VATIS UPDATE

Food Processing

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Highlights

- Microsystems detect freshness of meat
- Quick detection of *Salmonella*
- Fermenting papaya pulp and juice
- Renewable packaging material
- Frozen beverage machine
- Improved soybean processing

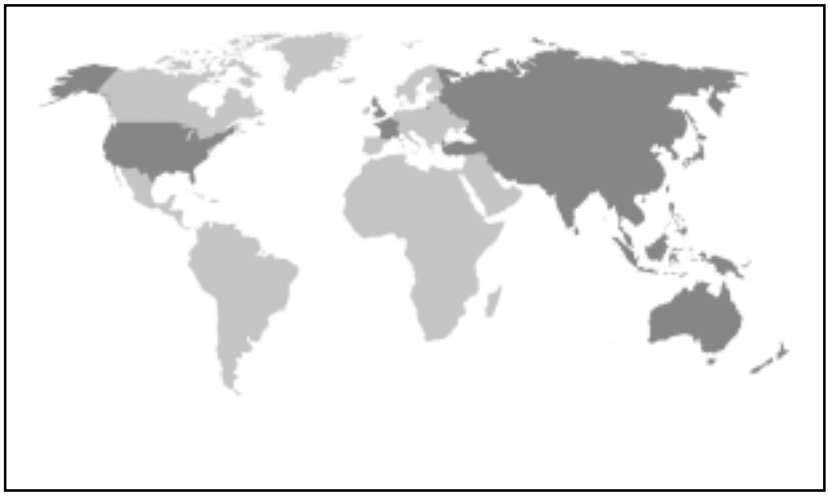
United Nations
ESCAP

APCTT
ASIAN AND PACIFIC CENTRE FOR TRANSFER OF TECHNOLOGY

The **Asian and Pacific Centre for Transfer of Technology (APCTT)**, a subsidiary body of ESCAP, was established on 16 July 1977 with the objectives: to assist the members and associate members of ESCAP through strengthening their capabilities to develop and manage national innovation systems; develop, transfer, adapt and apply technology; improve the terms of transfer of technology; and identify and promote the development and transfer of technologies relevant to the region.

The Centre will achieve the above objectives by undertaking such functions as:

- Research and analysis of trends, conditions and opportunities;
- Advisory services;
- Dissemination of information and good practices;
- Networking and partnership with international organizations and key stakeholders; and
- Training of national personnel, particularly national scientists and policy analysts.



The shaded areas of the map indicate ESCAP members and associate members

Cover Photo

Aseptic packaging line equipped with the new Sensofill™ FMa filler for beverage packaging
(Credit: Sidel, France)

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VATIS* Update Food Processing
is published 6 times a year to keep the readers up to date of most of the relevant and latest technological developments and events in the field of Food Processing. The Update is tailored to policy-makers, industries and technology transfer intermediaries.

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*** Value Added Technology Information Service**

IN THE NEWS

India to establish grape processing board

India's Union Cabinet has approved a proposal to establish the Indian Grape Processing Board (IGPB). The total funds allocated for this purpose by the government over a three-year period is about US$1.21 million. Highlights of the new board are:

- The Ministry will register IGPB as a society under the Societies Registration Act, 1860. IGPB will be autonomous from its very inception. The board, initially facilitated by the government and managed/driven by the industry, is expected to boost growth of the sector, benefiting both the producers and the processors;
- The headquarters of the board will be at Pune, Maharashtra, which is close to the principal grape growing/processing areas in the country;
- IGPB will foster the sustainable development of the Indian wine industry and will focus on R&D, extension, quality upgrading market research and information, and domestic and international promotion of Indian wine; and
- The expected outcomes of the board will be to increase awareness and capacity building among farmers, processors as well as other stakeholders resulting in higher productivity, reduced wastage, and improved quality of grapes and wine that comply with global standards.

(Source: pib.nic.in)

China-Canada project helps Chinese small farmers

A China-Canada project was the first international co-operation project focusing on the development of small farmers in China since its accession to the WTO. This project's purpose was to raise the market competitiveness of Chinese small farmers in adapting to domestic and international markets. With the support of the Canadian International Development Agency, the project started in April 2003 and was jointly executed by China's Ministries of Commerce and Agriculture and Agri-Food Canada. According to the Ministry of Commerce, policy research in the field of food safety provides valuable references for the legislation of the Food Safety Law (Draft), the Agricultural Product Quality Safety Law (which has been enacted), as well as the drafting of rules like those governing the food recall and pig slaughtering.

The policy research on WTO negotiations mainly includes market access and sanitary and phyto-sanitary measures and tariff-related trade barriers. Some research results achieved in the area of agricultural administration have already been adopted by policy documents issued by the State Council. The project established 95 pilot villages in five counties in Sichuan province and Inner Mongolia. By the end of 2007, the project had trained about 15,000 person-times for farmers, personnel who promote agricultural technologies, people from processing enterprises and local officials in both Canada and China. Compared with that in 2003 when the project was initiated, the farmers in the five pilot counties of the 2008 project reported an income increase of up to 50 per cent. (Source: english.people.com.cn)

Viet Nam's seafood exports rise

Viet Nam exported more than US$4.5 billion worth of seafood in 2008, an increase of nearly 20 per cent against the previous year, according to the Viet Nam Association of Seafood Exporters and Producers. Statistics released by the General Department of Customs reveal that the country exported more than 1.2 billion tonnes of seafood, a year-on-year rise of 33.7 per cent. The European Union (EU) continues to be the largest importer of Vietnamese seafood, having imported 349,000 t, worth US$1.14 billion, up 26 per cent from 2007.

Viet Nam shipped seafood to 26 out of 27 EU countries. The United States' market made up only 16.5 per cent of Viet Nam's export market structure as compared with 20.4 per cent in the previous year. The Republic of Korea was placed fourth among Viet Nam's top importers of seafood. Russia was Viet Nam's top importer of tra and basa catfish, with a 142 per cent and 109 per cent rise in terms of volume and value, respectively. Ukraine proved to be a phenomenon in 2008 as its imports of Vietnamese seafood grew by 202.6 per cent in volume and 221.1 per cent in value. (Source: english.vovnews.vn)

Rice by-products generate billions in global revenues

The rice by-products industry the world over has evolved into a multi-billion dollar venture. Rice bran cooking oil, perceived as the healthiest plant-based edible oil, is now highly commercialized in Thailand. Chicken-flavoured instant porridge (arroz caldo) is in the market in Japan, in addition to the popular rice milk and rice wine. In the United States, the most popular breakfast cereals are Kellog's rice Krispies; in California, Knorr has been marketing instant goto and champorado.

Snack items (puto, suman, bibingka and so on) have become common in the Philippines. Rice-based chiffon cakes, brownies and cream puffs have also been developed. Likewise, now in the pipeline are rice-based drinks or beverages (beer, tea, coffee and wine) and fortified products (rice noodles, espasol, canned rice and sprouted brown rice). In the Republic of Korea, processing of rice by-products such as rice cakes, sweets, gruels, flavours, wines and drinks has been expanding, states Mr. Jeong Heon-Sang and Mr. Kim Kee-Jong of the Rural Development Administration (RDA). Currently, the Republic of Korea's leading processed rice food is the aseptically packaged cooked rice "Haetban". (Source: www.philstar.com)

India pips China and Japan in food safety confidence

A study by the Asian Food Information Centre (AFIC), Singapore, reveals that Indians are more confident about food safety levels than citizens in most Asian nations, notably China and Japan. Interestingly, the study pointed out that 84 per cent of Indians are ready to purchase biotech food such as tomato, food staples and cooking oils. India has so far not approved commercial production of any genetically modified (GM) food products. Only Bt cotton has been allowed for commercial output while Bt brinjal is undergoing field trials.

