**PRESS RELEASE**

**French research group win the European Inventor Award 2023 for a safer and more efficient hydrogen storage solution**

* **Patricia de Rango, Daniel Fruchart, Albin Chaise, Michel Jehan and Nataliya Skryabina are winners in the ‘Research’ category of the European Inventor Award 2023**
* **The European Patent Office (EPO) honours the inventors for developing a technology to easily compress, store and transport hydrogen in the solid form of a disc**
* **The multidisciplinary research group’s solution requires less energy and stores hydrogen more safely, a crucial factor in combatting climate change**

**Munich, 4 July 2023** – The European Patent Office (EPO) announced today that French inventors Patricia de Rango, Daniel Fruchart, Albin Chaise, Michel Jehan and Nataliya Skryabina are winners in the ‘Research’ category of the European Inventor Award 2023. Selected from over 600 candidates, these researchers found a way to store **hydrogen efficiently and safely in a solid disc form for easier storage and transportation**.

“*The quest for green, renewable and abundant energy is one of humanity's primary concerns. Hydrogen has great potential but its storage and distribution raise questions of logistics and safety. This award sets us on a path to a decarbonised future, applying our hydrogen storage solution on an industrial scale,*” say the winning team.

Hydrogen plays a key role in the clean energy transition, being three times more energetic than fossil fuels. However, it takes up more space and requires more energy to compress and store it. 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.

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

With their combined expertise in physics and engineering, the French team developed an atomic structure and process that results in the solid hydrogen being stored in disc form, 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.

“*Our research on the solid storage of hydrogen resulted in a succession of patents, from a multidisciplinary team of chemists, physicists, mechanics, thermal experts together with the engineers of a new industry,*” explain the team.

**The winners of the 2023 edition of the European Inventor Award were announced at a hybrid ceremony today in Valencia (Spain).** You can stream the ceremony on [this page](https://inventoraward.epo.org?mtm_campaign=EIA2023&mtm_keyword=EIA-pressrelease&mtm_medium=press).

Find more information about the invention’s impact, the technology and the inventors’ stories on [this page](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).

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**About the inventors**

Daniel 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 Patricia de Rango and Nataliya Skryabina. After creating a larger prototype of their invention, they met with Michel Jehan, founder of JOMI-LEMAN, the team’s industrial partner.

At the time, Albin 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.

**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.