

Company Facts

- Company formed in 2001 in France.
- Moved to Montreal through asset purchase in June 2008.
- Current employees: 7

Major Shareholders

- Emertec 20%
- iNovia 22%
- ID Capital 43%

IP Portfolio

- 7 issued patents
- 5 draft applications

Current Products

- Family of epoxy resins systems & resin films enhanced through chemically-bonded nanoparticles (CNTs, Clays,...)

Target Markets/Key Clients

- Sporting Goods
 - Look Cycle, MRC Japan,...
- Oil & Gas infrastructure maintenance
 - Tier 1 European refiner
- Aerospace
 - Bombardier, Airbus
- Wind Energy
 - Suzlon

Management

- **Thierry Roth**, CEO
- **Dr. Kai Schierholz**, CSO

Contact Information

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Company Overview

Nanoleedge is a leading designer and maker of innovative resin systems & films for users of specialty epoxy systems. It supplies clients with a range of nanotechnology-enhanced epoxy resins that deliver unparalleled improvements in mechanical and chemical properties (e.g. Higher toughness and strength-to-weight ratio, resistance to impact and crack propagation, compressive and flexural strength, electrical conductivity), while maintaining compatibility with clients' existing manufacturing processes, all cost-effectively. Nanoleedge delivers clients with better and safer products.

Company History

The Company was created in 2001 as a spin-off of CNRS, the prestigious French national laboratory, by Patrick BERNIER. Following 5 years of R&D on the production of Carbon Nanotubes (CNTs) and on novel nanomaterials, new management was brought in to focus the company on the embryonic nanocomposite market. With lots of technology and a new business plan, Nanoleedge's entire team believed it best if the Company moved to more entrepreneur-friendly North America. Because of Montreal's strong presence in both the composite and aeronautical industries, management closed a \$3M round with Montreal-based iNovia and ID Capital in 2008.

The Need

More and more products are being made from composites. Manufacturers are constantly seeking composites with better physical properties with an attractive price/performance ratio. For example, the rapidly increasing composite-content in aircraft is currently held back by crack propagation concerns for key parts. Similarly, while hockey sticks made from composite materials have far superior performance, they are plagued by very short useable lifetimes. Nanoleedge's technology addresses this and other performance problems.

Nanoleedge's Technology : Nano In® , the Nanoblending era.

The fact that CNTs display extraordinary intrinsic properties is well known. For example, CNTs are 300 times stronger than steel and conduct electricity better than copper. However, CNTs do not naturally combine with polymer matrices and their properties are not normally transferable to composites at the macro-scale. Having started out as a CNT manufacturer, Nanoleedge has deep understanding of the physics and chemistry of CNTs. This has allowed it to develop a technology platform that selectively transfers CNT properties to resins then used to produce high performance materials. Performance from the Nanoleedge family of resins has been confirmed both by clients and independent laboratories.

The Nanoleedge resin systems are industrial products, not laboratory samples. They are homogeneous, stable and 100% compatible with the various manufacturing processes used by clients. Nanoleedge already produces ton-quantities using scalable production and quality processes.

Nanoleedge is further innovating by delivering these resins not only in liquid form but also as a film. Resin films simplify manipulation to the point that finished goods makers can bypass the prepreg run in the composite value chain and perform the step of combining carbon or glass fabric and resins themselves, thereby reducing their costs and allowing new performance.



Executive Summary

Through its expertise in formulating high performance epoxy resins integrating nanoparticles, Nanoledge has succeeded in developing high performance formulations for customers in several markets such as sporting goods and oil & gas infrastructure maintenance. Examples of early commercial successes are Look (cycle frame) and Mitsubishi Rayon (hockey sticks) in the sporting goods industry and a Fortune 500 company in the pipeline maintenance industry.

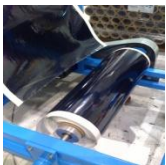
The Products

In response to the high performance and environmentally-friendly composites market demand, NANOLEDGE has launched its commercial offering **INNOVIUM**. INNOVIUM is a complete range of customized resin systems and intermediate resin films, entirely dedicated to the Fabrics Weavers, Prepreg Makers, Composite Part Manufacturers and the End Customers.

Taking advantage of nanoparticles and greener additives for improving durability and processability of composite materials, Nanoledge will ensure you to manufacture premium materials based on nanoblending technologies & industrial know how.



Our **AKD resin systems** has been formulated with nanochemicals for enabling innovative performance into the composite material (new performance proven).



Our **LEO semi solid resin film** solution provide clean, reliable and easy to use nanochemicals for players into the composites sector. This LEO film form factor of the NANO IN technology enables the development of high performance composite materials by fast, simple stacking of a resin film onto UD fibres or woven fabrics. (Cleantech processing)

Markets

A recent study published by Freedonia estimates that Epoxy based nanocomposite resins account for 15 M pounds in the US market today and calls for this segment of the market to grow to 1,400 M pounds by 2020. They further estimate that while virtually none of the current resins embed CNTs, 60% of the 2020 market will integrate them.

Competition

Most resin users and some resin makers have tried to add nanoparticles (mostly CNTs) to their resins in the hope that performance would be improved. The opposite occurred most of the time. Only a few companies such as Nanoledge, Zyx Performance Materials, and Amroy make nano-enhanced resins that deliver performance improvements over plain resins. Nanoledge has cost, performance, cleantech and scalability advantages over the other two players.

The Plan

The company initially decided to go for market niches within the major industrial sectors, focusing on areas where customers have specific problems for which Nanoledge formulated resins solutions can be tailored. Nanoledge develops specific solutions to specific customer solutions and will translate the more promising ones to other potential customers within the same market segment. Though generally slower to adopt new technologies, the aerospace industry will be an important market in the long term. To that end, tests and development programs by parts suppliers and majors such as Airbus have already begun. In the mid-term, the plan is to partner for distribution with some of the larger resin, technical textile or prepreg players.

Customers product/application built up with the Nanoledge products

