Beijing oils, cereals meeting attracts 200+

Fats and oils' supply and demand, nutrition, functionality, quality, biotechnology, processing, and utilization were discussed in four sessions organized by AOCS members for the International Symposium on New Approaches to Functional Cereals and Oils, held Nov. 9–14, 1997, in Beijing, China.

The Chinese Cereals and Oils Association (CCOA) was the host organization, with technical programs being crafted by the three co-organizing groups: the International Association for Cereal Science and Technology, the American Association of Cereal Chemists, and the AOCS. Approximately half of the 200 persons who preregistered were from China, about 30 from the United States, and approximately ten each from Australia, Canada and Denmark. Twenty nations were listed in the attendance list. Approximately 20 persons registered too late to be recorded in the participants' list.

The five fats and oils sessions were: Nutrition and Market Situation of Oils, with Yung-Sheng (Vic) Huang of Abbott Labs Medical Nutrition Research and Development in Columbus, Ohio, and Joyce Beare-Rogers of Canada as chairpersons; Functionality and Quality of Oils, with John deMan of the University of Guelph in Guelph, Canada, and Kathleen Warner of the National Center for Agricultural Utilization Research (NCAUR) in Peoria, Illinois, as chairpersons; Biotechnology and New Sources of Oils, with Ching T. Hou of NCAUR and David J. Kyle of Martek Bioscience Corporation in Columbia, Maryland, serving as organizers/chairpersons; and Processing and Utilization of Oils (Sessions I and II) with Neil Widlak of Archer Daniels Midland, Decatur, Illinois; Anthony Chen of CW International and Associates of Half Moon Bay, California; Peter Wan of the USDA Southern Regional Research Center in New Orleans, Louisiana, and Christian Grange of Extraction DeSmet in Antwerp, Belgium, serving as session chairpersons. In addition to the five lecture sessions, a poster session with at least six displays was held. Cochairpersons for the poster session were Yusof Basiron of the Palm Oil Research Institute of Malaysia (PORIM), and Robert C. Hasten of Hastech Corporation in Lincoln, Nebraska.

The summaries for four sessions that follow were each prepared by one of the chairpersons for that session.

Nutrition and Market Situation of Oils
This portion of the report was prepared by Yung-Sheng (Vic) Huang of Ross Products Division of Abbott Labs Medical Nutrition Research and Development.

Although the session was originally scheduled to have six speakers, one speaker could not make the trip to China and another, due to unforeseen difficulties, could not deliver his presentation during this session. His presentation was rescheduled and included in the afternoon session.

David Kritchevsky of The Wistar Institute began the session with his keynote presentation on "Caloric Restriction and Cancer." He said that it was a co-organizer of the event.

He advised that increasing energy flux through exercise or reducing calorie intake could significantly reduce the incidence of tumor. The time in life at which energy restriction is instituted also affects the outcome. He concluded that a modest reduction in energy intake appears to be a simple and inexpensive approach to reduction of cancer risk in man.

In the second presentation, Joyce Beare-Rogers discussed "Nutritional Concerns of Fats and Oils." She indicated that the dietary fat intake varies significantly between one person and another, and also differs from day to day. There is a great disparity in the supply of dietary fat in different parts of the world. The international consensus for sedentary adults is that total fat should not exceed 30% of total dietary energy.
She went further to examine the role of different fats based on unsaturation. Although perceived to be atherogenic, she indicated that not all saturated fatty acids behave similarly, and cautioned that saturated fatty acids should not be extremely low in the diet during periods of rapid membrane synthesis. Monounsaturated and polyunsaturated fatty acids were both effective replacements for the hypercholesterolemic fatty acids, such as lauric and myristic acids. The levels of *trans* fatty acids in diet depend on the nature of the diet. Clinical evidence showed that *trans* monounsaturated fatty acids elevate low-density lipoprotein (LDL) and lipoprotein (a), and may lower high-density lipoprotein (HDL). At equal concentrations, *trans* fatty acid had more unfavorable effects than saturated fatty acids.

