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Truth. "If it was a scientist doing it, it would be different. But I don't think there were any glaring errors." The publicity, Broecker says, accomplished far more than IPCC's scientists could have done on their own: "Gore put it in a way that people listened. We're much further along to meaningful action [to cut emissions] because of him."

IPCC led the way, Watson says. Its reports forging increasingly strong links between human activity and global warming were instrumental in moving nations toward drafting and signing the Kyoto Protocol for cutting greenhouse gas emissions, he says. But more recently, says Oppenheimer, other forces have come into play: high oil prices and a new energy crisis; events ascribable to global warming, such as the dwindling of Arctic sea ice; and weather events such as Hurricane Katrina that are at least analogs of weather in a greenhouse world.

And then "along comes Al Gore," says Oppenheimer. The end result has been an explosion of media attention and, in the United States, unprecedented political debate and even emission-cutting legislation. But it's not over, warns political communications researcher Matthew Nisbet of American University in Washington, D.C. IPCC and Gore may have raised awareness broadly and stoked concern among the already environmentally attentive, but by Nisbet's reading of the polls, the broad support for emissions cuts that will hurt is nowhere near there. Activists, he says, need a new message.

–RICHARD A. KERR AND ELI KINTISCH

With reporting by Pallava Bagla.

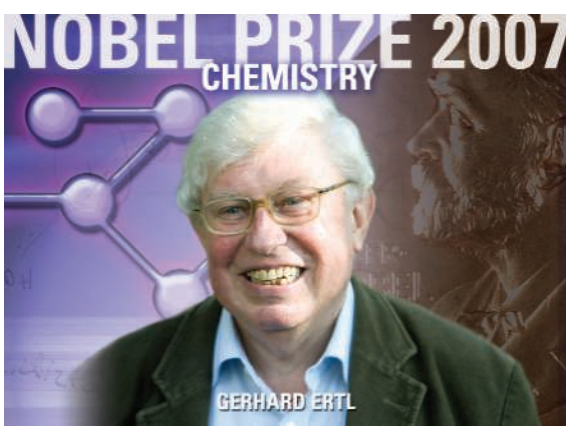
NOBEL PRIZES

Chemistry Laureate Pioneered New School of Thought

Now that's a birthday present! Instead of receiving the random necktie on his 71st birthday last week, Gerhard Ertl was awarded this year's Nobel Prize in chemistry. Ertl, a physical chemist at the Fritz Haber Institute of the Max Planck Society in Berlin, Germany, won for developing methods that reveal how chemical reactions take place on metals and other surfaces. Those techniques have led to results as diverse as new catalysts that remove poisonous carbon monoxide from car exhaust and an understanding of how stratospheric ice crystals supercharge chlorine's ability to destroy the planet's protective ozone layer.

"This is really well deserved," says Ralph Nuzzo, a surface chemist at the University of Illinois, Urbana-Champaign. "Ertl is a titan." John Vickerman, a chemist at the University of Manchester in the U.K., agrees. "The reactions occurring at surfaces are very difficult to probe because there are so few molecules involved, and they frequently occur very rapidly," he says. "Furthermore, the scientist has to distinguish what is happening in a layer one molecule thick from the rest of the solid. Ertl developed very sophisticated physical tools to identify the chemistry occurring at the surface." The Royal Swedish Academy of Sciences, which awards the Nobel Prizes, says Ertl was selected not for developing a particular tool, technique, or discovery, as is often the case, but because "he established an experimental school of thought for the entire discipline."

One early example was in figuring out how iron-based catalysts convert hydrogen and nitrogen into ammonia, a critical industrial process for making fertilizers. This conversion, known as the Haber-Bosch process, combines dinitrogen molecules from the air with dihydrogen molecules. Earlier studies had revealed that the slowest step in the process was one in which nitrogen molecules adsorb onto iron particles in a manner that primes them for combining with hydrogen. Researchers didn't know whether the tightly bonded nitrogen molecules reacted with hydrogen intact or whether they broke apart first. Using spectroscopic techniques and other tools, Ertl revealed the complete seven-step process whereby nitrogen and hydrogen molecules land on an iron surface, break apart, and react to form ammonia.



Many happy returns. After Gerhard Ertl won the Nobel on his birthday, colleagues toasted him with champagne and German pretzels.

After receiving the announcement last Wednesday, about 200 of Ertl's colleagues toasted him with champagne and German pretzels on the shaded lawn of the Fritz Haber Institute. After Ertl fielded a few questions from TV reporters, the crowd broke out in a rousing round of "Happy Birthday to You" (in English).

In an earlier phone interview with *Science*, Ertl was quick to offer credit to fellow researchers. His field, he says, was propelled by the parallel development of many surface characterization techniques. And, he adds, many scientists were adept at applying them—including Gabor Somorjai of the University of California, Berkeley, with whom he shared the 1998 Wolf Prize in Chemistry for their work in surface science. "I was a little bit disappointed he didn't share [the Nobel Prize] with me," Ertl says. Last week, several chemistry bloggers went further, arguing that Somorjai deserved recognition for his vital role in laying the foundations of surface science.

For his part, Somorjai says simply that he does not understand how award decisions are made. But he notes that in the 1980s, he began steering away from ultrahigh-vacuum surface science to study reactions at solid-liquid interfaces, among other things. By contrast, Somorjai says, "Ertl stayed in there all through his life."

–ROBERT F. SERVICE

With reporting by Gretchen Vogel in Berlin, Germany.

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