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**PRESS RELEASE**

**Neeka and Leila Mashouf win the Nature Guardians prize at the Young Inventors Prize 2025 for turning CO₂ into essential materials**

* **28-year-old American scientists recognised for converting industrial CO₂ emissions into biodegradable cellulose**
* **Their innovation offers a scalable, low-carbon alternative to textile production**
* **The European Patent Office is awarding them EUR 20 000 for advancing sustainable material manufacturing**

**Munich/Reykjavik, 18 June 2025** – During a ceremony held today in Iceland, the European Patent Office (EPO) awarded the twin American sisters **Neeka and Leila Mashouf** (28) the **Nature Guardians prize** for their invention, developed through their company **Rubi Laboratories.** Their breakthrough innovation mimics the way trees absorb carbon dioxide using enzymes to **convert industrial CO₂ emissions** into biodegradable cellulose that can be spun **into sustainable textiles and other products.**

The **Nature Guardians prize** **recognises initiatives dedicated to protecting ecosystems and biodiversity,** addressing climate change, ocean health and wildlife conservation. Their work helps prevent environmental damage and restore natural balance. As this year’s recipients of the Nature Guardians Prize, the Mashouf **sisters received in total EUR 20 000 (EUR 5 000 awarded to each Tomorrow Shaper and an additional EUR 15 000 in recognition of this special prize).**

“*Additional recognition from the European Patent Office propels Rubi’s mission forward, as we pioneer the next era of energy-efficient manufacturing by transforming carbon into essential materials*,” said Neeka Mashouf, co-founder and CEO at Rubi. “*A better world, where manufacturing exists in harmony with the planet, continues to serve as our North Star as we reach new milestones and make strides in commercializing our technology*.”

The American inventors were selected by an independent jury as one of the **ten winners of the Young Inventors Prize 2025,** chosen from over 450 candidates worldwide. This prize celebrates innovators aged 30 and under, known as Tomorrow Shapers. From this group, three were awarded with special prizes:

* **World Builders,** awarded to the French-American Marie Perrin, for promoting sustainable access to essential resources like water, energy and sustainable infrastructure;
* **Community Healers**, awarded to the Ugandan team of Sandra Namboozo and Samuel Muyitafor developing solutions for food security, education, healthcare and fair working conditions;
* **Nature Guardians,** awarded to the American team.

**Reducing emissions through textile innovation**

The global textile industry is one of the most environmentally damaging supply chains, contributing **up to 8% of global CO₂ emissions**, according to the [United Nations Environment Programme](https://www.unep.org/resources/publication/sustainability-and-circularity-textile-value-chain-global-roadmap) (UNEP). In response to the sector’s high environmental cost, the Mashoufs developed a novel carbon conversion process that avoids the energy demands and sugar-based inputs typical of many existing technologies.

Operating outside living cells in a controlled reactor, their system uses enzymes to turn captured CO₂ into cellulose pulp – the basis for biodegradable fibres. **The sisters claim this method consumes ten times less energy than thermochemical alternatives** and reintegrates carbon into the natural cycle. *“It took countless trials, errors, and optimisations to make it all work, from producing enzymes that had never been made before to testing them in conditions no one had ever explored,”* said Neeka.

**Shaped by science, inspired by nature**

Neeka and Leila Mashouf were driven by a desire to **tackle the environmental impact of the fashion industry.** In 2021, they founded Rubi Laboratories to turn industrial CO₂ emissions into textiles using a nature-inspired enzymatic process. The company is now focused on **scaling the technology and expanding its applications**, with CO₂-derived cellulose already being piloted by Walmart, Patagonia and H&M. *“Our focus is now on engineering and execution. It’s exciting to be at the point where we can concentrate on scaling the system and bringing everything to the next level,”* said Neeka.

Their team now includes 17 scientists and engineers specialising in enzymology, chemical engineering and carbon capture. *“These skills hadn’t really been combined before. It’s an ongoing challenge to find the right people, which is why we always search globally—because this work requires something truly unique,”* she added.

**The Young Inventors Prize celebrates worldwide innovators 30 and under using technology to address global challenges posed by the United Nations Sustainable Development Goals (SDGs).** By turning waste carbon into a valuable resource, the Mashouf sisters are directly contributing to UN SDG 9 (Industry, Innovation & Infrastructure), SDG 11 (Sustainable Cities & Communities), SDG 12 (Responsible Consumption & Production), and SDG 13 (Climate Action).

**The winners of the 2025 edition were announced today during** [**a ceremony livestreamed**](https://www.epo.org/en/news-events/young-inventors-prize/2025-event?mtm_camp=pressrelease&mtm_key=yip2025&mtm_med=press) **from Iceland.**

Find more information about the invention’s impact, the technology and the inventor’s story [**here**](https://www.epo.org/en/news-events/young-inventors-prize/neeka-mashouf-and-leila-mashouf?mtm_camp=pressrelease&mtm_key=yip2025&mtm_med=press).

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**About the Young Inventors Prize**

Aimed at individuals 30 and under, the Young Inventors Prize showcases the transformative power of youth-driven solutions and recognises the remarkable young people paving the way to a more sustainable future. Established in 2022, trophies were first handed out during the European Inventor Award ceremony. As of 2025, the Prize has moved up a gear with its own dedicated event, held separately from the Award. Among the 10 Tomorrow Shapers selected for each edition, three receive special prizes: World Builders, Community Healers, and Nature Guardians. In addition, a People’s Choice winner is selected through an online public vote. Each Tomorrow Shaper receives EUR 5 000, while the three special prize winners are awarded an additional EUR 15 000. The People’s Choice winner also receives an extra EUR 5 000. [Read more](https://new.epo.org/en/news-events/european-inventor-award?mtm_camp=pressrelease&mtm_key=yip2025&mtm_med=press) on the Young Inventors Prize eligibility and selection criteria.

**About the EPO**

With 6,300 staff members, the[European Patent Office (EPO)](https://www.epo.org/?mtm_camp=pressrelease&mtm_key=yip2025&mtm_med=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 46 countries, covering a market of some 700 million people. The EPO is also the world's leading authority in patent information and patent searching.