She also recommended that the intake of dietary n-6/n-3 fatty acid ratio should be between 5:1 to 10:1. As the relative positions of the three fatty acids in triacylglycerol molecules determine their metabolic fate, she believed that the tailored triacylglycerol structured fats might be useful in improving fat absorption.

In the third presentation, Yung-Sheng Huang reviewed the published biochemical and clinical effects of dietary supplementation of γ-linolenic acid (GLA). He indicated that although the mechanism by which GLA exerts its effects is still not completely understood, GLA tends to be most effective in the presence of a variety of factors (endocrine and dietary, and also progression of certain diseases) that influence the Δ6-desaturation activity. Δ6-Desaturation is the rate-limiting step in the essential fatty acid metabolism cascade for production of long-chain polyunsaturated fatty acids. Evidence exists that dietary supplementation of GLA, bypassing the impaired or ineffective Δ6-desaturation step, can alleviate essential fatty acid deficiency. Increased intake of GLA also raises the levels of dihomo-GLA, the precursor of 1-series of eicosanoids, such as PGE-1. He concluded that this process may be responsible for part of many of the beneficial effects of GLA supplementation.

B.S. Jalani of PORIM provided an excellent overview on the current and expected future (up to year 2010) global supply and demand for edible oil (to the year of 2020), oilseeds, and meal related to the 11 major oil crops (palm, palm kernel, soybean, sunflower, rapeseed, cotton, groundnut, olive, coconut, corn, and sesame).

He indicated to the audience that supply and demand will govern oil prices. With increasing production and supply of oils, the current higher prices of oilseeds and meals are likely to be modified in the coming years if demand does not at least match the same pace. However, he pointed out that over-supply of oils may not actually take place as unfavorable climate conditions may limit production. He anticipated that the vegetable oil demand will exceed production after 2010.

Function and Quality of Oils

*This report was prepared by Kathleen Warner of the U.S. Department of Agriculture's Center for Agricultural Utilization Research (USDA-NCAPUR).*

Speakers in this session discussed the requirements to produce fats and oils with high quality and good functionality.

In the functionality category, John deMan, professor emeritus at the University of Guelph in Canada, discussed functional requirements for fats and oils in food applications such as margarines and shortenings, noting that specific fatty acid and glyceride composition for such products can be designed using processing techniques such as hydrogenation, fractionation, and interesterification.

Marc Kellens of DeSmet, Belgium, expanded on this topic by discussing how the use of processes such as interesterification can be used to produce fats with low *trans* isomers or no *trans* isomers.

Teah Yau Kum of the Palm Oil Research Institute of Malaysia then discussed how the basic information from the previous two presentations could be applied by reviewing applications of interesterification to produce margarines containing palm oil.

Pernille Gerstenberg of Gerstenberg & Agger A/S of Denmark concluded the functionality portion of the program by presenting data from studies on desirable crystallization profiles needed in fats being processed for use in puff pastries.

Edward G. Campbell of Archer Daniels Midland of the United States led off the quality portion of the session by reviewing industry standards for oilseeds and oils. Kathleen Warner of the USDA-NCAPUR spoke on requirements for good-quality processed fats and oils. Oils should meet quality standards for physical characteristics such as color and moisture, for chemical characteristics such as low free fatty acid and peroxide levels, and for sensory characteristics such as bland flavor for salad oils. Specific instrumental, chemical, and sensory characteristics were recommended for these quality analyses.

Wolfgang Gueking of the Unichema International in Germany concluded the quality portion by reviewing the factors that affect the quality of hydrogenated oils, including oil pretreatment (neutralizing, bleaching), as well as catalyst type and catalyst quality. Processing conditions for partially hydrogenated oils are of primary importance because of the need to provide the level and degree of selectivity required.

Biotechnology and New Sources of Oils

*This portion of the report was prepared by C.-T. Hou of the USDA-NCAPUR.*

The AOCS Biotechnology Division-sponsored session on "Biotechnology and New Sources of Oils" was organized by Ching T. Hou, of the USDA-NCAPUR in Peoria, Illinois.

