What's New 化學中心 綠色/永續化學網站

http://www.sinica.edu.tw/chem/gc/

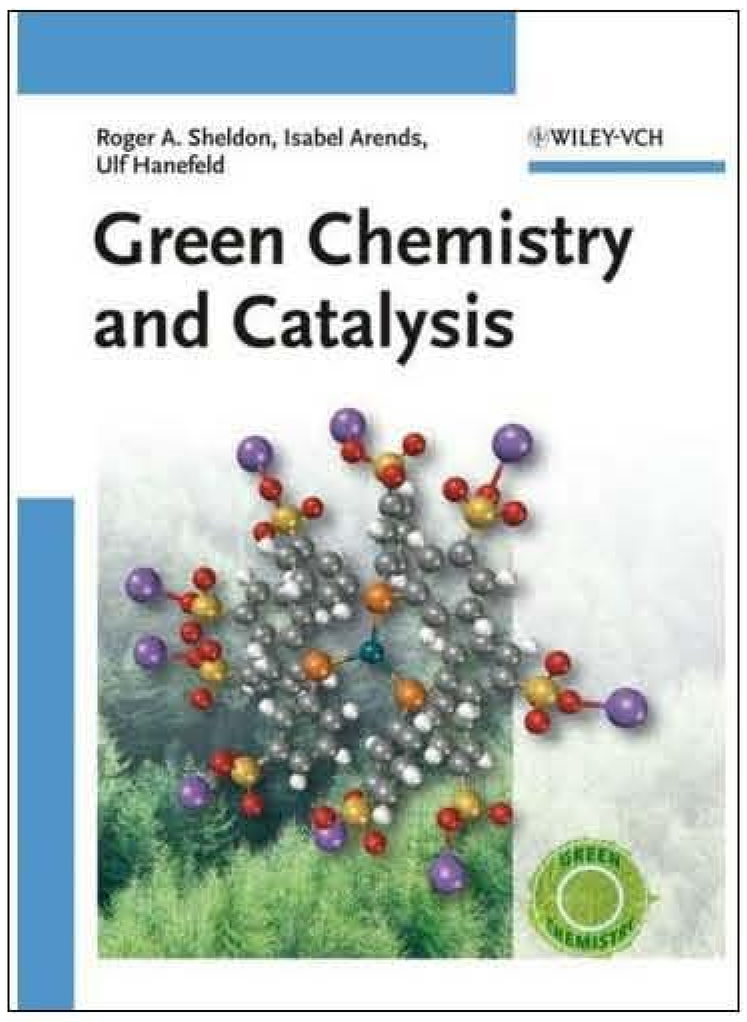
New Sections

Bioenergy

Biodiesel

Journal of Chemical Education
February 2007 Vol. 84 No. 2
一本綠色化學的特刊。

The first book to focus on catalytic processes from the viewpoint of green chemistry presents all the important aspects. Written by Roger A. Sheldon and his co-workers



