

Project Place

- gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2014-Chapter-4-Industrial-Processes.pdf
- Euro Chlor. *The European Chlor-Alkali industry: an electricity intensive sector exposed to carbon leakage*. Brussels: 2010. http://www.eurochlor.org/media/9385/3-2-the_european_chlor-alkali_industry_-_an_electricity_intensive_sector_exposed_to_carbon_leakage.pdf
 - WorldSteel Association. *Steel's contribution*

to a low carbon future. Brussels: 2014. http://www.worldsteel.org/dms/internetDocumentList/bookshop/Steel-s-contribution-to-a-Low-Carbon-Future-2014/document/Steel_s%20contribution%20to%20a%20Low%20Carbon%20Future%202014.pdf

For further information contact the Task Group Chair Pietro Tundo <tundop@unive.it> www.iupac.org/project/2013-057-3-300



See also www.iupac.org/publications/ci/indexes/stamps.html

Stamps International

Let There Be Light!

The International Year of Light and Light-based Technologies (IYL 2015) is a global initiative launched by the United Nations and UNESCO to draw attention to the history and societal impact of optical technologies. Much like the recent International Years of Astronomy (2009), Chemistry (2011), or Crystallography (2014), it presents a unique opportunity to promote the development of sustainable solutions to worldwide challenges in energy, education, agriculture, communications, and health.

The IYL will also underscore the inherent value and broad range of applications of light-based technologies in chemistry, physics, biology, medicine, and other disciplines. In this note, two of the most significant discoveries in the multifarious history of the science of light are illustrated with postage stamps. The German stamp was issued on the occasion of the bicentennial of the birth of Joseph von Fraunhofer (1787-1826), the Bavarian physicist and optician who invented the spectroscope (1814) and observed for the first time the dark absorption lines in the Sun's spectrum. In 1859, Robert Bunsen and Gustav Kirchhoff at Heidelberg realized that they could use a spectroscope to investigate the emission spectra of numerous substances and in this manner they discovered shortly thereafter the elements cesium and rubidium. In the ensuing decades, spectroscopic analysis became the most reliable method for the identification of hitherto un-



known chemical elements, including thallium, indium, gallium, and several lanthanoids. Remarkably, helium was spectroscopically detected on the Sun's chromosphere during a solar eclipse in 1868, more than 25 years before it was found on Earth!

The French stamp illustrated here-in was issued in 2001 as part of a set featuring some of the most important scientific achievements of the 20th century, from space exploration and the elucidation of the structure of DNA to the discovery of penicillin and the development of the laser.



Even though nobody was certain about the potential uses of lasers when they were first built in the late 1950s, they have become ubiquitous today in consumer electronics (e.g., laser pointers and printers, compact disc players) and a variety of industrial and commercial applications such as cutting and welding tools, barcode scanners, optical communications, and precision metrology. In a similar vein, the use of lasers in eye surgery (as shown on the stamp), kidney stone removal, and other medical procedures is growing at an accelerated pace as the experimental techniques become safer, more precise, and less expensive.

As an enabler of color, light is intimately related to various forms of art and the cultural heritage of nations, and thereby will be featured during 2015 in a myriad of topical workshops, conferences, and exhibitions. It is my hope (of course) that many commemorative postage stamps honoring the IYL are also released during the year. Let the celebrations begin!

Written by Daniel Rabinovich <drabinov@uncc.edu>.