During the first half of the session, high-ranking officers from the United States, Japan, Taiwan, and Canada were invited to talk about their national agricultural biotechnological research programs. This was intended to introduce research programs of the outside world to the Chinese and to stimulate possible collaborations on research programs among Pacific Rim countries. The second half of the session consisted of papers with more specific topics. Advance contact between the speakers and the Chinese
Taiwan has limited natural resources and energy supplies. Its farmland is expected to decrease. Agriculture is a main focus of biotechnology programs in Taiwan. The upstream basic research, funded primarily by the Science Council, is carried out in Academia Sinica and universities. The midstream development research is done in the Development Center of Biotechnology, Food Industry and Development Institute, Taiwan Sugar Research Institute, Asian Vegetable Research and Development Center, and the Agricultural Experiment Stations. The major agricultural biotechnology programs at the Academia Sinica in Taiwan include (a) plant post-harvest biotechnology, (b) plant disease and insect control, (c) transgenic plants, (d) animal disease, diagnosis, and vaccine production, (e) aquacultural biotechnology, and (f) environmental and enzyme technology. There are more hogs than people on Taiwan. Many large-scale hog farms are operated by the Taiwan Sugar Company. NCAUR director Johnsen asked questions about the pollution control measures for such operations.

James K. Daun, manager of the Grain Research Laboratory of the Canada Grain Commission, talked about the “Modified Fatty Acid Profiles in Canadian Oilseeds.” Daun also is AOCS president. He gave an overview of varietal developments concerning canola, rapeseed, flax, sunflower seed, mustard seed and soybean. Canola varieties have been developed with high-oleic fatty acid and low-linolenic fatty acid contents for improved oxidative stability. Work is underway to develop varieties with high saturated fatty acids and erucic acid for specialty products. Flaxseed with low-linolenic acid content is being commercialized and is being marketed under the name of solin. Early maturing sunflower, marketed as Sunola, with high-oleic acid content also has been developed.

During the afternoon papers on specific topics, the session chairperson, Ching T. Hou, lead scientist for oil chemical research at NCAUR, spoke on “Value-Added Products from Oils and Fats Through Bio-Processes.” He stressed that it is important to convert the United States’ huge annual surplus of vegetable oils and animals fats into value-added industrial products. Production of structured lipids by lipase-catalyzed reactions for biomedical products and nutraceuticals was discussed. New yeast lipases have been identified and characterized as to their positional hydrolysis specificity. Hou devoted more of his time in describing two new compounds: dihydroxy- and trihydroxy-unsaturated fatty acids produced by biocatalysis. These compounds show some interesting antibacterial and antifungal activities. The chemical structures of these new compounds resemble those of plant self-defense substances.

David J. Kyle, president of Martek Bioskience Corporation, was unable to attend, but his paper on “New Specialty Oils: Development of DHA-rich Nutraceutical Products,” was presented by Claus C. Becker. n-3 Long-chain polyunsaturated fatty acids, such as those obtained from fish, long have been known to be healthful as brain food or good for the heart. Most of the beneficial attributes of fish oil are attributed particularly to docosahexaenoic acid (DHA). Martek has developed a DHA-rich (more than 40%) oil from a species of alga. Clinical studies have demonstrated that dietary supplementation with this oil at levels as low as 500 mg a year can lead to a significant elevation of serum DHA levels, and in the breast milk of nursing mothers. Furthermore, unlike fish oils, this oil, even at high dosage, did not result in any changes in platelet aggregation, bleeding time or suppression of immune function. Consequently, this oil represents a clean, safe, and renewable specialty oil resource for a multitude of applications with many significant advantages over fish oil, Kyle’s paper said.

Greg Allgood, section head for regulatory and clinical development at Procter & Gamble in Cincinnati, (continued on page 245)
STEP 1

Detach the peel-off label from the mailing panel (or envelope) and affix as indicated, or complete the form below. Please type or print clearly. Leave an open box between words and sets of numbers. Submit only one badge request on each form (except for companion badge). Registration and cancellation conditions apply as stated in the full-registration brochure.

