

chemicals

A photograph of laboratory glassware, including three Erlenmeyer flasks and two beakers, all containing a green liquid. The glassware is arranged in a row, with the flasks on the left and the beakers on the right.

Chemicals

— Industry of the Future

A stylized graphic of a molecular structure, consisting of several overlapping circles in shades of green and white, arranged in a way that suggests a complex chemical or biological structure.

Industrial
Partnerships:
Advancing
Energy and
Environmental
Goals



Office of Energy Efficiency and Renewable Energy
U.S. Department of Energy

Office of Industrial Technologies





Industry collaboration

More diverse than any other in the United States, the chemical industry as a whole faces challenges to advance R&D, maintain global competitiveness, and improve energy and environmental performance. The chemical industry is meeting these challenges through collaboration with the U.S. Department of Energy's Office of Industrial Technologies (OIT).

The OIT-chemical industry partnerships provide an opportunity for people from many different organizations to discuss priority research needs that are important to the future of the industry.

—Earl R. Beaver, *Chief Technical Officer, Bridges to Sustainability*

In 1997, U.S. chemical industry leaders and OIT agreed to align resources to meet the industry's long-term R&D goals. Guided by its vision for the future and critical R&D needs defined in its roadmaps, the chemical industry established the Chemical Industry Vision2020 Technology Partnership (Chemical Vision2020). Chemical Vision2020 is assisting OIT in determining how best to match industry's priority research activities with national goals.

Chemical Vision2020 includes leaders from major U.S. chemical companies and the industry's key trade organizations—the American Chemical Society, the American Institute of Chemical Engineers, and the Council for Chemical Research. Chemical Vision2020 is helping OIT's Chemicals Industry of the Future Team evaluate the chemical R&D portfolio and is coordinating the implementation of industry activities. These efforts will set the pace for the industry to balance research, business, and environmental goals.

Successful alliances

Partnerships with OIT have led to over 100 successful projects for the chemical industry, valued at \$145 million. Support from OIT allows industry partners to move ahead with scientific discovery and innovation that are key to sustainability.

The Multi-phase Fluid Dynamics Research Consortium (MFDRC) demonstrates chemical industry partnerships in action. This unique alliance of 21 partners, including leading chemical companies, an energy equipment manufacturer, a computer manufacturer, national labs, and universities, has joined forces to develop accurate modeling of gas-solid transport—computing or simulating the flow of solid particles in a flowing gas stream, such as air. Improved computational

What's working

Through Chemical Vision2020, the chemical industry is gaining the momentum needed to advance long-term goals and achieve sustainability for the future. This industry-led process provides:

- **A venue for strategic thinking about the future of the industry.** Chemical Vision2020 gives the industry a single voice, but with broad industry representation, to discuss, clarify, and solidify the direction of the OIT-chemical industry partnership. This diverse and experienced group provides valuable feedback to OIT about effective ways to interact with industry. At the same time, they are working to expand awareness among technology leaders about Chemical Vision2020.
- **A structure to implement partnerships.** Housed under the Council for Chemical Research, Chemical Vision2020 serves as a formal structure to coordinate activities, evaluate progress, and develop funding sources. The new organization will accelerate industry-wide involvement, which will allow research partnerships and networks to take shape.
- **A relevant approach for today's competitive environment.** Future growth, profitability, and competitiveness require new technology; however, the costs and risks of long-term, complex R&D may exceed an individual company's capabilities. Chemical Vision2020 partnerships accelerate innovation of critical enabling technologies by encouraging the chemical industry to leverage technical expertise and financial resources.

fluid dynamics tools could substantially improve industrial efficiencies.

The MFDRC combines research and technology development to advance the state of the art of scientific tools and methods upon which the chemical industry depends. “This is a capability building effort,” explains Tyler Thompson, Research Partnership Leader for Dow Chemical. “It has clear and proven applicability to industrial problems, but it is impossible or inappropriate for a single company to develop these tools alone.”

Since 1998, OIT has supported the effort with \$1.4 million in annual funding. By working in partnership with OIT, the MFDRC has advanced technology development by 5 to 10 years. The work accomplished through this successful collaboration will yield benefits across the chemical industry.

- **Collaboration of diverse players with common goals.** Strong leadership that recognizes the industry’s varied interests will help focus efforts on wide-ranging technology applications—those that significantly impact the entire industry. On the horizon are industry “challenges” and “consortiums”—industry-led partnerships that will solicit innovative solutions to key chemical industry needs.

Partnering benefits

Partnerships facilitate technological advances, which in turn, meet societal demands for chemical-based products and address our national goals for energy and environmental quality. Chemical companies who take part in Chemical Vision2020 partnerships are:

- Forming technology teams and networks to leverage government funds and access to top scientific expertise and facilities.
- Gaining a competitive edge by building on technical developments that lead to private innovation and commercialization of technologies.
- Helping to guide technology development that promotes sustainable growth for the industry.
- Enhancing public perception of the chemical industry by demonstrating a commitment to energy savings and environmental performance.

How to participate

Innovative technology is the key to long-term competitiveness in the business of chemistry, and by working in partnership, chemical companies advance innovation. In addition, individual companies can achieve near-term successes by taking steps to improve processes in the normal course of production.

The Chemical Vision2020 Challenge is a new opportunity to get involved. Chemical Vision2020 roadmaps identify R&D priorities in precompetitive areas where breakthroughs could have a broad impact throughout the chemical industry. To foster innovative problem-solving in these key areas, Chemical Vision2020 proposes an industry-led R&D competition to be co-funded by industry and OIT. Chemical companies, individuals, national laboratories, and universities, and others would work in partnership to propose solutions and be eligible for financial awards. By pooling resources, Chemical Vision2020 can create an enticing incentive for innovation. Learn more about Chemical Vision2020 by visiting www.chemicalvision2020.org and get ready to take this challenge.

If you would like to know more about partnering with OIT, contact Paul Scheihing, OIT Chemicals Team Leader (paul.scheihing@ee.doe.gov, or 202-586-7234), or get involved by:

- Taking advantage of a wide range of resources available through OIT. Learn how OIT facilitates industry partnerships and keeps you up-to-date on the latest technical information, industry-related news, and important solicitation announcements. Visit the OIT Web site at www.oit.doe.gov.
- Saving energy, reducing costs, and improving environmental performance in your plant today by participating in OIT's BestPractices. Visit www.oit.doe.gov/bestpractices/.





For more information on the Chemicals Industry of the Future, contact the OIT Clearinghouse at (800) 862-2086 or visit www.oit.doe.gov/chemicals/

Please send any comments, questions, or suggestions to webmaster.oit@ee.doe.gov

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