and the candela. The SI has the great advantage that these same units are used in all activities of society that involve measurement: daily life, precision engineering, advanced science, etc.

Sufficient progress has been made in National Metrology Institutes around the world to give serious consideration to updating the present definitions of the kilogram, the ampere, the Kelvin, and the mole. In particular, the kilogram has received much public attention because its definition dates from 1889 and it is the last base unit still defined in terms of a manufactured object, the international prototype of the kilogram, which is conserved and used at the International Bureau of Weights and Measures (BIPM) in Sèvres, France. It would be far better, particularly for the scientific community, if the base units were defined in terms of fundamental constants of nature because these constants are invariable over time. Such definitions have been achieved for the definitions of the second and the metre, both of which have been defined for many years through such constants.

Updating the definitions of the four units mentioned above will require care. In making the change, it is a prerequisite that for all the activities of daily life, a kilogram will still be a kilogram; water will still freeze at zero degrees Celsius, etc. That is to say, none of these proposed changes will be noticeable in everyday activities. However, the changes will have immediate impact in the excruciatingly accurate measurements carried out by highly specialized laboratories.

A redefinition of the kilogram first requires highly accurate measurements of a fundamental constant of nature in terms of the mass of the international prototype of the kilogram, currently exactly equal to 1