The study assumes significance, especially in view of the fact that the approval for GM crops in India has always been a controversial matter with organizations like Greenpeace India voicing concerns about various safety-related and other issues with such products. The government, too, has been more vigilant than ever about food safety norms. Already, concerned over the existence of fake and adulterated food products, the Food Safety Standards Authority (FSSA) under the Ministry of Health is preparing draft guidelines. Mr. P.I. Suvrathan, FSSA Chairman, has stated that suitable laws would be brought in to even force a recall of contaminated products. India has also decided to put in place a mechanism, possibly by 2010, to scrutinize all imported items to avoid the inflow of any contaminated products. (Source: www.indiajournal.com)

High percentage of foods pass safety tests in Hong Kong

The Centre for Food Safety, Hong Kong, tested 11,200 food samples during November-December 2008 with an overall pass rate of 99.6 per cent. Only 43 samples failed the tests. The Centre's Assistant Director for Food Surveillance and Control, Dr. Miranda Lee, stated that most of the breaches were not serious and would not cause immediate health risks. Dr. Lee said six items were vegetables or fruits, 26 were meat or poultry, seven were aquatic products, and four were other food commodities.

A Chinese parsley sample had trace amounts of a pesticide called isocarbophos while the other five vegetable and fruit samples contained excessive cadmium. Apart from the 19 unsatisfactory fresh meat samples, which were announced earlier, there were seven other unsatisfactory samples including a frozen suckling pig sample containing excessive veterinary drug residue, two smoked pork sausage and two fresh beef samples having non-permitted food additives and two marinated chicken gizzard samples infected with *Salmonella.* A fried mud carp ball contained malachite green while three ling fillet samples and three black cod samples had excessive mercury. Apart from the two poon choi samples and an egg, one dietary supplement was found to contain the non-permitted sweetener stevioside. (Source: www.news.gov.hk)

FAMA to market coffee

In Malaysia, the Federal Agriculture Marketing Authority (FAMA) plans to take proactive measures

to market its coffee product more aggressively. FAMA Agro-based Industry (Coffee) Development Manager Mr. Abdul Moeen Abdul Wahid stated that Malaysia has a big market for coffee and FAMA is now focusing attention on its "Anggerek" coffee in Sarawak. Many pre-mix coffee powder enterprises that blend coffee with herbal powder have mushroomed in the country, a clear indication that coffee is in high demand in Malaysia.

Mr. Wahid states Anggerek coffee did not face much problems in Sarawak with the existence of the strong marketing and distribution network that has captured 80 per cent of the coffee market in Malaysia's biggest state. Among the factors for Anggerek coffee powder to be popular in Sarawak is the use of original coffee beans, margarine, wheat and sugar besides guaranteed cleanliness and no additive is added, such as dry coconut, in the processing. (Source: www.bernama.com.my)

India's industrial capacity for fruits and vegetables processing

In India, the industrial capacity for processing fruits and vegetables reached 2.68 million tonnes at the beginning of 2008. The categorization of industrial units under Fruit Products Order, 1955, is based on annual production limit. The Minister of State for Food Processing Industries stated that the number of licensed units, according to annual production limit, is as follows:

- Large scale: above 250 t (656 licensed units);
- Small scale (B): up to 250 t (390 licensed units);
- Small scale (A): up to 100 t (435 licensed units);
- Home scale (B): up to 10 t (1,906 licensed units); and
- Cottage scale: up to 50 t (1,153 licensed units).

(Source: pib.nic.in)

SPS Information Management System

The SPS Information Management System provides WTO related information on sanitary and phyto-sanitary measures related to food safety and animal and plant health. The tool can help managers meet new export criteria, or find out if there could be a problem with a particular ingredient sourced from a region. For more information, contact:

SPS Information Management System
E-mail: spsims@wto.org
Web: http://spsims.wto.org

SAFETY/ QUALITY CONTROL

New test for melamine

Researchers at the Swiss Federal Institute of Technology Zurich (EPFZ), Switzerland, report a technique to detect the presence of melamine in liquids faster. The team employed a technique known as mass spectrometry to cut testing time, according to Mr. Renato Zenobi, a professor of analytical chemistry at the Organic Chemistry Laboratory at EPFZ. Mass spectrometry is used to measure the masses of atoms and molecules in materials or liquid. (Source: www.tehrantimes.com)

Nano zinc oxide dots eliminate food-borne pathogen

Researchers at the United States Department of Agriculture's Food Safety Intervention Technologies Research Unit report that the application of zinc oxide (ZnO) nanoparticles in food systems could prove to be an effective means to inhibit certain pathogens. In a study, scientists evaluated the antimicrobial activity of zinc oxide quantum dots (QDs), nanoparticles of purified, powdered ZnO. The team stated that ZnO QDs were utilized as a powder bound in a polystyrene film (ZnO-PS) and suspended in a polyvinylprolidone gel (ZnO-PVP). Bacterial cultures were inoculated into a growth media of tryptic soy broth (TSB) or brain heart infusion broth (BHIB) or liquid egg white (LEW) and incubated at 22°C.

LEW was chosen for the study because both the physical and functional properties of liquid egg products are sensitive to thermal treatments and because occurrences of egg-related *Salmonellosis* have heightened concerns for the safety of egg-related products. Results indicate that the inhibitory efficacies of ZnO QDs against three pathogens were concentration-dependent and also related to the type of application. The ZnO-PVP (3.2 mg ZnO/ml) treatment resulted in 5.3 log reduction of *L. monocytogenes* and 6.0 log reduction of *E. coli* O157:H7 in growth media after 48 hours of incubation, compared with the controls. (Source: www.ap-foodtechnology.com)

Pressure chamber makes egg microcracks shine

Researchers at the Agricultural Research Service (ARS), of the United States Department of Agriculture (USDA), have developed a prototype pressure chamber and camera system that can find microcracks (very small cracks) in fresh eggshells. This device could help the egg industry find microcracks that often go undetected during grading, claim the researchers at ARS' Quality and Safety Assessment Research Unit (QSARU) and Egg Safety and Quality Research Unit (ESQRU). The ARS team that developed the device comprised food technologist Ms. Deana Jones at ESQRU, and engineers Mr. Seung Chul Yoon, Mr. Kurt Lawrence and Mr. Bosoon Park, technician Mr. Allan Savage and image analyst Mr. Jerry Heitschmidt at QSARU.