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City

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Country

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STEP 2

Are you an AOCS member? [ ] Yes [ ] No

AOCS Membership Account Number

Are you attending as one of three representatives through your corporate membership? [ ] Yes [ ] No

Affiliation: [ ] Government [ ] Academe [ ] Industry [ ] Other

Please indicate your primary interest area in the AOCS (check one only):

[ ] Analytical [ ] Biotechnology [ ] Edible Applications

[ ] Feed Microscopy (AAFIM) [ ] Health and Nutrition [ ] Industrial Oil Products

[ ] Lipid Oxidation and Quality [ ] Phospholipid [ ] Processing

[ ] Protein and Co-Products [ ] Surfactants and Detergents

STEP 3

Form of Payment

All payments must be in U.S. dollars in form of bank draft drawn on a U.S. bank, international money order, wire transfer, or credit card.

[ ] My check is enclosed.

[ ] I wish to pay by wire transfer. Send bank transfers to: Account No. 104-292-0, Bank of Illinois, 100 W. University Ave., Champaign, IL 61820 USA. Reference: AM98 and registrant’s name

[ ] I wish to pay by credit card. [ ] American Express [ ] Visa [ ] MasterCard

Mail completed form with full payment to AOCS, 1608 Broadmoor Dr., P.O. Box 3489, Champaign, IL 61826-3489 USA, or fax (both pages) to 1-217-351-8091.

Don’t forget to send your hotel form to the appropriate hotel.

Please attach a description of any special requirements you may have (i.e., special meals, sight impaired, disabled, hearing impaired, etc.).

By my signature, I agree to abide by all rules and conditions outlined in the Registration and Cancellation Policies, including the General Conditions. Copies of the policies and conditions are available upon request.

[ ] Signature

If you have not registered by mail or fax by April 24, 1998, you must register on site.

Complete both sides of this form.
**TECHNICAL REGISTRATION**
(Includes technical sessions, Expo, Opening Mixer, and Awards Breakfast)

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**NONTECHNICAL REGISTRATION** *(does not include admission to technical sessions)*

Tickets for the Opening Mixer and Awards Breakfast may be purchased on site.

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**SATURDAY, MAY 9**

- 8th Annual Jim Lyon Classic Golf Tournament | 150 | 160 | $ |
- Saturday Night Shuttle | 10 | 10 | $ |

**MONDAY, MAY 11**

- 14th Annual Fat People's Fun Run and Walk | 20 | 30 | $ |
- Industrial Oil Products Division Luncheon and Meeting | 20 | 30 | $ |
- Lipid Oxidation and Quality Division Luncheon and Meeting | 25 | 35 | $ |
- Phospholipid Division Luncheon and Meeting | 25 | 35 | $ |
- Latin American Section Luncheon and Meeting | 25 | 35 | $ |
- Spirit of Chicago | 65 | 75 | $ |
- Second City Show | 35 | 45 | $ |
- Pub Crawl: Jazz and Blues Chicago Style | 60 | 70 | $ |

**TUESDAY, MAY 12**

- Edible Applications Division Luncheon and Meeting | 25 | 35 | $ |
- Health and Nutrition Division Luncheon and Meeting | 25 | 35 | $ |
- Processing Division Luncheon and Meeting | 25 | 35 | $ |
- Surfactants and Detergents Division Luncheon and Meeting | 25 | 35 | $ |
- Biotechnology Division Dinner and Meeting | 35 | 45 | $ |
- Feed Microscopy (AAFM) Division Dinner and Meeting | 35 | 45 | $ |
- Protein and Co-Products Division Dinner and Meeting | 35 | 45 | $ |

**WEDNESDAY, MAY 13**

- Canadian Section Breakfast and Meeting | 20 | 30 | $ |
- European Section Breakfast and Meeting | 20 | 30 | $ |
- Analytical Division Luncheon and Meeting | 25 | 35 | $ |
- Annual Meeting Banquet | 75 | 85 | $ |

