
Graphmatech, Graphenea, & Northvolt: “Breakthrough in Battery Recycling”

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As the electric vehicle market matures, battery recycling and reuse rapidly becomes a bigger deal. Battery recycling is a long established practice, but never before at the scale we will see for lithium-ion batteries from electric cars and trucks. One might think there’s nothing new under the sun in this world, but some young and ambitious companies — Graphmatech, Graphenea, and Northvolt — beg to differ.

Those companies claim a “breakthrough in battery recycling” after achieving their goal of “up-cycling end-of-life EV batteries into graphene oxide at industrial pilot scale.” This graphene oxide up-cycling process follows Northvolt first pulling out metals and minerals that it uses to build batteries. That part of the process is the same as it’s been, but now, instead of trashing the rest, Graphmatech and Graphenea are able to get graphene oxide from it.

“The upcycling of graphene oxide from recycled batteries represents a great development in our pursuit of a sustainable battery industry in Europe,” said Emma Nehrenheim, Chief Environmental Officer of [Northvolt](#). “Batteries contain an abundance of valuable materials which we can recover to reduce our dependence on mining and producing fresh materials. We are proud to have contributed to this development.”

“Producing graphene oxide from end-of-life batteries makes the entire graphene value chain more sustainable and cost effective,” commented Jesus de la Fuente, CEO of Graphenea Advanced Materials.

“Securing our supply chain in collaboration with Northvolt and Graphenea is a dream come true. We’ll enable the green transition with recycled batteries,” added Mamoun Taher, CEO of Graphmatech.

When we interview Northvolt founder and CEO Peter Carlsson about Northvolt's origins and plans a couple of years ago (see [here](#), [here](#), and [here](#)), maximizing the environmental friendliness of battery production was front and center. Sustainability is not a buzzword or marketing ploy at Northvolt — it's a core reason for the company's existence and a core part of its growth plans. So, it's not surprising to see that this is the battery company that is innovating and leading in this way.

European countries typically get graphene oxide from outside the region, so this is a promising sign for increasing domestic supply of this battery ingredient.

The process starts with Northvolt modifying its own recycling process a bit in order to provide adequate graphite material for Graphmatech. "Northvolt has supported Graphmatech by optimizing its recycling process at Northvolt Labs recycling plant to obtain a feed of graphite-based material for Graphmatech of sufficient purity to enable upcycling into graphene oxide."

There is no mention of using graphene oxide in future batteries. That's not what it's useful for. However, it is useful in other cleantech fields. The companies note that the graphene oxide Graphmatech is producing can be used in "hydrogen pressure vessels and pipes that leak 40% less hydrogen than current technology." Many see hydrogen-powered ships and perhaps aircraft as critical to decarbonizing transportation fully. Cutting leakage a stunning 40% would help to make those much more cost competitive.

"Modified graphene oxide can be added to metals to create materials which are more conductive, stronger and tougher than alternatives, whilst reducing metal consumption, making it an attractive and useful material within the green transition," Graphmatech, Graphenea, and Northvolt add.

Everyone is familiar with battery startup/giant Northvolt (scroll through our extensive archives for Northvolt if you're not), but I imagine not many are familiar with the other two companies, so here's their short summaries of themselves:

“Graphenea is a technology company created in 2010 specialized in the production of graphene oxide and CVD graphene, it has clients in more than 60 countries and offices in San Sebastián ([Spain](#)) and Boston ([USA](#)). Through research and innovation, Graphenea supports its customers by producing new forms of graphene from graphene field effect transistor chips to graphene oxides, whilst maintaining its leadership in the expanding graphene production sector. Graphenea Advanced Materials has a mission to transform industrial sectors with their graphene-based additives that create added value and increase the performance of materials.”

“Graphmatech AB delivers patented next-generation materials to support the green transition. The company is best known for its metals for electrification, polymers for the hydrogen economy, conductive polymers for 3D printing and graphene additives for batteries. Founded as a spinout from Uppsala University in 2017, Graphmatech is a privately held Swedish company with a diverse team spanning eight nationalities. Find out more at www.graphmatech.com”.

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