The technology emulates human graders who squeeze the egg along suspected cracks to see if it opens. A prototype chamber was built that uses a brief negative pressure to slightly pull the eggshell outward to expose any existing cracks that may be present, without causing cracks in intact eggs. A camera system then takes a picture before and while the pressure is applied to "see" if the shell is cracked. The system detected 99.4 per cent of eggshell cracks, says Mr. Lawrence, while recording almost no false positives – only 0.3 per cent. In comparison, professional human graders exhibited an 85.8 per cent crack detection rate and 1.2 per cent false positives. (Source: www.ars.usda.gov)

Microsystems detect freshness of meat

In Germany, experts from five different research institutes came together two years ago to develop a scanner to evaluate the quality of meat. Funded by the German Federal Ministry for Education and Research, the "FreshScan" project is headed by the Fraunhofer Institute for Reliability and Microintegration, and brings together researchers from Max Rubner Institute, Ferdinand Braun Institute for High Frequency Technology, Leibniz Institute for Agricultural Engineering Potsdam-Bornim and the Technical University of Berlin. The team employed processes based on laser technology that could "read" and document the freshness of raw meat. Within the project, a usable experimental model made up of an intelligent label and a hand scanner has been developed. The label functions as a type of running sheet and documents the condition of meat from the slaughterhouse to the point of sale. Additionally, the temperature can be continuously monitored and recorded, ensuring any interruption to the cool chain is documented. The scanner reads the meat's condition and simultaneously records it in the intelligent label.

The concept builds on two approaches, firstly by focusing on the food itself and secondly on the logistics of the processing chain, the foodstuff's history is transparent at all steps and can be traced back if necessary. Various functions can be chosen via a touch screen that also displays the analysed measurements. The functional system is currently being tested and optimized as a pilot solution for pork. After the implementation of any required modifications, it could also be used commercially for other types of perishables. *Contact: Dr. Volker Großer, Fraunhofer Institute for Reliability and Microintegration, Germany. Tel: +49 (30) 4640 3250; E-mail: volker.grosser@izm.fraunhofer.de; Or Mr. Georg Weigelt, Fraunhofer Institute for Reliability and Microintegration, Gustav-Meyer-Allee 25, Berlin 13355, Germany. Tel: +49 (304) 6403 279; E-mail: georg.weigelt@izm.fraunhofer.de.* (Source: cordis.europa.eu)

Smart bar code indicates product freshness

In the United States, University of Rhode Island (URI) reports that a smart bar code for food packaging can inform consumers and retailers whether refrigerated food products like chicken, milk and beef are fresh or not. Smart packaging including freshness and time-temperature indicators for use in supply chains for foods that are highly temperature-sensitive is a growing trend. The research team consisted of two URI chemistry professors, Mr. Brett Lucht and Mr. William Euler, working together with SIRA Technologies, a food safety company.

The bar code label is based on the employment of an ink that is nearly invisible, but which turns red when the food is contaminated; the colour change on the bar code prevents the product from being scanned at the checkout counter. The

labelling thus establishes an irreversible, tamper-proof archived signal in any applicable database. While there are other thermochromic indicators on the market, these are expensive and lack the archival feature required by regulatory agencies to track and trace products on a global scale. The colour changing bar code is cost-effective at US$0.04 per label. (Source: www.fnbnews.com)

Sensors for the food industry

IFM Electronic Ltd., the South African arm of the process optimization and control company IFM Electronic GmbH, is offering T series full-metal inductive sensors, which have been specifically designed for the food industry. Application tests such as temperature/shock, 1,000 hour long-term and steam boiler tests have proved the suitability of these sensors. The threaded body and the sensing face of the one-piece housing are made of stainless steel, leading to longer sensor life and reducing machine downtime.

The M12, M18 and M30 sensors provide sensing ranges of 3, 5 and 10 mm at 0°-100°C temperature. High ingress resistance is ensured by the choice of IP67/IP68/IP69K ratings, while the newly developed EVT series connectors, certified by ECOLAB, prevent ingress of moisture into the nut or cable. The asymmetrically acting vibration protection holds the nut tight in its position, guaranteeing an optimum and permanent seal. *Contact: Ms. Celia de Beer, IFM Electronic Pty. Ltd., Postnet Suite 279, Private bag X8, Elardus Park, 0047 South Africa. Tel: +27 (12) 450 0370; Fax: +27 (12) 345 5145; E-mail: info.za@ifm.com; Website: www.ifm.com.* (Source: www.instrumentation.co.za)

Quick detection of *Salmonella*

Researchers at Iowa State University, the United States, have developed a technique to test for the presence of *Salmonella* that may give better answers faster. Developed by Mr. Byron Brehm-Stecher, assistant professor in food science and human nutrition, and his graduate student Mr. Bledar Bisha, the process begins with testing the food, in most instances produce, with a strip of adhesive tape. The tape is applied to the produce, then carefully removed, taking a sample of whatever is on the skin of the produce. That sample is then put on a slide and soaked in a special warm, soapy mixture that contains a genetic marker that binds with *Salmonella* and gives off a fluorescent glow when viewed under an ultraviolet light – this genetic marker approach is called fluorescent *in situ* hybridization (FISH). FISH technique can tell investigators if the produce is contaminated with *Salmonella* in about 2 h, while current methods of detecting *Salmonella* take 1-7 days.

The tape-FISH technique can also be used to test produce not suspected of being contaminated, but the volume of produce that would need to be tested may make this impractical. However, the technique could be valuable as a basic research tool. Researchers could study how *Salmonella* and other types of organisms interact on produce surfaces, explains Mr. Brehm-Stecher. *Contact: Mr. Byron Brehm-Stecher, Food Science and Human Nutrition, Iowa State University, United States of America. Tel: +1 (515) 2946 469; E-mail: byron@iastate.edu.* (Source: www.public.iastate.edu)

Rapid detection of melamine in milk

Researchers at Purdue University, the United States, report to have developed a new method to determine melamine levels in whole milk and milk powder. Led by Prof. Graham Cooks, the detection technique is based on ambient ionization utilizing a low-temperature plasma (LTP) probe combined with tandem mass spectrometry (MS/MS) This highly sensitive assay is claimed to be the fastest technique yet. According to Prof. Cooks, this technique allows detection and quantitative assessment of the industrial chemical in milk powder, whole milk and other products at levels down to low parts per billion in analysis times of about 25 seconds.

Prof. Cooks stated that ambient ionization methods, such as the low-temperature plasma ionization employed by the Purdue group, can greatly reduce the time-intensive and sometimes difficult prerequisites of mass spectrometers. Prof. Cooks explains that the ionization source of the research project was developed as a general method, not aimed at melamine, with the melamine experiments completed in about 10 days. A patent has been applied for in relation to the detection method, while discussions with regard to its commercialization are ongoing. Further, the research team has been

involved in many other food safety related projects, including studies focused on pesticide residues, components in olive oil and natural sweeteners. (Source: www.ap-foodtechnology.com)

Technology improves peanut grading, moisture detection

In the United States, researchers at ARS' National Peanut Research Laboratory have developed a new technology to facilitate the peanut industry grade peanuts faster and more accurately. An engineer, Mr. Hank Sheppard, and research leader Mr. Marshall Lamb uncovered that using X-ray technology to grade peanuts delivered a 98-99 per cent accuracy rate and is faster than official peanut grading methods – 7 minutes versus 20 minutes per sample. Official peanut grading is labour-intensive, requiring 3-6 people to hand shell, pick, sort and grade each nut.

Another processing problem addressed by ARS research is peanut moisture. Nuts must have a moisture content of 10 per cent or less to be suitable for further processing and shelling. The ability to determine moisture before grading begins would allow processors to divert high-moisture nuts for further drying instead of discarding them. At present, peanuts are shelled and the moisture content is then determined. An engineer at NPRL, Mr. Chari Kandala, developed an automated in-shell moisture detection system utilizing radio frequency that could work in tandem with the X-ray grading unit to provide peanut processors a more efficient operation. (Source: www.ars.usda.gov)

CODEX INDIA

This website has been developed under the FAO Project to strengthen the National Codex Committee TCP/IND/0067(A). It provides information on the Codex Alimentarius Commission and its Subsidiary Bodies as well as the Codex activities in India.

