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C&EN

CHEMICAL & ENGINEERING NEWS

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COVER STORY

CUSTOM CHEMICALS

While the business outlook continues to brighten, firms build plants and partnerships in Asia, causing regulatory concerns. PAGE 19, 29, 31

QUOTE OF THE WEEK

"Our ability to measure has outstripped our ability to interpret data."

RICHARD A. BECKER, SENIOR TOXICOLOGIST, AMERICAN CHEMISTRY COUNCIL PAGE 52

NEWS OF THE WEEK

BUSINESS

GOVERNMENT & POLICY

SCIENCE & TECHNOLOGY

ACS NEWS

AWARDS

THE DEPARTMENTS

COVER: *Lonza's plant in Guangzhou, China, is one result of staged investments by the company. Lonza*

THIS WEEK ON WWW.CEN-ONLINE.ORG

CHEMICAL BONDS

Young Arab and Israeli scientists are participating in intensive chemistry workshops.

PLUS: See all of ACS's policy statements.

COURTESY OF MARINA RAQUIL

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POLICING CONFLICTS OF INTEREST

OVERSIGHT: Report calls for NIH to do more monitoring of its grantees

NIH

THE NATIONAL INSTITUTES of Health must do more to make sure financial conflicts of interest of its extramural investigators are reported and addressed, according to a report by the Department of Health & Human Services (HHS) Office of the Inspector General (IG). The report's findings come after NIH spent the past several years cleaning up its conflict-of-interest policies for intramural scientists.

At issue is how the agency documents and follows up on financial conflicts of interest within grantee institutions. The IG report finds that NIH lacks an accurate, centralized account of conflict-of-interest reports and that its institutes rely on the good faith of the grantee institutions to make sure they comply with federal guidelines governing such situations. In addition, the IG analysis finds that conflict reports submitted to NIH lack details necessary for the agency to follow up.

"It is imperative that the funds provided to grantee institutions be used appropriately and that the research conducted using these funds not be biased because of any conflicting financial interests of investigators," the report says. And although it is ultimately the responsibility of grantee institutions to comply with federal conflict regulations, "NIH, as an oversight body, should take a more active role in overseeing financial conflicts of interest."

For the most part, NIH concurs with the IG report's findings and has outlined action to bolster its efforts in this area. For example, the agency says it will develop a reporting tool to help grantee institutions inform NIH of conflicts, and it will set up a new Web-based financial conflict-of-interest reporting system for agency staff by March 1.

NIH, however, disagrees that more detail is needed. "We believe that it is vital to maintain objectivity in research; however, responsibilities for identifying and managing financial conflicts of interest must remain with grantee institutions," the agency wrote in a letter to the IG office.

Congress is also studying the HHS IG report. And although no hearings are scheduled in either house, members are keeping a close eye on NIH conflict-of-interest issues.—SUSAN MORRISSEY

PEEKING AT REACTIONS

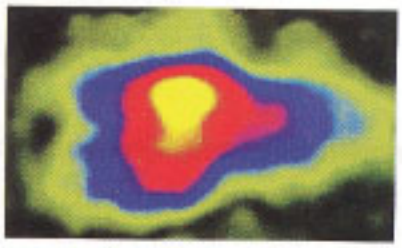
CATALYSIS: NMR method visualizes hydrogenation reactions inside microreactor

MANY INDUSTRIAL PROCESSES rely on catalytic hydrogenation. Pinpointing the active parts of a catalyst bed could help optimize those processes. A new nuclear magnetic resonance (NMR) imaging method allows researchers to visualize where hydrogenation reactions occur as gas-phase reactants flow through a microreactor (*Science* **2008**, *319*, 442). The method could be used as a tool for catalyst development and microreactor characterization.

The method was developed by a team led by chemistry professor Alexander Pines and postdoctoral associate Louis-S. Bouchard of Lawrence Berkeley National Laboratory and the University of California, Berkeley. The researchers use the para form of hydrogen to amplify the NMR signal of the product of a catalytic hydrogenation reaction.

p-H_2, a spin isomer of molecular hydrogen in which the magnetic spins of the two protons are aligned in opposite directions, has no observable NMR signal on its own. But when the two hydrogen atoms participate in a pairwise hydrogenation reaction, they become magnetically inequivalent. The result is a polarized product with an enhanced NMR signal.

The researchers use the method to observe the hydrogenation of propene to propane inside a microreactor. The signal from the polarized propane is 300-fold stronger than the propene signal. By mapping product formation, they can identify the active regions of the catalyst bed.


SCIENCE © 2008

AMPLIFIED The NMR signal of propane formed by hydrogenation of propene with *p*-H_2 is 300-fold stronger than the NMR signal of propene.

Although the method requires *p*-H_2 to be one of the reactants, it "allows you to study an even broader class of chemical reactions," Bouchard says. With the judicious selection of radio-frequency pulses, the researchers can extend the lifetime of the polarized product so that it can be used in other reactions. For example, a polarized alkene formed by the hydrogenation of an alkyne could be used to study polymerization reactions.

M. Daniel Raftery, a chemistry professor at Purdue University who develops NMR methods, calls the research "very impressive work." The method "should provide tremendous information for modeling studies," he says.—CELIA ARNAUD