**BASIC COMPANION REGISTRATION**

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**STEP 5**

Complete both sides of this form.
Ohio, presented a paper on “Reduced Calorie Fats: Safety and Role in the Diet of the New Fat Replacer Olestra.” Olestra is heat-stable so it is particularly suited to making fried foods such as savory snacks. Olestra is made from two common foods, table sugar and vegetable oil. Its structure is analogous to a triglyceride molecule, with a sucrose core instead of a glycerol backbone, and with six to eight fatty acid side chains attached to the sucrose core. Unlike triglycerides, olestra is not digested or absorbed in the gastrointestinal tract, nor is it metabolized by colonic microflora. Sensory studies of food prepared with olestra and triglycerides with the same fatty acid compositions show no significant differences in perceived flavor or texture. The safety of olestra has been established in a large number of short-term and long-term animal studies, and confirmed in controlled human studies. Olestra was approved in January 1996 by the U.S. Food and Drug Administration as a replacement for traditional dietary fats in savory snacks.

Oilseeds Processing and Utilization I
This summary was provided by Neil Widlok of Archer Daniels Midland. Kathy Warner of NCAUR opened the session with an overview of the significant contributions to oil processing performed by the USDA post-harvest utilization research center in Peoria, Illinois. Early USDA research was directed toward solving the flavor problems of soybean oil in order to make soybean oil suitable for salad oils, frying fats, margarines, and shortenings. Scientists showed that citric acid as a processing adjunct markedly improved the flavor stability of soybean oil by functioning as a metal chelating agent. As little as 0.1 parts per million (ppm) iron or 0.01 ppm copper adversely affected the flavor stability of soybean oil.

Dutton and co-workers confirmed that flavor deterioration is an oxidative phenomenon. As a result the practice of hydrogenating oils to reduce the polyunsaturated fatty acids, which are more sensitive to oxidation, has become a common practice today. The processing industry also responded by introducing vacuum bleaching and use of hermetic centrifuges. The Peoria facility also demonstrated the efficacy of packaging oil in a nitrogen atmosphere as well as using brown glass, or polyvinyl chloride or acrylonitrile containers, which are better than clear glass in protecting against oxidation.

USDA scientists also demonstrated oils can be extracted using supercritical carbon dioxide as an alternative to hexane extraction. Since phospholipids are essentially insoluble in supercritical carbon dioxide, this process appears well-suited for preparing feedstocks for physical or steam refining.

USDA scientists also showed that pretreatment of crude soybean oil with 0.2% phosphoric acid followed by water degumming produces a feedstock suitable for adsorbent bleaching and subsequent deacidification-deodorization.

USDA researchers demonstrated the importance of minimizing the formation of nonhydrolabile phospholipids by inactivating phospholipase D activity prior to processing, by controlling moisture of soy flakes entering the extraction process, and by avoiding excessive heat.

USDA scientists also developed low-trans soft margarines by interesterifying 80 parts soybean oil with 20 parts soybean trisaturates. Shortening base stocks suitable for blending with liquid oil can be prepared by interesterification of palm oil with soybean hard stocks.

Other research on genetically modified oils has focused on reducing the linolenic acid content in soybeans to 2% from 7-8%, yielding an oil with flavor stability equivalent to that of partially hydrogenated oils. Saturates in some genetically modified soybean oils have been increased to 40%.

Robert Hasten, of the Hastech Corporation, provided an overview on the past, present, and future of the hydrogenation process. Following World War II, hydrogenation became more popular as the preferred method of changing the physical characteristics of soybean oil to replace butter and animal fats.

While the basic batch process of hydrogenating oils has not changed...
AOCS–OTA International Conference and Exhibition on Oilseed and Edible Oil Processing

February 19–21, 1999
Hotel Le-Meridien, Windsor Place, Janpath
New Delhi, India

The 1999 AOCS–OTA International Conference and exhibition will provide an excellent opportunity for interaction among professionals working in oils/fats industry and research.

Theme: Progress through technology

The scheduled technical symposia include:

- World oil scenario
- Storage and handling of oilseeds and oils
- Oil extraction
- Processing of oils, degumming, refining, bleaching, deodorization, etc.
- Speciality fats
- Biotechnology and bioengineering
- Lipid oxidation
- Health and nutrition
- Proteins and co-products
- By-product recovery in oil processing
- Oil loss management
- Energy conservation
- Environment and pollution control
- Analytical
- Hydrogenation

Exhibition

This meeting also will include approximately 50–60 exhibits.