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Website: http://www.codexindia.nic.in

INGREDIENTS

On-line mixing and application of surface coating compositions

The Procter & Gamble Co., the United States, has patented a process and apparatus for preparing a surface coating composition for an animal food. The process involves combining, in-line along a food processing line, liquid fat and a dry additive to provide a liquid fat-dry additive composition, which is then combined with a liquid additive to provide a surface coating composition that can be coated on the food.

This process overcomes shortcomings related to staged application of dry and liquid additives on to the surface of animal food. It allows for optimizing the amount of dry additives on the surface of the animal food while minimizing waste. Also, the process of surrounding or encapsulating dry additives in liquid fat prior to the addition of liquid additives protects unstable and sensitive additives during the production of a surface coating composition, while minimizing the time for viscosity to build before application. Furthermore, the on-line mixing and application enables more uniform application of surface coating compositions and essentially eliminates costly delays and repairs caused by the formation of viscosity in mixed compositions as traditionally used in staged or simultaneous application methods. (Source: www.flex-news-food.com)

Microencapsulation technology for food applications

In the United States, Martek Biosciences, the docosahexaenoic acid (DHA) omega-3 innovator and maker of life'sDHA™ brand of DHA, has entered into a licensing pact with General Mills for the latter's patented microencapsulation technology. This technology is expected to enhance the ability of Martek to produce cost-effective, high-quality DHA powders for certain food applications, particularly long shelf-life products and applications posing sensory and formulation challenges. DHA omega-3 is a long-chain omega-3 fatty acid that serves as a primary building block for the brain and the eyes and supports cardiovascular, eye

and brain health throughout life. There is a large and growing body of scientific evidence demonstrating that people of all ages benefit from an adequate supply of DHA omega-3 in their diets.

At present, life'sDHA is found in numerous foods, beverages and supplements for people of all ages. It is also the only source of DHA used in United States' infant formula and is included in more than 99 per cent of all formulas on the United States market, as well as in more than 200 brands of nutritional supplements, functional foods and infant foods sold in over 75 nations worldwide. (Source: www.flex-news-food.com)

ß-glucan-containing fat and oil composition

Adeka Corporation, Japan, has received a United States patent for a ß-glucan-containing fat and oil composition. The ß-glucan-containing fat and oil composition has ß-glucan of micro-organism origin or basidiomycete origin uniformly dispersed in a food without worsening the texture, taste, and other characteristics of the food. Adeka also offers a novel micro-organism that can efficiently produce ß-glucan, which has a high activity and favourable qualities from low-cost saccharides like sucrose at a high production speed. (Source: www.flex-news-food.com)

Low in fat, high in flavour

Scientists at the United Kingdom's Institute of Food Research report to have made a breakthrough that promises low-fat food with all the health benefits without compromising on flavour. This development could herald a new generation of low-fat products – including yoghurts, creams, ice-creams and sauces used in ready-made meals – that will be more palatable for consumers and combat obesity epidemic in the country.

The team uncovered that they could both reduce the fat content of food ingredients and retain the original taste by diluting the liquid fat with water during a high-speed mixing process. By adding a type of protein, they could then stop the fat and water separating out again. Dr. Peter Wilde, deputy programme leader at the Institute, expressed that although low-fat foods were an essential part of tackling rising levels of obesity, many were not as "palatable" as the full-fat product. Dr. Wilde said, "We have altered the oil and water ratio so that the fat content is reduced but it still retains its taste. We are keeping the same number of fat droplets inside the food but filling each droplet with water, so the outside of the droplet will taste like a fat droplet but it has more water inside it." (Source: www.scotlandonsunday.scotsman.com)

Whey protein promises nano-encapsulation of omega-3

The whey protein ß-lactoglobulin may bind the omega-3 fatty acid docosahexaenoic acid (DHA) offering nano-encapsulation potential. Researchers at the Israel Institute of Technology, Israel, report that the whey protein may be a nano-vehicle for DHA, and nano-complexes with pectin-produced transparent dispersion with extended shelf-life for the ingredient. The use of omega-3 fatty acids in foods is limited by their low solubility in water and their sensitivity to spoilage by oxygen. For the new study, the team investigated the potential of ß-lactoglobulin to spontaneously bind to DHA and to act as a carrier for the fatty acid. And in combination with low-methoxy pectin, colloidally stable nano-complexes of DHA and ß-lactoglobulin were produced. An excess of pectin led to the formation of particles containing 166 times more DHA. (Source: www.foodnavigator.com)

Shelf-stable salt encapsulated in flavoured oil

Wynn Starr Flavours Inc., the United States, is patenting an invention that provides a flavoured oil-encapsulated ingredient and, more particularly, a flavoured oil-encapsulated salt. The encapsulated ingredient is set forth as an encapsulate, which includes the encapsulated ingredient (substrate) and the encapsulating material. The encapsulate provides an encapsulated salt, which could be incorporated into a food product such as ground meat to selectively distribute the flavour of the oil and expose the salt to the ground meat. In a further configuration, the encapsulating oil is flavoured by at least one Maillard reaction product. The Maillard reaction product is formed by the selected time and temperature heating of a reducing sugar and an amino acid in the presence of water. (Source: www.freepatentsonline.com)

BEVERAGES

Beverage equipment and thermal processing machinery

Arrow Scientific, Australia, offers custom thermal processing machinery based on product, temperature needs, space availability, lab layout and budget. Arrow works with bottom line process technologies (BLT) to design the best beverage equipment or thermal processing unit from simple to complex, manual to automated, individual components to complete skid-mounted units. BLT specializes in the design and fabrication of small-scale beverage equipment and other bench-top machinery. Fill rates up to 1 l/min are available, with samples as small as 500 ml.

A standard High Temperature Short Time (HTST) pasteurizer provides beverage companies and ingredient suppliers an efficient, simple-to-operate and affordable way to produce beverage samples under controlled conditions. Facilities include:

- Bottle filler box for safety;
- Water heater with digital controller;
- Variable speed product pump;
- All stainless construction;
- Water container with auto-refill for start-up and flush; and
- Digital product temperature display.

(Source: www.foodmag.com.au)

Patented cold-fill process

XND Technologies, the United States, is offering a complete line of bottled water products that use a patented technology to add organic nutrients to water without adding masking flavours, colours or sweeteners. The proprietary cold-fill process is claimed to give XND several advantages:

- This process is said to cost 30 per cent less than the standard hot-fill process, which translates directly to greater bottom line profits;
- Cold-filling enhances the bioavailability of the ingredients, prevents biodegradation and allows beverages to be bottled at neutral pH, thereby creating a more healthful product without altering the taste of the water; and
- The process allows the company to use the claims “no preservatives”, “natural” and “organic” on its packaging and marketing materials. Consumer testing indicates that public awareness sees Nu2O bottled water products in a category of its own.

