

will change our world for the better, making a more thoughtful use of our resources, favoring more efficient transformations, and providing more sustainable solutions in applications.”

The first selection of Top Ten Emerging Technologies in Chemistry was released in 2019 as a special activity honoring IUPAC’s 100th anniversary; the results were published in the April 2019 (*Chem Int*, 41(2), pp. 12-17, 2019; <https://doi.org/10.1515/ci-2019-0203>). The 2020 results were published in October 2020 (*Chem. Int.* 42(4) pp. 3-9, 2020; <https://doi.org/10.1515/ci-2020-0402>) 2019.

The next search for the Top Ten Emerging Technologies in Chemistry has already begun and the deadline for submission is 31 March 2022. It will be led again by Michael Droescher.

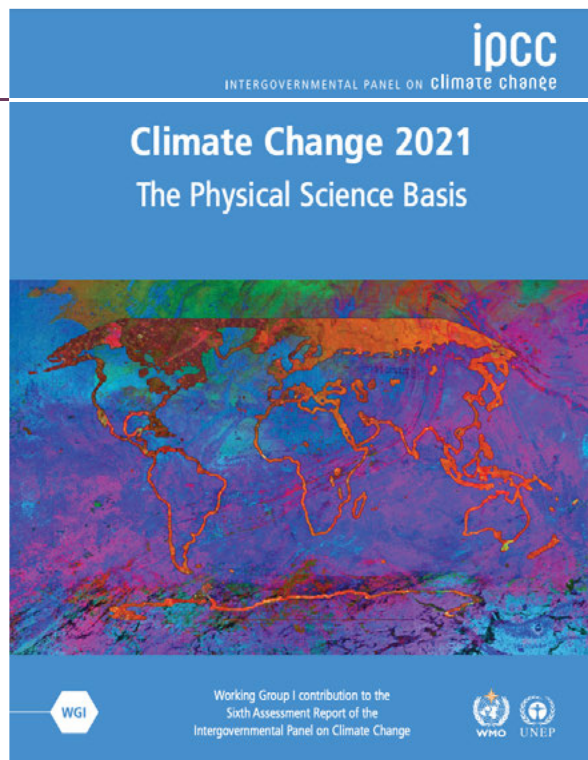
For more information on the 2019 and 2020 selections and on the search for the 2022 Top Ten Emerging Technologies in Chemistry go to: <https://iupac.org/what-we-do/top-ten/>.

*The Jury was an international group of objective and unbiased experts who reviewed and discussed a pool of nominations, and ultimately selected the final top ten. The following comprised the panel of judges for the 2021 Top Ten Emerging Technologies in Chemistry: Chair, Michael Droescher, (German Association for the Advancement of Science and Medicine), Jorge Alegre-Cebollada (Centro Nacional de Investigaciones Cardiovasculares, Spain), Sophie Carencio (French National Center for Scientific Research, France), Javier García Martínez (Universidad de Alicante, Spain), Ehud Keinan (Technion, Israel), Rai Kookana (CSIRO Land & Water, Australia), Greg Russell (University of Canterbury, New Zealand), Ken Sakai (Kyushu University, Japan), Natalia P. Tarasova (D. I. Mendeleev University of Chemical Technology, Russia), and Bernard West (Life Sciences Ontario, Canada).

Climate Change 2021—The Physical Science Basis

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body responsible for assessing the science related to climate change. The Sixth Report from IPCC Working Group I published in August 2021 paints a very sombre picture for the future. This report was commented on in a news item by the International Science Council (ISC) on behalf of its members, of which IUPAC is a founding member.

The report presents the latest advances in modelling and improved historical data to lead to the undeniable



conclusion that the whole world is experiencing the effects of climate change and that this is due to human activities. The extreme weather events which have occurred in 2021 are not taken into account. The goal of the Paris Agreement is that global warming is held to well below 2 °C with respect to pre-industrial values and efforts should be pursued to limit warming to 1.5 °C. All five emission scenarios considered in the IPCC report lead to warming greater than 1.5 °C and three of the five have warming of 2 °C or greater by 2041 to 2060. The curbing of greenhouse gas emissions, mainly carbon dioxide, reducing the carbon footprint, will improve the situation and could potentially reverse the temperature trend later in the century if decisive action is taken urgently now. Ambitious targets are required and implementation is needed immediately.