For further information about the 1999 AOCS–OTA International Conference and Exhibition, please contact:

Organizing Secretary
AOCS–OTA International Conference and Exhibition
Siel Foods & Fertilizer Industries
15 Shivaji Marg
New Delhi 110015, India
Telephone: 011-91-11-510-0190
Fax: 011-91-11-687-9300

Call for Papers

The Technical Program Planning Committee for AOCS–OTA International Conference and Exhibition to be held February 19–21, 1999, in New Delhi, India, is accepting titles for papers to be presented during the conference. Persons wishing to present papers should submit the abstract form giving title, author(s), presenter, Division and Session information for appropriate slotting at the conference. Papers are to be of 20 minutes' duration. Please indicate whether the presentation will be a traditional slide-and-lecture format or a poster presentation. Since there will be limited time for lectures, poster presentations are encouraged. Persons whose abstracts are accepted will be notified by October 15, 1998, by the Technical Program Chairperson. Mail the completed abstract form by August 15, 1998, to Technical Program Chairperson, AOCS–OTA International Conference and Exhibition, Oil Technologists' Association of India, c/o Siel Foods & Fertilizer Industries, 15 Shivaji Marg, New Delhi 110015, India.

Definition of an Acceptable Abstract

Abstracts must be typed, double-spaced, and limited to the space provided on the abstract form. The abstract should include the full title. Original research abstracts should be informative and should include the following information:

Statement of thesis, why the study is important, what was done to test the thesis, how the research work was structured, and the results. A statement such as "results will be presented" is not acceptable.

Abstract Review Procedure

The abstract will be reviewed by the Technical Program Committee. Incomplete abstracts will be returned to the author for corrections and resubmission if time permits. The Technical Program Committee reserves the right to edit abstracts.

Publication Rights

OTAJ reserves first publication rights on all papers delivered at the conference. A release from OTA must be obtained by authors wishing to publish elsewhere. The submission of a paper to another publication before scheduled presentation can cause cancellation.

Delivery Time

The delivery time for the paper is 20 minutes including discussion, questions, and answers.

Equipment and Facilities

A 35-mm slide projector and overhead projector will be available without request. Please advise the organizing secretary if you will require any additional equipment.

Poster Presentation

Space will be available for the display of poster papers for authors who would like this opportunity for more personal interaction with interested parties. The poster presenter is responsible for setup and takedown. Those interested in this means of presentation should check the "yes" box beside "poster session."

Deadline

The deadline for the abstract and the poster paper for the AOCS–OTA International Conference and Exhibition is August 15, 1998.
Due Date: August 15, 1998

February 19–21, 1999
Hotel Le-Meridien, Windsor Place, Janpath
New Delhi, India

Title:

Author(s):
(List principal author first; underline presenter’s name if different from principal author.)

Company(ies)/Institution(s):

Address(es):

Abstract:

Please check the category to which your paper best relates:

- World oil scenario
- Storage and handling of oilseeds and oils
- Oil extraction
- Processing of oils, degumming, refining, bleaching, deodorization, etc.
- Speciality fats
- Biotechnology and bioengineering
- Lipid oxidation
- Health and nutrition
- Proteins and co-products
- By-product recovery in oil processing
- Oil loss management
- Energy conservation
- Environment and pollution control
- Analytical
- Hydrogenation

For use by Technical Chairperson only.

☐ Acceptable
☐ Not acceptable

Note: It is necessary for the speaker presenting the paper to register for the seminar.
50 years, Hastert said the following technical achievements have contributed to significant improvement in productivity: (a) heat transfer and energy conservation, leading to reduction in load and discharge times; (b) impeller design optimization, improving gas dispersion; and (c) improvements in catalyst activity, selectivity, filterability, and uniformity.

In the future, in-process refractive index instruments will provide improvements in process control and productivity. Advances in fixed-bed precious metal catalysts will make it possible to hydrogenate at lower temperatures, compared to standard nickel catalysts, 50–80°C versus 150–200°C, an obvious energy conservation advantage.