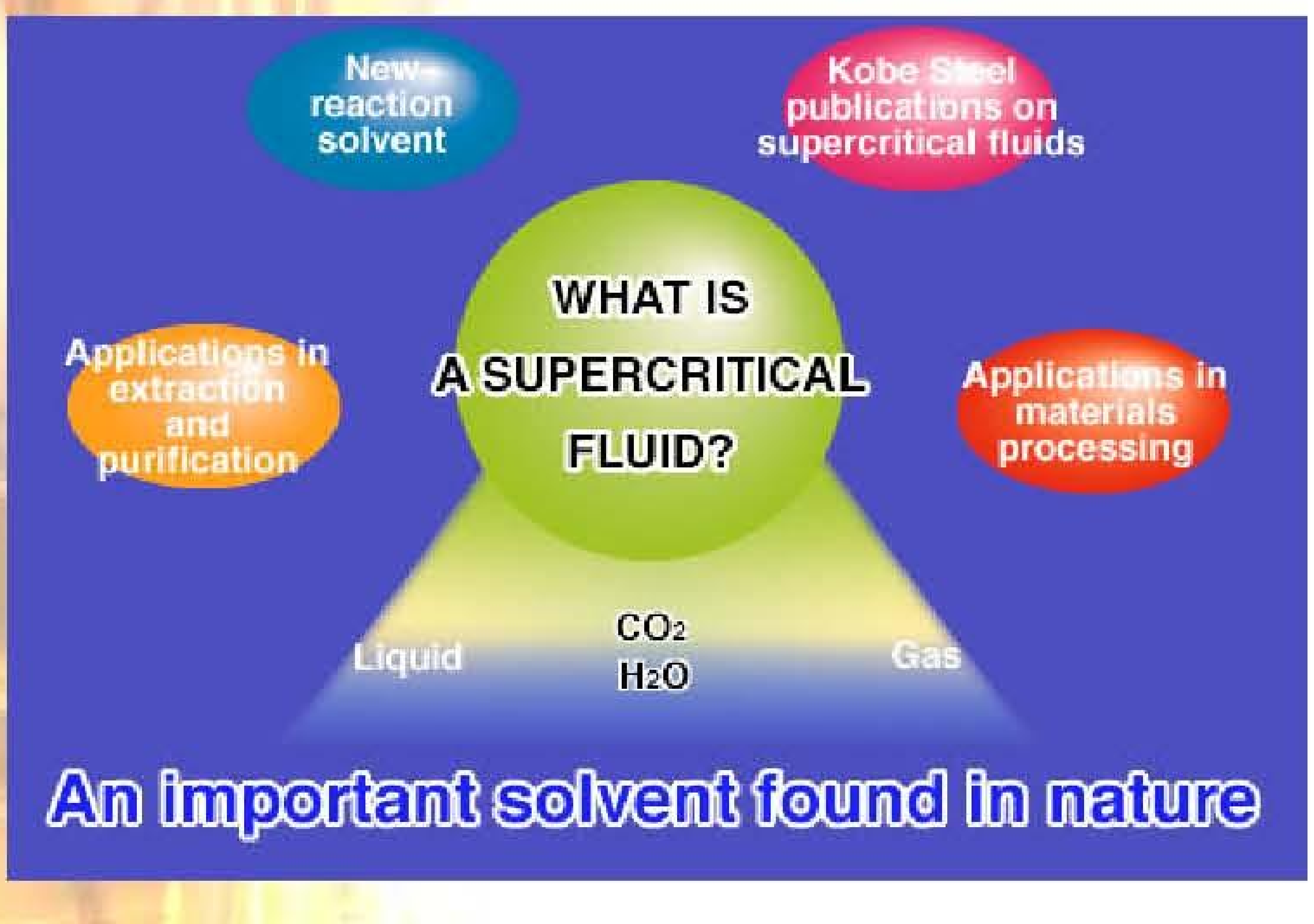
Do you know?

EPA's National Partnership for Environmental Priorities (NPEP) focuses efforts on reducing 31 priority chemicals

http://www.epa.gov/epaoswer/hazwaste/minimize/chemlist.htm

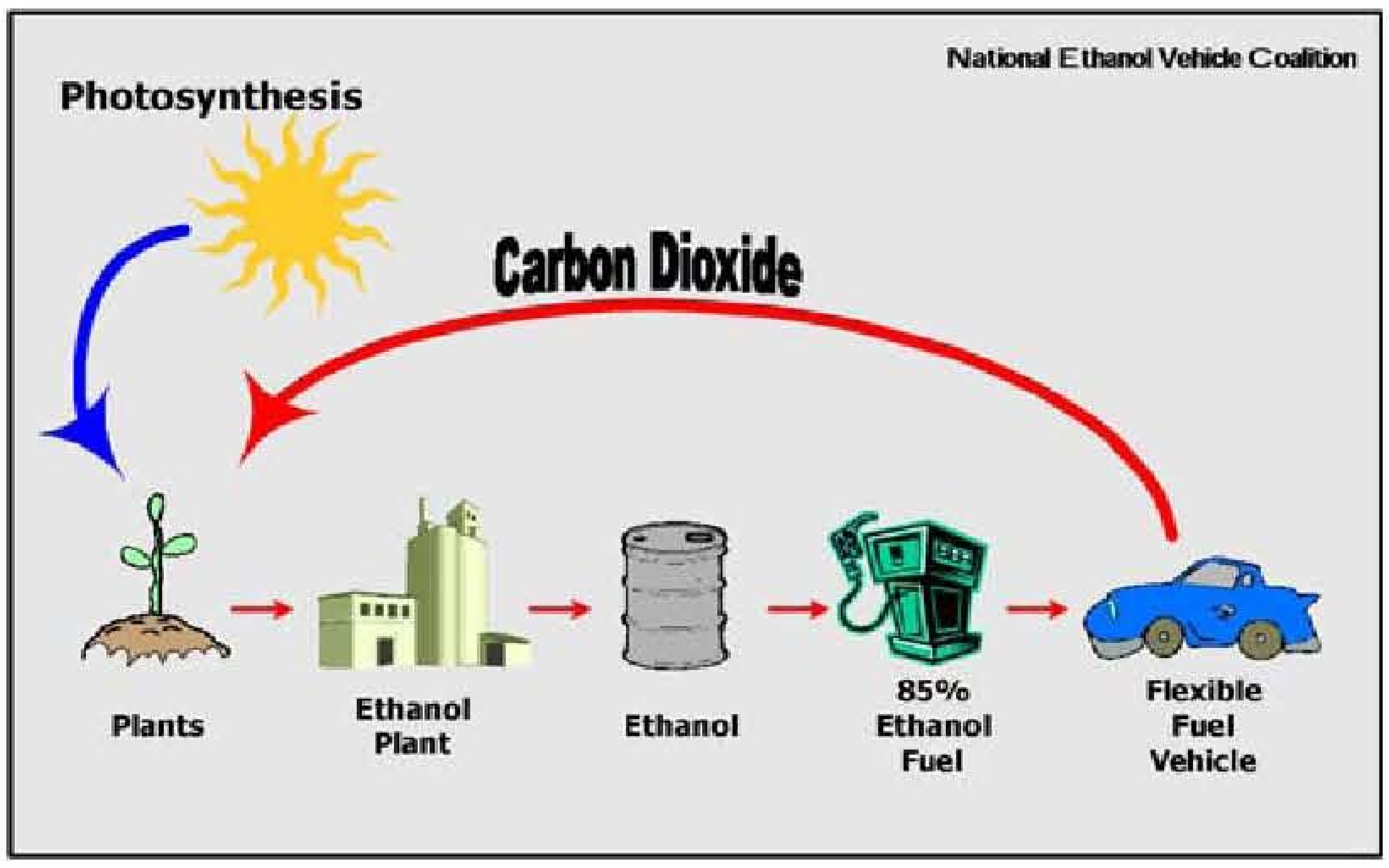
Priority Chemicals	
Organic Chemicals and Chemical Compounds	
1,2,4-Trichlorobenzene	Hexachlorobutadiene
1,2,4,5-Tetrachlorobenzene	Hexachlorocyclohexane, gamma-
2,4,5-Trichlorophenol	Hexachloroethane
4-Bromophenyl phenyl ether	Methoxychlor
Acenaphthene	Naphthalene
Acenaphthylene	PAH Group
Anthracene	Pendimethalin
Benzo(g,h,i)perylene	Pentachlorobenzene
Dibenzofuran	Pentachloronitrobenzene
Dioxins/Furans	Pentachlorophenol
Endosulfan, alpha & Endosulfan, beta	Phenanthrene
Fluorene	Polychlorinated Biphenyls (PCBs)
Heptachlor& Heptachlor epoxide	Pyrene
Hexachlorobenzene	Trifluralin
Metals and Metal Compounds	
Cadmium	Mercury
Lead	

