New York Local Section Meeting:

Biodiesel Arrives in Brooklyn

With crude oil consistently selling for over $70/bbl in the global marketplace, many are searching for cheaper alternative fuels. One such possible energy source is biodiesel, a fast-growing and green subdivision of the biofuels market. Biodiesel is a clean-burning fuel that is produced from domestic renewable resources, *e.g.*, leftover cooking grease. Speaking on this subject, Christopher Frank, Tri-State Biodiesel's chief technology officer, introduced his company's designs at the New York local section meeting on June 19, 2007. Based in New York, Tri-State Biodiesel uses three trucks to collect local restaurant grease — specifically "above floor" restaurant oils — free-of-charge from over 600 eateries in Manhattan, Brooklyn and Queens.

Since the capacity of the company's recycling program is still in its pilot phase, collected grease must be shipped out of state to be processed, recycled, and turned into a biodiesel blend suitable for use in a typical diesel engine. Common blends include B5 (5% biodiesel, 95% petrodiesel), B20 (20% biodiesel, 80% petrodiesel) and B100 (100% biodiesel).

The combustion of B100 is the cleanest of all automotive fuels, releasing even less greenhouse gases than electric cars. Since B100 releases no aromatics or sulfur, its use reduces these gas emissions by 100% when compared to regular petrodiesel or any blended fuel. However, in cold weather, B100 has a tendency to become more viscous and resistant to flow. But because of its green potential, distributors of alternative fuels often will use additives to ameliorate the issue.

Tri-State Biodiesel aims to expand its production capacity with a new plant to be completed next year. "After gaining the required permits, we expect to break ground mid-summer of 2007," says Frank. Located on the waterfront area of the Red Hook section of Brooklyn, the facility is projected to produce 3 million gal/yr of ASTM D 6751-07-compliant fuel. "Given an 86% conversion rate for the process, this translates into 3.5 mil gal of waste oil taken out of wastewater and landfills each year," notes Frank. The company also intends to expand its collection fleet to six vehicles and buy from other waste collectors to meet the new plant's capacity. Focusing primarily on the purest product blend, the company anticipates B100 production to cost $0.85/gal, which takes into account a $0.50/gal government subsidy. "Retail prices for our B100 product will be competitive with petrodiesel retail prices," says Frank.

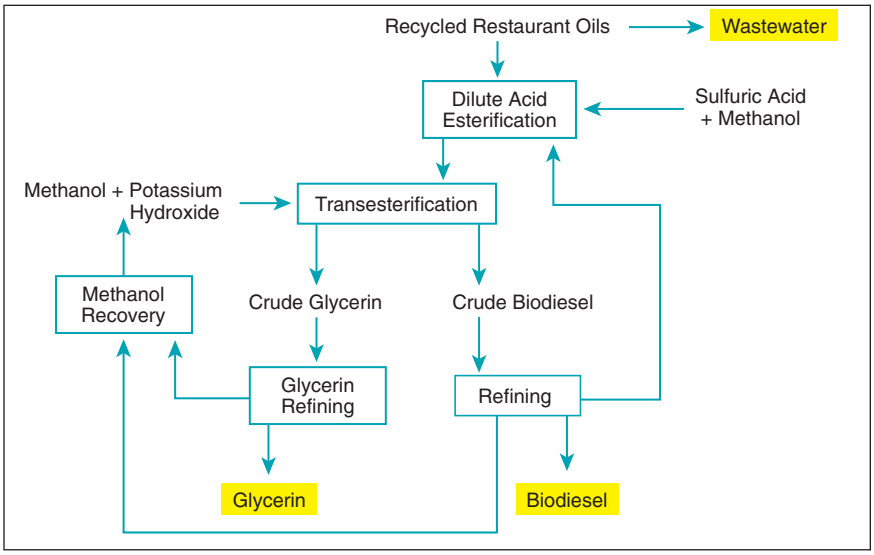

Figure. Shown above is Tri-State Biodiesel's flowsheet to biodiesel production with a glycerin byproduct.