Hastert also reviewed several papers presented at the 1997 AOCS Annual Meeting & Expo, that were proposing more radical approaches to hydrogenation.

Werner Zschau, of Sud-Chemie AG, provided an overview on the principle and practice of bleaching technologies. The primary effects of bleaching clay were identified as: (a) acidic effect—removes phospholipids, chlorophyll, and soaps; raises free fatty acid contents; (b) catalytic effect—increases conjugation, reduces color bodies, increases trans, decreases peroxides, increases ketones and aldehydes; (c) ion exchange effect—reduces phospholipids, soaps, and trace metals; and (d) adsorption effect—reduces phospholipids, chlorophyll, carotenes, and free fatty acids.

Oxygen should be avoided during bleaching to avoid oxidizing the oil and developing color bodies.

In the physical refining of palm oil, the bleaching step is used to remove trace metals, excess phosphoric acid, oxidation products, and some of the carotenes. High-quality crude palm oil may require as little as 0.5–0.8% highly active bleaching clay, while poor-quality palm oil may require as much as 3%.

Crude palm with a high amount of nonhydratable phospholipids can be treated using a two-step bleaching process. The first step is a wet bleaching that involves the addition of 1.5% water. Care must be taken to control temperatures and contact time to avoid damaging the oil.

Rapeseed usually contains more chlorophyll than other oils and thus requires more highly active bleaching clays and higher temperatures.

Because soybean oil contains a high level of unsaturated fatty acids, crude soybean oil must be protected from oxidation to avoid developing oxidized color bodies that are extremely difficult to remove.

Lennart Klasson, of Alfa Laval Separation AB, provided a paper on the experiences with SoftColumn deodorization technology. Such deodorization utilizes a packed column, allowing for lower deodorization temperature and longer retention times without a decrease in production. A 250-tons-per-day unit was reported to have a stripping steam consumption below 0.5% to oil flow, and total heat recovery above 85%. Lower deodorization temperatures also reduce formation of trans isomers.

Neil Widlak, of Archer Daniels Midland, provided an overview of the production and application of lipid-based emulsifiers used in the food industry. The functional properties of the lipid-based emulsifiers are related to the liquid crystalline properties which are influenced by the chemistry of the hydrophilic and lipophilic portions of the emulsifier molecules. All lipid-based emulsifiers use fatty acids as the lipophilic portion of the emulsifier molecule.

It was demonstrated that fatty acid chemistry influences the melting properties and therefore the functional properties of an emulsifier. Since the application of an emulsifier is based upon its functional properties, fatty acid chemistry is important in selecting or designing an emulsifier system. The manufacture and application of monoglycerides and lecithin were provided in greater detail. The advantage of using co-emulsifier systems to enhance functionality was also reviewed.

Andrew Ng Kok-Liang, of Eastman Chemical AP Pte. Ltd., provided a paper on the effectiveness of different antioxidants in frying applications. The effects of BHT, BHA, TBHQ and water-dispersible BHT on the stability of fried potato chips and instant wheat noodles were accessed using an accelerated shelf-life test and Totox values. It was demonstrated that chips fried in palm oil with 25 ppm TBHQ provided equivalent oxidative stability to chips fried in palm oil with 200 ppm of either BHA or BHT. In instant noodles, TBHQ was better at maintaining a lower Totox value in canola and palm olein frying oils and providing longer shelf life than a synergistic combination of BHT and BHA. The addition of water-dispersible BHT directly into the dough did not prove to be as effective as TBHQ added directly to the frying oils.

Peter Lapinsikas, of Scotia Pharmaceutical Ltd., provided a paper on the production and marketing of γ-linolenic acid (GLA)-containing oils. The largest source of GLA is the seed oil of the evening primrose. Commercial crop production began in 1970 in Western nations, and in 1980 in China. By 1993 China had become the world’s dominant supplier, and now accounts for approximately 90% of the world evening primrose seed production. Cold-press extraction of the oil is practiced in China whereas the Western countries generally use solvent extraction methods.

