## Vivek Polshettiwar is Awarded the 2022 IUPAC-Chemrawn VII Prize For Green Chemistry

**Vivek Polshettiwar (India) has been awarded the 2022 IUPAC-CHEMRAWN VII Prize for Green Chemistry in recognition of his outstanding contributions to the field of green chemistry.**

Professor Vivek Polshettiwar (Tata Institute of Fundamental Research, Mumbai, India) works on the development of novel nanomaterials for catalysis, solar energy harvesting, and $CO_2$ capture-conversion to tackle climate change. With his group, they have developed next-generation green nanocatalysts via the morphological control of nanomaterials, dendritic fibrous nanosilica (DFNS) whose uniqueness is high surface area resulting from the fibrous structure instead of the formation of pores, making the large surface area easily accessible (*Nature Protocol.* 2019, 14, 2177-2204). DFNS is now being used for various applications, such as catalysis, photocatalysis, $CO_2$ capture-conversion, RNA extraction from viruses, energy harvesting and storage, drug delivery, *etc.*

For example, by using the techniques of nanotechnology, Polshettiwar has transformed DFNS-based yellow gold to black gold by changing the size and gaps between gold nanoparticles. Similar to real trees, the developed black gold acts like an artificial tree that uses $CO_2$, sunlight, and water to produce fuel. This work on "Black (nano)Gold" is one-of-its-kind and a way forward to develop "Artificial Trees" which captures and converts $CO_2$ to fuel and other valuable chemicals (*Chemical Science,* 2019, 10, 6694-6603). His group also showed how cooperativity in defects sites of DFNS convert $CO_2$ to fuel (*Proc. Natl. Acad.* Sci. USA 2020, 117, 6383) and how DFNS can be converted to green solid-acid for waste plastic degradation (*Nature Commun.* 2020, 11, 3828)

The research field of "Green Catalysis using Fibrous Nanosilica" which Polshettiwar has developed, is now explored by more than 150 groups worldwide (*Accounts Chem. Res.* 2022, 55, 1395). Polshettiwar is now trying to commercialize these technologies for solar energy harvesting, $CO_2$ capture and conversion to green fuels and chemicals.

The CHEMRAWN VII Prize was first announced in August 2008 and since, has been awarded every two years at the IUPAC International Conference on Green Chemistry. The Prize of USD 5000 is granted to a young investigator (less than 45 years of age) from an emerging region who is actively contributing to research in Green Chemistry. The 2022 CHEMRAWN VII Prize was presented to Professor Vivek Polshettiwar at the 9th IUPAC Conference on Green Chemistry that will be held 5-9 September 2022, in Athens, Greece.

*Vivek Polshettiwar, (right) received the 2022 IUPAC-CHEMRAWN VII Prize for Green Chemistry, from Pietro Tundo, founding chair of the IUPAC ICGCSD.*

The IUPAC CHEMRAWN VII prize has previously been awarded to Noureddine Yassaa (Algeria) in 2010, Rashimi Sanghi (India) in 2012, Vania G. Zuin (Brazil) in 2014, Ali Maleki (Iran) in 2016, Mirabbos Hojamberdiev (Uzbekistan) in 2018, and to Huizhen Liu (China), and Banothile Makhubela (South Africa) in 2020.

**https://iupac.org/what-we-do/awards/chemrawn-vii-prize/**

## IUPAC Announces the 2022 Top Ten Emerging Technologies in Chemistry

**IUPAC has released the 2022 Top Ten Emerging Technologies in Chemistry. The goal of this initiative is to showcase the transformative value of chemistry and to inform the general public about the potential of chemical sciences to foster the well-being of Society and the sustainability of our planet. The Jury*—an international panel of scientists with a varied and broad range of expertise—reviewed and discussed the diverse pool of nominations of emerging technologies submitted by researchers from around the globe and selected the final top ten. These technologies are defined as transformative innovations in between a discovery and a fully-commercialized technology, having outstanding potential to open new opportunities in chemistry, sustainability, and beyond.**


The 2022 finalists are (in alphabetical order):

- Aerogels
- Fibre batteries
- Film-based fluorescent sensors
- Liquid solar fuel synthesis
- Nanoparticle mega libraries
- Nanozymes
- Rational vaccines with SNA
- Sodium-ion batteries
- Textile displays
- VR-enable interactive modeling

IUPAC President, Professor Javier García Martínez, said that "the role of chemistry is central to finding and implementing innovative solutions that enable a more sustainable future. With this initiative, IUPAC informs policy and industry leaders, granting agencies, and the general public about technologies that are already creating new opportunities and opening new avenues for research and industry. The importance of this initiative is emphasized by the generous sponsorship of the International Year of Basic Sciences for Sustainable Development (IYBSSD-2022) and the Federacíon Empresarial de la Industria Química Española (feiQue) for which IUPAC is deeply grateful."

The 2022 Top Ten Emerging Technologies in Chemistry are further detailed in a feature article published in this issue of *Chemistry International (CI)* [see page 4]. Fernando Gomollón-Bel, the author of that feature has said, "This project, recognized by experts worldwide, highlights the value of the chemical sciences in the transition to a green economy and a more sustainable world, in line with the United Nations' Sustainable Development Goals (SDGs). This year IUPAC joins the celebration of the International Year of Basic Sciences for Sustainable Development (IYBSSD), a UN resolution to reaffirm and emphasize the importance of basic sciences, chemistry among them, to attain the ambitious SDGs by 2030. Each of the technologies gives us a glimpse of what chemistry can achieve and how creativity and commitment for a more sustainable future can yield the solutions we so urgently need."

The first selection of the 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 issue of *Chemistry International,* 41(2), pp. 12-17, 2019 (https://doi.org/10.1515/ci-2019-0203). The results of subsequent editions and the related articles in CI can be accessed at: https://iupac.org/what-we-do/top-ten/.

The search for the 2023 Top Ten Emerging Technologies in Chemistry has already begun and is being led again by Michael Droescher.

*The following comprised the panel of judges for the 2022 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), Christine Luscombe (Okinawa Institute of Science and Technology, Japan), Javier García Martínez (Universidad de Alicante, Spain), Ehud Keinan (Technion, Israel), Rai Kookana (CSIRO Land & Water, Australia), Zhigang Shuai (Tsinghua University, China), Natalia P. Tarasova (D. I. Mendeleev University of Chemical Technology, Russia), and Bernard West (Life Sciences Ontario, Canada).

**https://iupac.org/what-we-do/top-ten/**

## IUPAC International Award For Advances In Harmonized Approaches To Crop Protection Chemistry—Call For Nominations

**The IUPAC International Award For Advances In Harmonized Approaches To Crop Protection Chemistry recognizes individuals in government, intergovernmental organizations, academia, and industry who have exercised personal leadership for outstanding regulatory, public policy, and/or educational contributions supporting international harmonization of crop protection chemistry. The award is administered by the IUPAC Advisory Committee on Crop Protection Chemistry, a IUPAC subcommittee of Chemistry and the Environment Division, and is presented on a biennial basis.**

The next award will be presented as part of the Agrochemicals Division program for the Fall 2023 American Chemical Society meeting in San Francisco, USA, during August of 2023. Awardees receive an honorarium plus travel and per diem reimbursement to attend the award presentation ceremony.