Website Introductory Information: Supercritical Fluid



http://www.kobelco.co.jp/eneka/p14/sfe01.htm
http://www.supercriticalfluids.com/index.htm

你知道什麼是E85燃料嗎？
你的車可以用E85燃料嗎？



http://www.e85fuel.com/e85101/faqs/e85.php
http://running_on_alcohol.tripod.com/id26.html

Avoiding Global Collapse

Chemists have a vital role to play in achieving **SUSTAINABILITY**

STEPHEN K. RITTER, C&EN WASHINGTON

NOW THAT MOST PEOPLE in the U.S. are getting used to higher gasoline prices and electric bills, and the realization that those costs aren't likely to come down, the word "sustainability" is being tossed about with a greater sense of urgency. Many professional scientific societies, industry groups, electric utilities, manufacturing companies, government agencies, and some cities and states suddenly have become serious advocates for sustainability.

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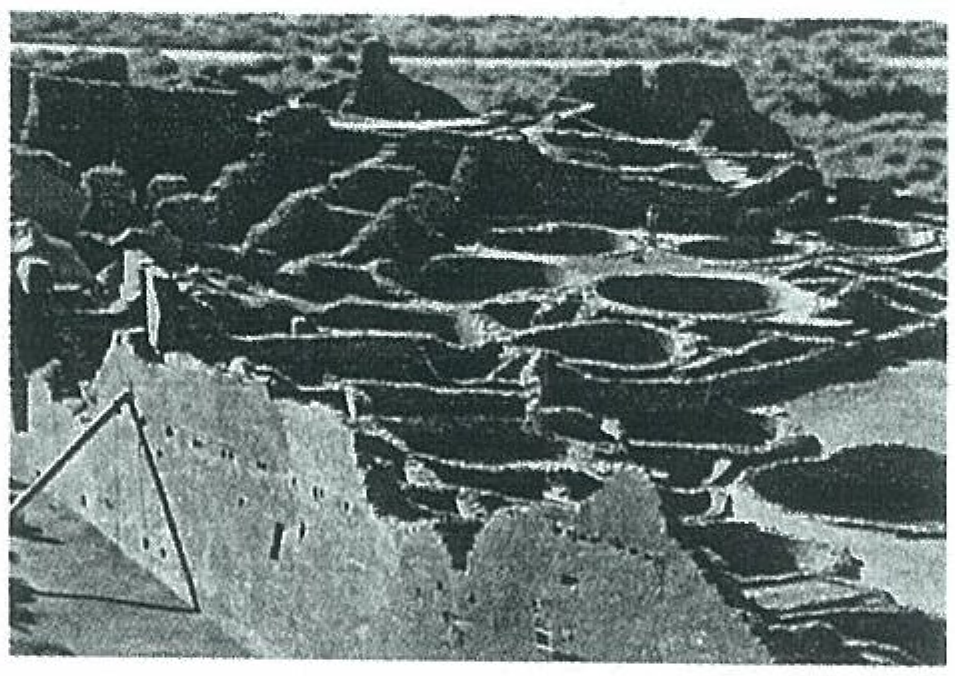