Other sources of GLA oils were identified as borage seed oil, blackcurrant seed oil, and from a number of fungi that can be grown in fermentation tanks. Although all of these oils contain GLA, the oils may have different physiological effects unrelated to the oil.

Oilseeds Processing and Utilization II

This summary was provided by Peter Wan of the USDA's Southern Regional Research Center.

Cocoa, the host organization, asked AOCS to develop one additional concurrent technical presentation session. After reviewing the program already in place, it became apparent that the processing of oilseeds and the utilization of oilseed by-products should be added to complete the AOCS techni-
The 5th AOCS session: Oilseeds Processing and Utilization, with Christian Grange, of DeSmet, Belgium, and Peter Wan, offered papers on seven topics. It was held on Thursday morning, November 13, 1997, and was well attended.

In his opening talk, "Processing Technology of Oilseeds from Past until Now," Maurice Williams, of Anderson International in the United States, reviewed historical practices and outlined the state of the art about oilseed preparation prior to the extraction process itself. Peter Wan, of the USDA's Southern Regional Research Center, then discussed "Extraction Solvents for Oilseeds," surveying the extraction solvents that have been studied and commercially used. Due to the regulatory pressure, commercial hexane is likely be replaced by isohexane in the near term, he said. Other potentially effective extraction solvents, such as liquefied gases, were also mentioned.

"Current Developments in Oil Refining Technology" was the topic for Marc Kellens, of DeSmet, Belgium, who updated oil-refining technology and hardware. Miscella refining and physical refining were emphasized.

After a tea break, Ren Tian, of Nutrition Technology Corporation in the United States, described "Processing and Utilization of Rice Bran," covering his firm's commercial experience in utilizing and processing rice bran in the United States. The first nutraceutical product derived from rice bran was introduced by the Nutrition Technology Corporation during the summer of 1997. More value-added products are being developed.

"Oilseed Meals as Animal Feed" was the topic for Robert L. Stroup, of French Oil Mill Machinery Company in the United States. He gave an interesting summary about the oilseed meals used as feed protein. His description of a magic formula for chicken attracted unusual attention from the audience.

C.Y. Wang, of South Dakota State University in the United States, delivered the final two talks of the session. In his paper on "Oilseed Protein: Chemistry, Nutrition, Processing for Edible Applications," he echoed Stroup's remarks on the present status of utilizing oilseed protein for human consumption, which is an important topic in China, the world's most populous nation.

In his second presentation, "Phytochemicals in Oilseeds and Their Potential Health Benefits," which he coauthored with Ali Mohammad, Wang noted that the subject of phytochemicals in or derived from oilseeds has been a hot topic in the Western nations. The health benefits of phytochemicals in oilseed meals make the utilization of oilseed proteins even more attractive.

Bai Meiquing, president of the host organization CCOA, closed the meeting by noting that the "participants from China and abroad have had a candid exchange of views on developing cereals and oils, resources, nutrition, processing, and other topics. "We are so delighted to say the symposium (was) a great success."

Opening comments were made by Zhang Ze, secretary general of the China Association of Science and Technology (CAST), who noted the Chinese were hoping the symposium would lead to improved utilization of China's cereal and oil-bearing crops.

Oil palm conference to be held in Indonesia

Indonesia has organized the 1998 International Oil Palm Conference to mark the 150th anniversary of the introduction of oil palm into that nation. The Indonesian Palm Oil Research Institute and the Indonesian Palm Oil Producers Association are the primary sponsors/organizers.

The conference will be held Sept. 23-25 at the Sheraton Nusa Indah Hotel, Nusa Dua, Bali, Indonesia.

Economic, marketing, nutritional, processing, and agronomic topics will be covered during the event, which will include an accompanying exhibition.

Persons interested in attending or presenting a paper should contact the Conference Secretariat, c/o Indonesia Oil Palm Research Institute, Jl. Brigien Katamso No. 51; Medan 20158, Indonesia (phone: 62-61-762522; fax: 62-61-762488; e-mail: iopri@idola.net.id).