(Source: www.packagingdigest.com)

Coco water beverage bottling

The joint venture project of Touareg Corp., the Philippines, to promote a coco beverage bottling plant is providing livelihood and income to 1,760 coconut farmers. The village-scale system for bottling coconut water as a health drink was designed using locally developed methods and fabricated equipment. The farmers were engaged mainly in copra drying in 1,690 ha of coconut land, resulting in an annual waste of 6,410 t of coconut water. Touareg’s project provides a healthy beverage alternative at prices lower than soft drinks. Unlike thermally processed (high-temperature/ short-time pasteurization) coco water products in expensive, non-reusable containers of medium-sized and large-scale industries that use petrol fuels as heating source, the project utilizes the abundant agri-biomass energy and adopts the cold conservation/microfiltration technology that retains the natural taste and aroma of coconut water in 100 per cent reclycable/reusable glass bottles. (Source: www.socialedge.org)

Non-nutritive sweetened beverages with coconut milk

The Concentrate Manufacturing Company, Ireland, is offering beverage compositions sweetened with at least one non-nutritive sweetener, such as a compound from the stevia plant, including steviol glycosides (rebaudiosides such as Rebaudioside A, stevioside). Coconut milk is present at levels sufficient to enhance the mouthfeel of the beverage, yet not affect the taste. Non-nutritive sweetened beverage compositions, beverage concentrates, and natural beverage compositions incorporating steviol glycosides and coconut milk have also been provided. In addition, a method for including coconut milk in a beverage formulation to enhance the mouthfeel of a beverage sweetened with a compound from the stevia plant has been provided. (Source: www.freepatentsonline.com)

Beverage microbial screening system

Celsis International plc., the global leader in rapid microbial detection solutions for industry, recently launched RapiScreen Beverage, a new assay for use on the Celsis Innovate – the company's proven rapid microbial screening instrument for dairy products. The rapid screening test kit extends the Celsis Innovate platform to efficiently and rapidly screen ultra heat-treated and extended shelf-life beverage products for microbial contamination. The flexibility and high-throughput of the Celsis Innovate system makes it ideal for companies that produce beverage and dairy products alike. The RapiScreen Beverage kit works on everything – from clear to pulpy juices and from broths to soups – with no filtering necessary. Utilizing proprietary innovations in enzyme technology, RapiScreen Beverage for Innovate delivers reliable and consistent results on a range of products in 24-48 hours. (Source: www.beverageonline.com)

Fermenting papaya pulp and juice

Marfarma Holding S.p.A., Italy, has patented a process for the fermentation of papaya pulp and juice by means of *Saccharomyces* strains, in which the fermenting suspension is added with a selenium soluble compound. The process of the invention provides fermented papaya containing selenium in nutritional amounts. The product obtainable by fermentation, which is a further object of the invention, has increased anti-oxidizing activity and provides suitable amounts of bioavailable selenium – whose deficiency in the body exposes it to risks of degenerative diseases like tumours and pancreatitis – and is useful in general in all those conditions which benefit from preventing formation of free radicals, known etiologic agents in a number of pathologies due to their effect on lipid lipoperoxidation, immune system cells, skin and, in general, on cells exposed to oxidative stress. The seleno-fermented papaya can be used as the active ingredient for nutritional supplements and/or medicaments, which can be employed in all oxidative stress conditions and related degenerative pathologies. *Contact: Marfarma Holding S.p.A., Via Balestrieri, No. 6, 20154 Milano, Italy.* (Source: www.freepatentsonline.com)

PRESERVATION

Modified atmosphere flow pack packaging

Retailers can now extend shelf-life and reduce produce wastage with Sammo Group's new flow pack machine designed exclusively for StePac's Xtend® modified atmosphere/modified humidity (MA/MH) packing films. A major European supplier of advanced post-harvest equipment, including sorting, packaging and palletization machines, Sammo's Xtend dedicated flow pack machine has optional top or bottom reels, a capacity of 30 packages of 500 g/min and comes with a wide range of accessories. Xtend MA/MH technology, prolongs shelf-life, minimizes dehydration and prevents the decay of fresh produce through the combined effect of modified atmosphere, modified humidity and condensation control. Each Xtend film is developed specifically for the vegetable or fruit required to be packed on the flow pack line. (Source: www.freshplaza.com)

Fish preservation may boost consumption

Researchers at Australia's Department of Primary Industries and Fisheries (DPI) are adapting ancient preservation technologies, which use spices from native food plant products. According to Dr. Roger Stanley, DPI is hoping to see the preservative used in convenience fish-fillet packs on supermarket shelves within a year. Dr. Stanley says adding spices to the product also creates a unique flavour. "A lot of these products – an example people would know would be lemon myrtle – do taste, but in this case we are trying to select products which actually have an agreeable [taste]," said Dr. Stanley said. "Lemon flavour with a fish product is something that we would try and do anyway." (Source: www.abc.net.au)

Extending the shelf-life of fresh-cut products

Hefestus Ltd., Israel has developed a packaging system based on the patented, no-vacuum process to extend the shelf-life of fresh-cut fruits

and vegetables to 14 days. Even highly sensitive products do not appear to suffer any negative effects in terms of structure or appearance when packaged utilizing this system, which creates a protective atmosphere containing just 1 per cent oxygen. The innovation is anticipated to enable producers to supply new, more distant markets with fresh products.

Furthermore, Hefestus will be supplying the right packaging machinery for the new technology. Its new Hera processes up to 1,200 units/h, which makes it one of the fastest packaging machines in the world. *Contact: Mr. Ron Golan, Hefestus Ltd., P.O. Box 3116, Caesarea 38900, Israel. Tel: +972 (4) 6271 835; Fax: +972 (4) 6271 876; E-mail: Hefestus1@Hefestus-slb.com; Website: www.hefestus-slb.com.* (Source: www.freshplaza.com)

Casein: natural antioxidant boosts shelf-life of meat

In Brazil, Ms. Karina Rossini and co-workers at the Universidade Federal do Rio Grande do Sul have reported that enzymatic hydrolysis of casein produced smaller peptides, which could prevent the spoilage of meat products. This development could offer formulators a natural antioxidant for beef and poultry products. The research tapped into growing interest in natural food additives as replacements to synthetic antioxidants.

Typically, oxidative deterioration of meat and its products is caused by the degradation reactions of fats and pigments. Oxidation processes in food can lead to organoleptic deterioration in taste, colour and texture The researchers utilized the commercial enzymes Flavourzyme and Alcalase (Novozymes) to hydrolyse casein. The resulting peptides from Flavourzyme were found to contain more soluble protein and free amino acids than Alcalase. Measures of the peptides' antioxidant activity revealed that those peptides produced from Flavourzyme had higher values compared with those obtained with Alcalase. When formulated into ground beef homogenates and mechanically de-boned poultry meat, the researchers found that the casein peptides "effectively inhibited lipid peroxidation" in the beef (100 per cent inhibition) and poultry (by 21 per cent) product, and thereby produced an extension of the products' shelf-lives. (Source: www.ap-foodtechnology.com)

PACKAGING

Renewable packaging material

Researchers at Xylophane, Sweden, report of a renewable packaging material that can extend the shelf-life of foods. A pilot factory, expected to be operating by early October 2009, will enable the material to be manufactured and assessed by the company's potential customers, as well as allow Xylophane to optimize the manufacturing process for full-scale production. The Xylophane material consists of the natural carbohydrate xylan and additives approved for food contact. Xylan can be isolated from agricultural by-products, such as hulls and husks from cereals.

