

Cost effective C3-fermentation chemistry

The NordBioChem's way out of Fossils

NordBioChem Ltd. (NBC), a private R&D management company, has created a unique technological platform for the industrial fermentative bio-chemistry (we call it Nordbiochemistry™) for high-volume & cost-competitive C3-bio-chemicals as replacements for basic standardized commodity petrochemistry with a significant reduction of CO₂ emissions and toxic reaction components (e.g. the production of propylene glycol).

Technology platform

Nordbiochemistry™ is based on a combination of high-effective Asynchrone Continuous Flow Membrane Fermentation and synthetic zeolites catalysed hydrogenation and dehydrogenation reactions. It converts glucose, saccharose, fructose or maltose into endproducts with a yield of e.g. 76% for propylene oxide and 87% for propylene glycol. Also C5-sugars could be utilized but less effectively – not because of the technology but because of the nature of C5-sugars.

The NBC's fermentation technology is proven by a large scale long term piloting and confirmed through independent secondary tests incl. Germany's Leibniz-Institute.

Current focus of NBC lies on **C3-bio-chemicals** especially on **propylene oxide** & derivatives, **propylene glycol** & derivatives, **acrylic acid** & its esters and a totally new technology path to **lactic-acid co-polymers**. There are applications in the fields of polyester resins, urethanes, automotive parts, coatings, paints, coolants, personal care & cosmetics, pharmacy, bio-fuels etc.

Especially promising are **radiation cure polymers** produced from biobased di- and tri-propylene-glycol. These radiation sensible bio-polyethers could significantly speed up 3D-printing and lower its raw materials cost.

Utilisation of **methane** using microbiological methods is a new and challenging target for the chemical industry, especially because of a very quickly expanding production of shale-gas.

Being the universal method of fermentation, Nordbiochemistry allows economically viable solutions for the production of lactic-acid and its derivatives by using methanotrophic microorganisms like *Lactobacillus Helveticus*.

Using starch from cereals for the fermentation, the proteins as by-products will be specially processed and converted into high value food- and feed-additives. NBC uses its own original effective processing where **proteins** will be separated into different components and then modified through adding essential amino acids.

Business opportunities

Nordbiochemistry™ opens the door for very productive and cost-effective fermentative C3-bio-chemistry. Its implementation decreases the capital expenditures considerably because of high productivity and lowers the investments, thus decreasing the production costs for relevant chemicals up to 40%.

NordBioChem is offering licenses for developed technologies and is looking for partners for industrial implementation.

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