**PRESS RELEASE**

**A new approach to storing hydrogen safely: French research group selected as a finalist for the European Inventor Award 2023**

* **A multidisciplinary research group developed an efficient storage solution for hydrogen, that can be a crucial factor in combatting climate change**
* **This invention makes green hydrogen accessible and safer to transport and mass store**
* **This solution requires less energy and uses materials with a long-life expectancy**

**Munich, 9 May 2023** – Hydrogen plays a key role in the clean energy transition, being 3 times more energetic than fossil fuels. However, it takes up more space and requires more energy to compress and store it. The French multi-disciplinary team; Patricia de Rango, Daniel Fruchart, Albin Chaise, Michel Jehan and Nataliya Skryabina; found a way to store hydrogen safely and efficiently in a solid form for easier storage and transportation. **The French researchers are finalists in the ‘Research’ category of the European Inventor Award 2023**, for their promising work. They were selected from over 600 candidates for this year’s edition.

**Solid hydrogen in a million-tonne market**

**Hydrogen has the potential to achieve global decarbonisation**. Demand for the element reached 94 million tonnes in 2021 and accounted for roughly 2.5% of the final global energy consumption, according to the Global Hydrogen Review 2022, published by the International Energy Agency (IEA). One of the main goals within the industry is safer and more efficient storage.

With their combined expertise in physics and engineering, the French team developed an atomic structure and process that results in the hydrogen being stored in disc, which is safer, more stable and doesn't ignite when heated. This method also requires less energy than storing hydrogen in liquid form or as very high-pressure gas and is therefore more sustainable. The disc can be stored for years without degrading. “*The system is very safe because of the low-level pressure used*,” said Daniel Fruchart, one of the team’s experts, “*I can put the disc directly on the table and there is no reaction with the air.*”

The French team uses magnesium hydride (MgH2) to store the hydrogen. Expanded graphite is added to the mixture to manage the heat when the hydrogen is released. It’s then mechanically compressed into a disc, which is easily stored and transported. Additionally, the heat of the reaction is stored reversibly, meaning the total energy efficiency improves by 80%. Their invention has already been commercialised across Europe, Australia, and Japan.

**Multidisciplinary collaboration**

After moving on to physics and chemistry from mathematics, Fruchart developed an interest in materials for energy conversion and energy transfers before investigating magnesium hydride. He later developed a strong interest in hydrogen storage cooperating with de Rango and Skryabina. After creating a larger prototype of their invention, they met with Jehan, founder of JOMI-LEMAN, the team’s industrial partner.

At the time, Chaise was a PhD student under de Rango’s supervision. He established the mixture and compact processes and validated the disc’s performance. Patricia de Rango designed the disc’s storage tanks and analysed the developmental processes and characteristics of the chemical compounds involved. Daniel Fruchart further investigated magnesium hydride and, after contacting Michel Jehan, developed the technology used in the process. Nataliya Skryabina studied hydrogen’s capabilities with other materials and their basic chemical and physical properties.

“*It’s important to have a close collaboration between the company and with basic research, to develop something together and not each part independently*,” explains Patricia de Rango, Research Scientist at Centre National de la Recherche Scientifique (CNRS) in Grenoble. *“I believe that our team is a musical orchestra*,” added Nataliya Skryabina, Head of the Research Department at JOMI-LEMAN. *“Everyone is like a special instrument. We can play ourselves, but it is not exactly music; only a part of it is.”*

*“The main aspect is a new approach to storing hydrogen safely,”* said Michel Jehan, President and CEO of JOMI-LEMAN. *“This is very important as we are producing something to be used for 20 years and longer.”*

**The 2023 European Inventor Award winners will be announced at a hybrid ceremony on 4 July 2023** in Valencia, Spain. The ceremony will be broadcast online [here](https://inventoraward.epo.org?mtm_campaign=EIA2023&mtm_keyword=EIA-pressrelease&mtm_medium=press) and open to the public.

Find more information about the invention’s impact, the technology and the inventors’ stories [here](https://new.epo.org/en/news-events/european-inventor-award/meet-the-finalists/patricia-de-rango-daniel-fruchart-albin?mtm_campaign=EIA2023&mtm_keyword=EIA-pressrelease&mtm_medium=press&mtm_group=press).

**Media contacts European Patent Office**

**Luis Berenguer Giménez**
Principal Director Communication / EPO spokesperson

**EPO press desk**
press@epo.org
Tel.: +49 89 2399-1833

**About the European Inventor Award**

The European Inventor Award is one of Europe's most prestigious innovation prizes. Launched by the EPO in 2006, the award honours individuals and teams, who have come up with solutions to some of the biggest challenges of our time. The finalists and winners are selected by an independent jury comprising former Award finalists. Together, they examine the proposals for their contribution towards technical progress, social and sustainable development, and economic prosperity. All inventors must have been granted a European patent for their invention. Read more [here](https://new.epo.org/en/news-events/european-inventor-award?mtm_campaign=EIA2023&mtm_keyword=EIA-pressrelease&mtm_medium=press) on the various categories, prizes, selection criteria and livestream ceremony to be held on 4 July 2023.

**About the EPO**

With 6,300 staff members, the [European Patent Office (EPO)](https://www.epo.org/?mtm_campaign=EIA2023&mtm_keyword=EIA-pressrelease&mtm_medium=press&mtm_group=press) is one of the largest public service institutions in Europe. Headquartered in Munich with offices in Berlin, Brussels, The Hague and Vienna, the EPO was founded with the aim of strengthening co-operation on patents in Europe. Through the EPO's centralised patent granting procedure, inventors are able to obtain high-quality patent protection in up to 44 countries, covering a market of some 700 million people. The EPO is also the world's leading authority in patent information and patent searching.