The plant's process turnaround time is expected to be eight hours. Starting with recycled restaurant oils, the system separates oil from wastewater and what is left is added to sulfuric acid and methanol during the dilute acid esterification phase. This leads to transesterification, or the process of converting a triglyceride from vegetable oil to a fatty acid methyl/ethyl ester. From this, the plant takes two tracks. One produces crude biodiesel directly, whereas the other makes crude glycerin by adding methanol and potassium oxide. Both crude products require refining, the remains of which can be placed back into the process to create more glycerin and biodiesel, as shown in the figure.

Why Red Hook?

Beyond its location on the East River waterfront with easy access to barges, the area is one of the many Empire Zones found across New York State. These areas are designated as such to entice companies either to move to New York or to expand their current operations, as long as the plans encourage overall economic development.

During the question-and-answer portion of the local section meeting, Frank was asked whether the new construction would release odorous emissions that would make the neighborhood smell like restaurant exhaust. "Our program is designed in such a way as to eliminate the unfortunate olfactory issues that many falsely associate with the biodiesel industry," replied Frank. As such, the community has been supportive, noting both the positive environmental impact and the economic benefits it will bring to Red Hook.

Robert Langer Honored with the National Medal of Science

Robert S. Langer, the Institute Professor at the Massachusetts Institute of Technology, is the 2006 recipient of the National Medal of Science. This award honors individuals for pioneering scientific research in a range of fields, including physical, biological, mathematical, social, behavioral, and engineering sciences, that enhances the understanding of the world and leads to innovations and technologies that give the U.S. its global economic edge. The National Science Foundation administers the award, which was established by Congress in 1959 (www.nsf.gov/nsb/awards/nms/medal.htm).

Langer is renowned for his revolutionary work on new and different ways to administer drugs to cancer patients. At MIT, he runs the largest biomedical engineering lab in the world. He holds more than 550 issued and pending patents and has written some 900 research papers.

Langer's achievements have had a profound impact on the field of cancer research. His accomplishments are also unique in that he entered the field with a PhD in chemical engineering, when he teamed with cancer researcher Judah Folkman at the Children's Hospital in Boston in 1974. At that time, the scientific community believed that only small molecules could pass through a plastic delivery system in a controlled manner.

In the 1970s, Langer developed polymer materials that allowed large molecules of protein to pass through membranes in a controlled manner to inhibit angiogenesis, the process by which tumors recruit blood vessels. Blocking angiogenesis is critical in fighting cancer, because the new blood vessels allow tumor cells to escape into the circulation and lodge in other organs.

Langer was the 2002 AIChE Institute Lecturer and was the recipient of the Society for Biological Engineering's 2006 James E. Bailey Award.

AIChE BOARD ELECTIONS: VOTING UNDERWAY

Over the last two months, *CEP* has featured position statements and bios for president-elect, treasurer and director candidates for the 2008 election. This information is available on the web at http://www.aiche.org/election/. Paper ballots will be mailed on August 20 to all fellows, senior members and members. Members can choose to vote by paper ballot or by electronic proxy. Members can cast one vote only.

We are pleased to again offer electronic proxy* during this year's election. Electronic proxy will be available August 20 through September 24. To use this electronic submission instead of a paper ballot, on or after August 20, visit http://www.cssconsult.com/elections/AIChE2008/. Your membership number will serve as your personal identification number. The same rigorous standards guarding your privacy will be applied to both paper ballots and electronic proxies. All paper ballots and electronic proxies must be received by September 24, 2007.

Election results will be announced at the AIChE Annual Meeting in Salt Lake City, UT, and in the December issue of *CEP*. If you have any questions on the election, please e-mail election@aiche.org.

*Electronic Proxy Ballot — Under New York law, a member can vote a proxy by electronic means. A proxy is a limited power of attorney affirmatively given to another person or persons to act in his or her stead. You will authorize President Evans and Secretary Love to vote on your behalf for the indicated candidates.

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WILEY

AIChE AND WILEY EXTEND PUBLISHING PARTNERSHIP

In July, AIChE and John Wiley & Sons, Inc., renewed and extended their agreement for publication of the Institute's flagship journals — *AIChE Journal*, *Environmental Progress* and *Process Safety Progress*. The agreement extends the AIChE-Wiley publishing partnership through 2017.

"Our members are very satisifed with the improved timeliness and impact of our publications," said Steve Smith, AIChE's director of technical activities and publications. Furthermore, "working with Wiley, we've launched initiatives that would have been difficult for us, as a small society publisher, to accomplish on our own. We have enhanced online features and a complete digital archive — all accompanied by stronger financial performance," Smith noted.