Xylan is an efficient barrier against oxygen, grease and aroma, and can therefore prolong the shelf-life of sensitive foodstuffs or be a sustainable alternative to the barrier materials on the market today. Since the raw material is water-soluble, the product can be coated on to paper, board or plastics without using other solvents. Tests have shown that the material can be used in contact with greasy and dry foodstuffs. Dispersion coating method is employed to apply a layer of Xylophane in a multi-layer package. Xylophane in powder form is dissolved in water and coated on to the substrate using roll, rod or blade. The coating is dried with warm air or infrared. Xylophane can be combined with other packaging materials such as paper, paperboard or plastics. (Source: www.theengineer.co.uk)

Horizontal form-fill-seal products

Propac Industrial, Australia, offers a horizontal wrapper designed specifically for the packaging of fresh and delicate products. The machine offers perfect hermetic seals and modified atmosphere packaging. Typical industries using Propac units include fresh meat and seafood producers. Propac offers box motion technology; random length and fixed models are available. Vacuum models are also available.

The Propac HFFS has been specifically designed for wet and harsh environments. It features a hygenic and easy-to-clean design with minimum moving components and, as with all Propac units,

it is manufactured from first-grade stainless steel. From an applications point of view, it can handle the packaging of random length products (e.g. different sized fish or meat portions). It also offers on-line vacuumization and gas flushing! *Contact: Propac Industrial, Unit 2, 61 Prince William Drive, Seven Hills, NSW 2147, Australia. Tel/Fax: +61 (2) 9674 9261/9267.* (Source: www.ferret.com.au)

Continuous motion case packer for high-speed packing

Standard-Knapp, the United States, has launched the PakMore™ continuous motion case packer for faster and smoother packaging of bottles in a variety of industries, including soft drink, beer, wine, food and household products. The PakMore uses Standard-Knapp's innovative pressureless Zero-Gap infeed for smooth bottle laning, ensuring balanced lines and jam-resistant operation. With a capacity to pack up to 75 cases/min, PakMore greatly reduces operational costs.

Designed to maximize placement accuracy and minimize bottle damage, PakMore's technologically advanced, dual-axis servo grouper and gripper heads pick up bottles and safely lower them into the case. The ergonomic design of PakMore's automated head changeover feature and smart automatic fault recovery system ensure the packer is as reliable as it is efficient. Additional features of the PakMore allow for the flexibility of an in-line or peninsula layout as well as an optional tablock slitter. *Contact: Standard-Knapp, United States of America. E-mail: info@standard-knapp.com.* (Source: www.amonline.com)

Customized packaging for fresh produce

Multivac, Germany, a global market leader for thermoformers and a supplier of complete packaging solutions for food and non-food items, has unveiled its FreshSafe packaging. The FreshSafe concept enables packaged fruits and vegetables to stay fresh much longer than they would in open packaging. The FreshSafe system is implemented with sealed thermoformed packaging or trays. The ideal gas mixture is prepared by exchanging the gas atmosphere (MAP). In addition or as an alternative, microperforated film is used as well. For sensitive goods such as gooseberries or raspberries, the quality of the packaging solution is critical during transport and storage that influences the economic efficiency and sustainability of this business. Extending the shelf-life for just 3-4 days, which can be achieved with an innovative packaging solution, prevents large amounts of fruit from spoiling. FreshSafe ensures that fruits stay fresh about twice as long as with open packaging.

The company's Traysealer T 700 is winning over customers. All components and parts are built with a rigorous focus on hygienic factors. The T 700 Traysealer is characterized by its maximum flexibility and easy, safe operation guaranteed by the intuitive machine control. The T 700 unites high performance with outstanding quality and safety standards. The T 250 Traysealer is designed for small and medium-sized batches of (fruit) trays. Except for inserting and removing the trays, all other processes are automatic on this model. Thirdly, the compact R145 Thermoformer has everything it needs for the perfect thermoforming of packing for fruits and vegetables. R145 Thermoformer has a space requirement of 3 m^2. *Contact: Ms. V. Haux, Multivac, Germany. E-mail: valeska.haux@multivac.de.* (Source: www.freshplaza.com)

Cost-effective system launched

PBI-Dansensor A/S, Denmark, has launched a cost-effective and versatile system for measuring the oxygen permeability of finished packages in the food industry. PermMate will enable packaging engineers to rapidly obtain the information required for creating the most appropriate package to achieve the necessary shelf-life for a given product. PermMate works by first flushing the headspace of the sealed package with nitrogen, using a fine needle inserted through a septum. Oxygen concentration is measured and the package is then placed in a controlled environment at ambient oxygen conditions and known temperature and humidity. After a given period of time, the gas within the package is tested again for its oxygen content. The deviation between the 'before' and 'after' readings enables an *in situ* permeability rate to be calculated for the finished package. This approach allows multiple packages to be examined simultaneously, whereas conventional package testing can only cope with one or a few packages. (Source: www.gasworld.com)

MACHINERY/ EQUIPMENT

Supply assembly for a beverage machine

Maver, Italy, has patented an invention pertaining to a supply assembly for use in the manufacture of a machine that prepares a beverage obtained by dissolving a soluble preparation in water. The invention also relates to a beverage machine that comprises said supply assembly. Maver's supply assembly consists of a mixing chamber containing a mixer that comprises at least one impeller for mixing a single dose of soluble preparation in a quantity of water to obtain said beverage. At least one nozzle is provided for introducing water inside the mixing chamber, which incorporates a top opening directly accessible to a user for manually introducing a single dose of soluble preparation. The mixing chamber also comprises a lower opening suitable for enabling the supply of the beverage in a direction substantially parallel to the axis of rotation of the impeller that is positioned so as to be faced and adjacent to the lower opening so that, during and as a result of its rotation, it prevents the beverage from escaping. (Source: www.wipo.int)

Laboratory candy depositors

Arrow Scientific Pty. Ltd., Australia, offers custom single-shot candy depositors suitable for heat-sensitive, viscous products. With batches as small as 500 g, the Bottom Line Depositor is claimed to deliver centre-filled products at a lower cost than currently available equipment. The system produces presentation quality products like filled chocolates, hard candies and caramels. It can also be used for new concepts such as honey-filled throat drops, yoghurt filled fruit jellies or sugar-free hard candy filled with energy gel. Custom dies are available for innovative patterns.

The Bottom Line Depositors have two (or more) individually heated and temperature controlled product hoppers and pump heads. Servo operation for each pump is independent, so the operator can set separate parameters such as up and down speed, start-and-stop timing and stroke length. It has many automated features, including a touch screen operator interface that can store up to 99 recipes. The servo-driven depositor has both product hoppers controlled independently, which allows for co-depositing two products with different properties. The control panel has an operator touch screen. The pneumatic depositor is designed to sit on a laboratory counter top. The machine has a single hopper with a divider plate, which gives the capability of producing two colour/flavour products with similar heat and flow properties. This machine can be built with multiple hoppers and heads. *Contact: Arrow Scientific Pty. Ltd., Australia. Tel: +61 (2) 9427 7455; Fax: +61 (2) 9427 7456; E-mail: info@arrowscientific.com.au; Website: www.arrowscientific.com.au.* (Source: www.foodaust.com.au)

Miniature rotary batch mixer

The new inline miniature rotary batch mixer, from Munson Machinery Co. in the United States, gently blends batches up to 142 litres in parts as small as one per million with complete uniformity in less than three minutes, evacuates the batch with no residual, and can be sanitized rapidly with no tools. The stainless steel Model 700-TH-5-SS sports a stationary inlet and outlet for inline operation, and a rotating drum with proprietary mixing flights that tumble, turn and fold material gently, rapidly achieving uniformity regardless of disparities in the bulk densities, particle sizes or flow characteristics of batch ingredients. The mixer is said to be efficient across its useable capacity range of 142 to 7 litres. Batch weight capacity of 226 kg is standard, with optional higher capacities. (Source: www.foodprocessing.com)

Frozen pie packing line: one cool system

The Bama Companies, the United States, recently installed an 18-robot system with a vision-based quality system to pack pies as they arrive from processing. The Sigpack system was chosen due to the flexibility the robot system offered, by picking the pies directly from the main belt and placing them into the cases. Challenges in the project included a frozen product and its chilled environment, high production rate, complex product

inspection and a cinnamon topping. Production efficiency, quality control and sanitation were key considerations.

