

Excellence in Food

English version



Nano-Food

Science-Fiction or Business Opportunity?

Thomas Bratschi, Lars Feldmann, Christian Häfliger, Christoph Meili

**A marketing report on new business
in food and packaging**

Content

Summary	3
---------	---

Introduction	4
--------------	---

1. Nanotechnology: Status Assessment	6
1.1 Natural and artificial substances	7
1.2 Nanotechnology in the food industry	7
1.3 Application areas of nanotechnology in the food industry	8
1.3.1 Agriculture	
1.3.2 Nano plants / food sourcing	
1.3.3 Food-safety	
1.4 Vague opportunities and risk profile of nanotechnology	11
1.5 Loopholes in declaration and regulation relating to nanotechnology	12
1.6 Nano food: new markets, benefit and applications	13

2. Strategic Thoughts: Nano as Business Opportunity	14
2.1 „Nano inside“ - the black box customer	
2.1.1 Risk perception regarding new technologies	
2.2 „Nano outside“ - success with the nano formula	17
2.2.1 Prolonging shelf life—demonstrating freshness	
2.2.2 Communicating quality—declaring perishability	

3. Vision of the future	25
3.1 The „Last-minute-Discounter“ 2015	26

4. Outlook	30
4.1 „Nano inside“ vs. „Nano outside“	30
4.2 Possible benefits	31
4.1 Questions to be considered	32

Appendix	33
----------	----

Authors	34
---------	----

This version is the first issue of *Excellence in Food* published in English. It's an update on last year's Excellence in Food which was published in German in June 2005

Introduction - Excellence in Food



The recent appearance of the advantages of nanotechnology (NT) on the back of Kellogg's Toppas packaging in Germany reveals the growing public importance of a cutting edge topic that was once only discussed by scientists, investors or industry experts.

Generally recognized as one of the 21st century 'mega' technologies, nanotechnology may revolutionise the food industry in the coming years. Kellogg's decision to replace advertising, puzzles and product information with information on Nanotechnology demonstrates their desire to familiarize their customers with nano products. Perhaps in the future customers will ask for healthy Nano Flakes instead of Corn Flakes.

Why an edition of "Excellence in Food" on Nanotechnology?

Looking into the topic of nanotechnology applications in food and packaging; we discovered that **the marketing perspective has not been considered so far**. It soon became clear that NT is already reality in various sectors of the food industry. Clearly, there is a lot of science fiction around. The inexhaustible possibilities of NT and future nano applications, however, render the topic interesting for a nano *Excellence in Food* (EIF). EIF evaluates strategic positions regarding future growth. Following the infinite possibilities of NT we dare to think the unthinkable.

3

It is crucial to analyse the means of NT today, because apart from the real implications of this technology, its hypothetical possibilities will play an important role in food companies' strategy development processes of tomorrow.

Thinking about emerging technologies requires:

- analysing the existing market mechanisms, and assessing their value by recognizing possibilities and limits.
- spotting the development of innovative products and offers detached from today's feasibility.
- going beyond the focus on daily business and achieving a bird's eye perspective of future consumers and customers requests.

That's why in the last part of *Excellence in Food* we develop a **business case as a vision of the future** which exemplifies our strategic thoughts about the topic "nano".

The first part of *Excellence in Food* throws light on the state of the art: What is NT, what research is being conducted, what has already become reality, and how is the food industry affected by NT? We look at possible risks and glance at the black box of non-existing declarations concerning nanoscale substances.

Part II shows possible opportunities NT implies for the food industry. We focus on supply issues with direct link to the end user. Thus the following strategic thoughts are from the consumer's point of view: There is a fundamental difference whether NT, respectively nanoscale substances, are contained in the product itself ("nano inside"), or whether NT is used to create a packaging that improves the product regarding shelf life, appearance or taste ("nano outside"). As far as the type of application that we call "nano outside" is concerned, we sketch a "**nano formula**" that relates the implementation of NT directly to product quality and value, and that allows a few - seemingly daring - considerations about novel adding value processes. These considerations are finally unfolded as a vision of the future that we call "Last-minute Discounter" in the last chapter of *Excellence in Food*.

3.1 The „Last-minute-Discounter“ 2015

In this edition of *Excellence in Food* you will find out what's behind the idea of the "Last-minute-Discounter".

Illustration : Diagram, added value of the Last-minute Discounter