Anasazi ruins in New Mexico's Chaco Canyon speak volumes about unsustainable societies.

Two expressions of this advocacy are the American Chemical Society national meeting next month in Chicago and the American Association for the Advancement of Science meeting held a week ago in San Francisco. ACS is sponsoring a large overarching program under the sustainability label for the first time, and the AAAS meeting had the theme "Science & Technology for Sustainable Well-Being."

By most written definitions, sustainability means having the ability to meet the needs of a healthy lifestyle for all people in the present without compromising the needs of future generations. That includes working through all the political, economic, environmental, and cultural dimensions of sustainability to allow developed countries to maintain their current standard of living while helping less developed nations peacefully improve their standard of living.

Most people seem to presume that we will succeed in achieving this vision of a sustainable future. But what happens if we fail?

I came away with a good idea of what would happen after reading Jared Diamond's 2005 book, "Collapse: How Societies Choose To Fail or Succeed." Diamond, a geography professor at the University of California, Los Angeles, received a Pulitzer Prize for his 1997 book, "Guns, Germs, and Steel: The Fates of Human Societies." That treatise examined how and why Western societies developed technologies that allowed them to dominate much of the world. In "Collapse," he investigates how and why some of those same societies later fell apart and what we can learn from it.

He presents case studies that center on the abandoned pyramids of Mayan cities in Central America, Easter Island's lonely moai statues, crumbling adobe pueblos and cliff dwellings of the Anasazi in the U.S. Southwest, and abandoned Viking settlements in Greenland. Diamond pieces together patterns of problems into a five-point framework of factors contributing to societal collapse: environmental damage; natural climate variation; hostile neighbors; support from friendly trade partners; and a society's response (or failure to respond) to its problems, including overconsumption of natural resources and overpopulation.

It's eye-opening to learn from Diamond's analysis that the problems that caused those ancient societies to fail are the same problems we face today. A couple of differences that exacerbate our problems are human-induced climate change and environmental damage from chemical pollution with an accompanying loss of biodiversity. And because humanity continues to evolve into an integrated global society, our inability to correct our problems could lead to a global collapse, not just a local or regional one.

What's in sustainability for chemists? A number of blue-ribbon panels have identified dozens of vital research and education topics that chemists can pursue to meet global sustainability. These include goals that not only bring about alternative technologies but also improve the efficiency of current technologies. These molecular solutions are the big pieces of the answer.

A smaller but still vital part of the answer involves investing time in local and global public outreach to spread the word about those solutions. A handful of chemists and chemical engineers, as well as ACS's Green Chemistry Institute, are already building bridges to make this happen. For some of the individuals involved, this has meant leaving traditional roles in academia, industry, or government to launch novel initiatives.

ONE EXAMPLE is chemist John C. Warner, who left a traditional university chemistry department to join the department of plastics engineering at the University of Massachusetts, Lowell. He also directs the university's Center for Green Chemistry. Warner recently led a delegation of chemists and artists to participate in a workshop on green chemistry and sustainability in South Africa. Warner and his colleagues sat down with African chemists and artists from several countries to discuss global sustainability.

For the African scientists, their role could be as simple as developing chemistry that takes advantage of local resources so there's less reliance on global assets. For the artists, their role would be to help disseminate information on sustainability to low-literacy communities through public art projects.

A simple example from Warner's work involves Maine potatoes. Only about half of the harvested potatoes are suitable to sell or use for making potato chips, Warner notes. So he is working with a group of scientists to take culled potatoes from Maine processors and use the starch to make polylactic acid, a biopolymer used to make food wrappers and clothing. It's a way to solve a local problem at a local level but also contribute to global sustainability, he adds.

"There are many things people can do to build a sustainable future," Warner says. "Green chemistry is the part that chemists have to do."

In the end, our sustainable future, including a sustainable chemical enterprise, is going to require molecular solutions. It's going to take big ideas and small ideas. And it is going to take all of us working together across political, economic, environmental, and cultural divides.

Views expressed on this page are those of the author and not necessarily those of ACS.