The line, which operates at 1,400 pies/min, incorporates a state-of-the-art vision quality control system, which ensures that only products of exact quality are accepted from the process equipment before being placed into cases. The frozen fruit pies exit the Bama freezer in rows of 20. After a series of belt turns, the products enter the packaging room, where temperatures and humidity are controlled. The rows of pies are separated via spreader belts and proceed under an overhead camera, which examines the entire product flow. Nine Model XR31 Delta robots are positioned on opposite sides of the main packaging belt. This layout facilitates complete pick coverage, reduces overlap and limits excess robot movement. The design allows for easy operator and maintenance access to each robot within the system. Robots use a custom-designed vacuum picker to gently pick and place pies into the cases, which move in a counter-flow direction to the main belt. The system is also equipped with special filters to assist with the collection and removal of excess cinnamon dust. *Contact: Mr. Tom Pecht, Sigpack Systems, United States of America. Tel: +1 (920) 6621 258; E-mail: tom.pecht@sigpacksystems.com.* (Source: www.foodengineeringmag.com)

Rice milling machine

Spbiotech Co., the Republic of Korea, has patented an invention pertaining to a rice milling machine that polishes rice by grinding, using only grinding rollers so that the rice does not bounce on to the bran removing screen, and that the germ of rice to be polished would not be removed. The invention comprises a milling part that incorporates an air inlet and an air outlet (both with fans), a bran removing screen, which is placed coaxially inside the said milling part while keeping regular distance from it, and a grinding roller rotated by a motor and placed coaxially in the middle of the bran removing screen.

The rice mill has an air inlet fan to draw external air in through the air inlet. The forced air system comprises an air blower consisting of lead-out holes to blow the air drawn in by the air inlet fan from the external part of the bran removing screen towards the axis of the grinding roller, such that the rice in the bran removing screen does not hit the inner surface of the bran removing screen and the rice is peeled only by the grinding roller, thus preventing the rice kernels from losing their germs and from being broken. The rice produced is thus of high quality. *Contact: Spbiotech Co. Ltd., 327-8 Yangjae-Dong, Seocho-Gu, Seoul 137-130, Republic of Korea.* (Source: www.wipo.int)

UHT sterilizing machine

Harbin Saide Hi-Tech. Co. Ltd., China, offers its model SJ-I machine for Ultra High Temperature (UHT) sterilization. The machine adopts hot steam as the heat source, and uses circulating water as medium for heat exchange. The machine has high efficiency in the heating process, providing gentle and uniform heating for the products. The unit is easy to be cleaned to ensure sterilization. The piping in the unit has low heat expansion rates, offering good stability. The U-connection pipe can be opened for inspection. The machine is controlled by a PLC computer, operated via a touch screen. The system can be equipped with frequency speed adjustment for handing different packaging rates. It can even be equipped with CIP or central CIP systems.

The machine is suitable for pure milk, flavoured milk, soybean milk, beverages, condiments and other liquid food products, even with particles and small pieces like fibre. The machine is also suitable for the pasteurization of fresh milk. *Contact: Ms. Liu Yanqiu, Harbin Saide Hi-Tech. Co. Ltd., No. 16 Honghu Street, Yingbin Road, Industrial Zone, Harbin, Heilongjiang 150078, China. Tel: +86 (451) 8434 8412; Fax: +86 (451) 8434 8419.* (Source: www.made-in-china.com)

Continuous hydration blanching

New technical applications in continuous bean hydration and blanching are providing improved efficiencies over traditional continuous blanching systems and dry bean soak tanks. In the latest upgrade to continuous dry bean processing, a new development known as Pressure-Flow has emerged, from Lyco Manufacturing, the United States. Pressure-Flow facilitates the hydrating of dry beans to a 60 per cent-plus saturation level through a continuous blanching process. The bean

is then fully hydrated and cooked, ready to be consumed and ready to be put directly into flexible pouches without the need for further hydration or cooking. While processing times are comparable to previous continuous blanching methods, the new system has the added benefit of providing a very low product damage rate (less than 1 per cent). *Contact: Lyco Manufacturing, 115 Commercial Drive, P.O. Box 31, Columbus, WI 53925, United States of America.* (Source: www.processingtalk.com)

Frozen beverage machine

Dia Geo Great Britain Ltd., the United Kingdom, has taken a patent on a frozen beverage system that includes a chamber, a scraper blade and a series of Peltier plates mounted closely adjacent a wall of the chamber. The new frozen beverage machine is preferably operable in a continuous "on demand" mode by virtue of a dispensing tap, generally of a much smaller scale than existing slush models. The Peltier plate arrangement will preferably be a plurality of plates with matched thickness, sandwiched between two discs. The matched thickness ensures that the plates are very efficient in heat transfer to the discs, which are made from aluminium.

In a preferred embodiment of the invention, the chamber is a cylinder, most preferably a shallow cylinder with a diameter substantially greater than its height, thereby maximizing cooling surface to volume ratio. The Peltier plate (or a plurality of plates) is mounted on both ends of the cylindrical chamber. The movement is by means of a rotatably mounted scraper/wiper at a central axis of the cylinder with a blade that wipes an end wall or both end walls of the chamber. The wiper blades are designed to wipe the surface of the plates to loosen the ice crystals forming thereon. Blades are shaped to prevent the compaction of ice crystals that is normally associated with scraping. Preferably, the blades also have features (such as fins on the back) that create turbulence and prevent localized compaction. The combined motion of the blade and rotor arm carries ice crystals around and maintains the crystals in suspension. As the ice volume increases, this motion slows considerably but still maintains a homogenous mixture. Preferably the blade has a shallow angle; a flat-faced blade would tend to move the slush as one piece.

