**PRESS RELEASE**

**Japanese scientist wins the European Inventor Award 2024 for the world’s most powerful permanent magnets**

* **Using a new blend of elements and his unique sintering technique, Dr Masato Sagawa developed the world’s strongest permanent magnets**
* **His magnets are used in a wide variety of applications, from medical technology to mobile phones, security systems, computer hard drives and green energy generators**
* **Sagawa took home the top honour in the ‘Non-EPO countries’ category for all inventors from outside the EPO’s member states**

**Munich, 9 July 2024 –** The European Patent Office (EPO) has announced Masato Sagawa as the winner of the ‘Non-EPO countries’ category of the European Inventor Award 2024. Dr Sagawa developed the world’s strongest permanent magnet in 1982, changing the future of computing, medical technology, green energy and multiple other fields. This invention saw him triumph in a category that also included American-French David Fattal who created genuine 3-D imaging without glasses for screens, and Fernando Catalano, Micael Carmo and their team from Brazil who invented quieter jets with lower carbon dioxide emissions.

“*I am extremely honoured to receive the European Inventor Award for my invention relating to a new permanent magnet material and its manufacturing method. I hope this award will help young people who aspire to become material scientists to realise how useful research and development in materials science and technology can be for society, and that it will serve as an encouragement to them,*” said Dr Sagawa.

Inspired by iron's greater availability and lower cost compared to the cobalt prevalent in magnets of that time, Sagawa began blending iron with various common rare earth minerals. His breakthrough came when **he included Boron into the mixture to increase the distance between the iron atoms, significantly boosting their ability to resist demagnetisation** – a property essential in permanent magnets. Ultimately, he settled on the alloy of neodymium, iron, and boron (Nd-Fe-B) that we know today, but what truly sets his magnets apart is the multi-patented sintering technique used in their creation. More than four decades later, this process still produces the strongest magnets relative to their size.

**How to make the world’s most powerful permanent magnets**

Dr. Sagawa admits that despite his significant achievements, he initially doubted his suitability for research, attributing his success to persistent hard work and a unique perspective. "*All my life, I wanted to be a scientist and a researcher, but I don’t think my research was very good. I wanted to be a professor, but I was not given that post, so I joined a research team at a company. It was there that I was asked to focus on magnets. Now, I had never studied magnets before, so it was really hard for me, but in a way, that helped because I was able to look at the subject with fresh eyes and without any preconceived notions about what could or could not be achieved,”* says Sagawa.

Nd-Fe-B magnets have allowed computer manufacturers to dramatically decrease the size of hard drives, helping power the personal computing revolution. Today some 60% of all permanent magnets are Nd-Fe-B. These can be found in fields as diverse as electronics, toys, packaging, hardware machinery, and aerospace and continue to be used by inventors in new technological advancements.

Despite receiving over 60 global patents, eighty-year-old Sagawa continues to tinker with the composition and manufacturing technique of his magnets. He is currently trying to find ways to reduce the required amount of relatively scarce dysprosium.

**All the winners of the 2024 edition of the European Inventor Award were announced at a hybrid ceremony** in Malta. You can stream the ceremony [online](https://www.epo.org/en/news-events/european-inventor-award/streaming?mtm_campaign=EIA2024&mtm_keyword=pressrelease&mtm_medium=press).

[Find out](https://www.epo.org/en/news-events/european-inventor-award/meet-the-finalists/masato-sagawa?mtm_campaign=EIA2024&mtm_keyword=pressrelease&mtm_medium=press) more about the invention’s impact, the technology and the inventor’s story.

**Next generation of the Young Inventors Prize in 2025 to take place in Iceland**

During today's ceremony in Malta, the European Patent Office (EPO) was excited to announce a new concept for the award, starting in 2025. From next year onward, the award will be held biennially, with the upcoming edition focusing on young innovators below 30 years-old whose inventions address one or more United Nations Sustainable Development Goals (SDGs). An independent jury of former finalists will evaluate the entries, ensuring a fair and insightful selection process that honours the innovative spirit and achievements of the next generation of inventors. The 2025 edition will be celebrated in Iceland, marking the first of these newly biennial-focused awards, and the [nominations period](https://www.epo.org/en/news-events/young-inventors-prize/nominations?mtm_campaign=EIA2024&mtm_keyword=pressrelease&mtm_medium=press) for all technological fields remains open from today until the end of September.

In alternating years, starting in 2026, the EPO will return to the original concept of the European Inventor Award, featuring its traditional categories of ‘Industry’, ‘Research’, ‘SMEs’, ‘Non-EPO countries’, ‘Lifetime Achievement’ and ‘Popular Prize’.

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**About the inventor**

Born in Tokushima Japan on 3 August 1943, Masato Sagawa is primarily known as the inventor of the world’s most powerful permanent magnet, the sintered Nd-Fe-B magnet. After completing a doctorate in Metallurgical Materials Engineering at Tohoku University, he joined Fujitsu laboratories in 1972. There, Sagawa used his off-hours to create the ground-breaking sintered Nd-Fe-B magnet before stepping down from his position to join Sumitomo Special Metals Co. and patent his magnet.

He unveiled his breakthrough at the Magnetism and Magnetic Materials Conference in Pittsburgh in 1983 and, in 1988, established Intermetallics, a research and development firm singularly devoted to advancing neodymium magnets. He currently holds positions as Distinguished Invited University Professor at Tohoku University and Senior Fellow at the Research Promotion Organization for Carbon Neutrality at Meijo University. He continues to work on perfecting the Nd-Fe-B magnet.

**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.

**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 45 countries, covering a market of some 700 million people. The EPO is also the world's leading authority in patent information and patent searching.