Chemistry, often referred to as the central science, is crucial in the battle against climate change. Ways of reducing consumption of energy in chemical reactions and processes, renewable fuels produced from sunlight with photocatalysts, reagent recycling and waste reduction, new and more efficient materials are all needed. IUPAC, as a worldwide resource for chemistry with over a thousand volunteer scientists who are experts in their fields of chemistry, from academia and industry, can and must make an important contribution to these questions.

Christopher Brett, IUPAC President commented: “This landmark report on climate shows the current state of the world and the need for decisive and incisive action. We strongly support the statement by the ISC and emphasise the important role that chemistry will

play in addressing the challenges. This is in accordance with a vision for IUPAC to be a global resource for chemistry for the service of humankind and the world. We are already working on many of the topics which will be crucial and we offer our expertise in addressing these issues which must be carried out in collaboration between all scientists and society as a whole."

IUPAC has worked for years in several fields related to the challenges of climate change and the environment, green chemistry for sustainable development and world needs. Before the Covid-19 crisis, it was already implementing an organisational drive to make much greater use of on-line meetings, thus reducing travel and decreasing our carbon footprint.

Examples of IUPAC projects that address the challenges associated with climate change are:

- Evaluated Kinetic Data for Atmospheric Chemistry
- Climate and Global Change: Observed Impacts on Planet Earth
- Multi-scale Biogeochemical Processes in Soil Ecosystems: Critical Reactions and Resilience to Climate Changes
- Assessment of the Contribution of IUPAC Projects to the Achievement of the United Nations Sustainable Development Goals
- Visualizing and Understanding the Science of Climate Change
- Systems Thinking in Chemistry Education
- Systems Thinking in Chemistry for Sustainability: Toward 2030 and Beyond
- Green and Sustainable Chemical Processes

The cover of the IPCC report is *Changing by Alisa Singer, "As we witness our planet transforming around us we watch, listen, measure...respond."* www.environmentalgraphiti.org - 2021 Alisa Singer.

<https://iupac.org/climate-change-2021-the-physical-science-basis/>

2022 IUPAC-Richter Prize—Call for Nominations

IUPAC and Gedeon Richter, Plc. are pleased to announce the 2022 IUPAC-Richter Prize in Medicinal Chemistry.

The 2022 IUPAC-Richter Prize will be presented during the 37th ACS National Medicinal Chemistry Symposium (26-29 June 2022) in New York (USA) and the recipient will also give a lecture on the subject of their research at the XXVII EFMC International

Symposium on Medicinal Chemistry (4-8 September 2022) in Nice (France).

The prize—USD 10,000—is to be awarded to an internationally recognized scientist, preferably a medicinal chemist, whose activities or published accounts have made an outstanding contribution to the practice of medicinal chemistry or to an outstanding example of new drug discovery.

The Prize has been established by a generous gift from the **Chemical Works of Gedeon Richter, Plc.** (Budapest, Hungary) to acknowledge the key role that medicinal chemistry plays toward improving human health.

Applicants should be received by nomination only, with just one person needing to serve in that capacity, although a total of five (5) individuals should be listed as referees overall. The package must be submitted electronically and should contain a complete resume, a professional autobiography of not more than two pages, and a one-page summary of what the individual considers to be his/her activities, accomplishments and/or publications that have had the most significant impact upon the field of Medicinal Chemistry. The material will be forwarded confidentially to an independent selection committee appointed by the IUPAC Subcommittee on Medicinal Chemistry and Drug Development.

For further information please contact Janos Fischer, Chair of the Jury and member of the IUPAC Sub-committee on Drug Discovery and Drug Development, by email at <j.fischer@richter.hu>

Nomination materials should be submitted by **15 December 2021**

<https://iupac.org/2022-iupac-richter-prize-call-for-nominations/>

Awardees of the 2021 IUPAC-Zhejiang NHU International Award for Advancements in Green Chemistry

We are delighted to announce the 2021 recipients of the established IUPAC-Zhejiang NHU International Award for Advancements in Green Chemistry. We congratulate **Gabriele Laudadio** from the Scripps Research Institute, **Lichen Liu** from Tsinghua University, and **Jingxiang Low** from University of Science and Technology of China as the early career award winners, and **David Milstein** from the Weizmann Institute of Science, Israel for the experienced chemist award.