"We look forward to continuing our partnership with AIChE in the publication and dissemination of essential research in chemical engineering," said Jon Glover, Wiley's associate publisher, physical sciences journals.

Wiley and AIChE also signed a separate agreement in March 2005 to jointly publish books under a new, co-branded imprint. Per the agreement, Wiley and AIChE co-publish 10–15 books a year in the broad field of chemical engineering, including books in process safety and emerging technological areas, such as biological engineering and sustainability.

Idaho/Montana Local Section Scholarships:

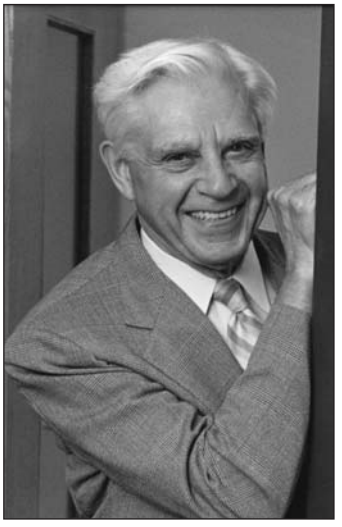
A Bright Future in Chemical Engineering

Kelsey Feige (left) of Idaho Falls, ID, and Hilary Fabich (right) of Livingston, MT, are the 2007 recipients of $500 scholarships offered by the Idaho/Montana local section for high school graduates who plan to enroll in chemical engineering. Feige will be attending the South Dakota School of Mines and Technology, while Fabich will be attending Montana State Univ.

In addition to exemplary academic records, both winners have excelled in other activities. Feige is an accomplished dancer and has tutored students in math at the middle school level. Fabich is an accomplished pianist and flutist, and has worked on numerous projects supporting young people.

In Memoriam — Otto H. York (1910–2007)

On July 12, Otto H. York passed away at his home in Madison, NJ. He was 96. An AIChE Fellow and member of the AIChE Foundation Board of Trustees, York earned a bachelor's degree in chemical engineering from Purdue Univ. (West Lafayette, IN) in 1934. With a $1,000 loan, York formed the Otto H. York Co. in 1947. The company developed and marketed Demister, a device made of knitted wire mesh pads used in the chemical and petroleum industries to improve the performance of process vessels. The pads remove mist from any gas stream and are fitted into evaporators, columns, towers, pressure vessels and scrubbers. The device revolutionized the field of gas-and-liquid separation in the chemical processing industries. York eventually sold the firm to the Foster Wheeler Corp.



York also managed the York Foundation, which provides money to charities, community organizations and to environmental and chemical engineering research enterprises. In particular, York was a longtime benefactor to the New Jersey Institute of Technology (NJIT; Newark). He gave a number of gifts to the university and served on the Trustees' Advisory Committee to the Dept. of Chemical Engineering, Chemistry and Environmental Science. In 1991, he pledged a gift of $1 million to be used for facility improvements. NJIT dedicated the Otto H. York Center for Environmental Engineering and Science in his honor in 1989. The center houses the largest university-based hazardous waste management research program in the nation.

In 2002, York pledged another $1 million to the NJIT chemical engineering department. The endowment fund is used to establish scholarships to attract outstanding students to its chemical engineering department, as well as to support faculty research. In September 2002, the department was renamed the Otto H. York Dept. of Chemical Engineering.

He is survived by: a son, Michael O.; a daughter, Myrth; and five grandchildren, Neath Pal, Nyssa York Green, Caleb York Green, Chloe Myrth Dunscombe and Nathaniel John Pyke.

AIChE Conference Calendar

For information and registration details, visit www.aiche.org/conferences or call Customer Service at 1-800-242-4363 or 1-203-702-7660 (outside the U.S.)

2007 Ammonia Conference
September 16–20 • Loews Lake Las Vegas • Henderson, NV

2007 AIChE Annual Meeting
November 4–9 • Salt Palace Convention Center • Salt Lake City, UT

2008 SBE's International Conference on Stem Cell Engineering
January 20–23, 2008 • Coronado Island Marriott Resort • Coronado, CA

2008 Spring National Meeting
April 6–10, 2008 • Ernest N. Morial Convention Center • New Orleans, LA

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