The frozen beverage system is preferably configured for precise control of product temperature to ensure quality and consistency. Since the incoming liquid is at a higher temperature than the solution in the chamber, temperature sensors are arranged such that they can read a mixture of incoming product and slush. *Contact: Dia Geo Great Britain Limited, 8 Henrietta Place, London W1G 0NB, United Kingdom.* (Source: www.wipo.int)

Super high-temperature instantaneous sterilization

Quanzhou City Lizhong Food Machinery Co. Ltd., China, offers a super high-temperature sterilizing machine. Applicable for instantaneously sterilizing liquid food (such as fresh milk, juice, beverage, soymilk and wine) and high-viscosity food (such as concentrated milk, ice cream and soysauce), the equipment assures effective sterilization, while preserving the foods' taste and nutrition value. The sterilizing machine incorporates double-coiled pipe structure and sterilization occurs in 3-6 s at temperatures of 115°C-135°C. *Contact: Quanzhou City Lizhong Food Machinery Co. Ltd., Jiangnan Hi-Tech Industrial Zone, Quanzhou, Fujian 362000, China. Tel: +86 (595) 2235 0867; Fax: +86 (595) 2246 9799.* (Source: www.made-in-china.com)

Improved soybean processing

Researchers at Iowa State University, the United States, report to have been able to improve soybean processing. They found that adding ultrasonic pre-treatment to soybean processing boosts and improves the yield of protein that can be added to foods. In laboratory tests, exposing ground and defatted soyflakes to ultrasonics increased the release of soyproteins by 46 per cent. Moreover, the ultrasonic treatment breaks some of the bonds that tie sugars to the soyproteins. Separating the sugars from the proteins improves the quality of the proteins. It also boosts the sugar content of the soy whey left behind after processing. Ultrasonic treatment boosted sugar yields by 50 per cent. The low-cost, sugar-enriched whey can replace an expensive compound used to grow lactic acid bacteria. The bacteria produce nisin, a valuable natural food preservative that is also used in cosmetic and health-care products (mouthwash and toothpaste). (Source: www.bio-medicine.org)

RECENT PUBLICATIONS

Biotechnology in Flavour Production

This book provides a unique overview of the current state of the art of flavour production through biotechnology, examining the principles and current methods of producing flavours from plants and other organisms. Chapters are included on plant tissue culture, genetic engineering of plants, fungi and bacteria for flavour improvement.

Non-destructive Testing of Food Quality

The expert contributors to this guide explain current industry advances and how to convert available instrumentation into valuable assets. Readers learn how the competencies of product knowledge, process understanding, instrumentation, principles of sensing, process control as well as analytical methodology are required to turn an application into success. The broad-based coverage of topics addresses the most dominant sensor technologies keeping in mind the research initiatives advancing these technologies in food and pharmaceuticals.

For the above books, *contact: John Wiley & Sons (Asia) Pte. Ltd., Customer Service Department, 2, Clementi Loop #02-01 LogisHub@Clementi, Singapore 129809. Tel: +65 64632400; Fax: +65 646 34604; E-mail: csd_ord@wiley.com.sg.*

Micro/Nano Encapsulation of Active Food Ingredients

This book highlights innovations in encapsulation and controlled release technologies, as well as design principle of food delivery systems. It also provides some new directions and opportunities that can arise from the development of new nano-structured biomaterials for the fabrication of delivery vehicles and carriers for active food ingredients.

Contact: Oxford University Press, 198 Madison Avenue, New York, NY 10016, United States of America. Tel: +1 (212) 7266 000.

TECH EVENTS

12-14 May
Shanghai
China

BAKERY CHINA 2009
Contact: Gesellschaft für Handwerksmessen mbH,
Willy-Brandt-Allee 1,
81829 München,
Germany.
Tel: +49 (89) 949 55115;
Fax: +49 (89) 949 55239;
E-mail: messe@ghm.de

17-20 Jun
Bangkok
Thailand

ProkPak Asia 2009
Contact: Bangkok Exhibition Services,
SPE Tower, 9th Floor,
252 Phaholyothin Road,
Samsennai, Phyathai,
Bangkok 10400,
Thailand.
Tel: +66 (2) 615 1255;
Fax: +66 (2) 615 2991-3;
E-mail: enquiry@besallworld.com.

25-27 Jun
Cebu City
Philippines

CEBU FOOD EXPO 2009
Contact: Global-Link Inc.,
Unit 1003, Antel 2000 Corporate Centre,
121 Valero Street,
Salcedo Village,
Makati City,
The Philippines.
Tel: +63 (2) 750 8588;
Fax: +63 (2) 750 8585;
E-mail: jing@globallinkph.com.

12-15 Aug
Jakarta
Indonesia

INDOFOODTEC 2009
Contact: PT. Wahana Kemalaniaga Makmur,
Kompleks Perkantoran Graha Kencana Blok CH - CI,
Jl. Raya Pejuangan No. 88,
Jakarta 11530,
Indonesia.
Tel: +62 (21) 5366 0804;
Fax: +62 (21) 532 5887;
E-mail: info@wakeni.com.

17-19 Sep
New Delhi
India

Sweet & Snack Factory India 2009
Contact: Koelnmesse GmbH,
Messeplatz 1,
50679 Köln,
Germany.
Tel: +49 (221) 8210;
Fax: +49 (221) 821 2574;
E-mail: info@koelnmesse.de.

29 Oct
Beijing
China

CHINA FOODTECH 2009
Contact: China International Exhibition Centre, 6 East Beisanhuan Road,
Chaoyang District,
Beijing 100028,
China.
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PUBLICATIONS from APCTT

PERIODICALS

(Free access at www.techmonitor.net)

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- ❑ VATIS Update (6 issues/year)
  - ❍ Biotechnology (e-version)
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  - ❍ Food Processing (e-version)
  - ❍ Ozone Layer Protection [#] (e-version)
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BOOKS	Indian Rupees* (India, Bhutan and Nepal)	US Dollars*
❑ Managing Innovation for the New Economy: Training Manual, 2002 Volume 1: How to Guide & Quick reference materials Volume 2: Articles & Lectures	1,000.00	50.00
❑ Regional Capacity-building for the Adoption of ISO-14000 and Transfer of Environmentally Sound Technology: Training Manual, 2000	600.00	30.00
❑ Small Rural Industries in the Asia Pacific Region: Enhancement of Competitiveness of Small Rural Industries in a Liberalized Economic Environment and the Impact of Poverty Alleviation, 2000	600.00	30.00
❑ Technology Transfer and Technological Capacity-building in Asia and the Pacific		
❍ Volume 1: Big Countries and Developed Economies, 1999	600.00	30.00
❍ Volume 2: ASEAN, NIEs, SAARC and the Islamic Republic of Iran, 1999	600.00	30.00
❍ Volume 3: Least Developed and Pacific Island Countries and Economies in Transition, 1999	600.00	30.00
❍ Volume 4: Emerging Issues in Regional Technological Capability-building and Technology Transfer, 1999	600.00	30.00
❑ Rural Industrialization as a Means of Poverty Alleviation: Report of the Regional Seminar on the Enhancement of Partnerships among Governmental, Non-governmental and Private Sector Entities for the Promotion of Rural Industrialization for Poverty Alleviation, 1999	600.00	30.00
❑ Institutional Development for Investment Promotion and Technology Transfer, 1999	500.00	25.00
❑ Ozone Depletion Substances Phase-out Technologies: Problems & Issues on Technology Transfer, Absorption and Generation, 1998	300.00	15.00
❑ Development and Utilization of S&T Indicators: Emerging Issues in Developing Countries of the ESCAP Region, 1998	300.00	15.00
❑ ODS Phase-out: A Guide for Industry, 1998	500.00	25.00
❑ Proceedings of the Consultative Meeting on Technology Management Education and Training for Developing Countries, 1997	800.00	40.00

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[#] Print version supported by the Ozone Cell, Ministry of Environment & Forests, Government of India, for distribution to a select target group.

** Amount to be sent to APCTT with the order for covering costs and handling charges.*