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## Tuning in to your steak

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*By: Janette Woodhouse*

If current research projects prove successful, diners will soon be able to tune into their steak before they tuck into it.

Fraunhofer IZM is employing microsystem technology to assess meat freshness and Somark Innovations has reported successful trials of injectable RFID ink aimed at the meat market.

The Fraunhofer project, named FreshScan, will comprise two components: an intelligent label, operating as a type of running sheet, documenting the condition of the meat from slaughter to sale, as well as a laser, which reads the condition of the meat and simultaneously records it in the intelligent label. The researchers also aim to enable the label with continual temperature measurement and recording features, so that each interruption to the cool chain can be documented.

By employing microsystem technology, the production chain from the producer to meat processing, transport, wholesale and retail, through to the consumer will be recorded and the quality of the meat seamlessly documented. In this way, the food's history will be transparent at all steps in the process and retraceable. The quality and condition of the meat will be able to be measured and called up at any point.

The concept builds on two approaches - the food itself and the logistics or processing chain. To inspect the product, a mobile "freshness scanner" will record, by means of an optical sensor, data with which the condition of the food can be directly recorded and analysed. The scanner will use laser beam, which will be differently scattered and reflected depending on the condition of the meat. The light reflected back from the meat is analysed by a variety of technologies, including Raman spectroscopy. Thus, it is possible to quickly and simply assess whether the food meets given quality standards.

Saving the measured data on the food will ensure monitoring of the process chain is reliable. A sensor fitted at the processing site will record the processing and transport data, such as time, temperature, moisture and light incidence.

Initially, the system will be tested and optimised for meat it may subsequently also be used commercially for other types of food.

Somark's innovation features biocompatible radio-frequency identification

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(RFID) ink which will allow processors to track individual cuts of meat or vegetables and allow them to make speedy recalls in the event of a food contamination outbreak. The company has successfully tested its RFID1 Ink in cattle and laboratory rats, establishing the efficacy of injecting and reading a biocompatible chipless RFID Ink ""tattoo"" within the skin of animals. Initially, the technology will be leveraged to the livestock industry to help identify/track cattle and thus mitigate export trade loss from BSE2 (aka Mad Cow Disease) scares.

Secondary target markets include laboratory animals, dogs and cats, prime cuts of meat, and military personnel.

So the day is coming when you will be able to tune in to the provenance and supply-chain history of your steak before you eat it.

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