Cotton's impact on field grows

A&M professor awarded Wolf Prize for contributions to inorganic chemistry

BY SCOTT JENKINS
The Battalion

Running chemical reactions on an old kitchen stove as a youngster sparked a passion for chemistry that has continued throughout the productive career of Dr. F. Albert Cotton, Texas A&M distinguished professor of chemistry.

For his extensive accomplishments in the field of inorganic chemistry, Cotton last week was named the recipient of the 2000 Wolf Prize in chemistry. The international award, given by the Wolf Foundation of Israel, will be presented in May by Israeli president Ezer Weizman at a ceremony in Jerusalem.

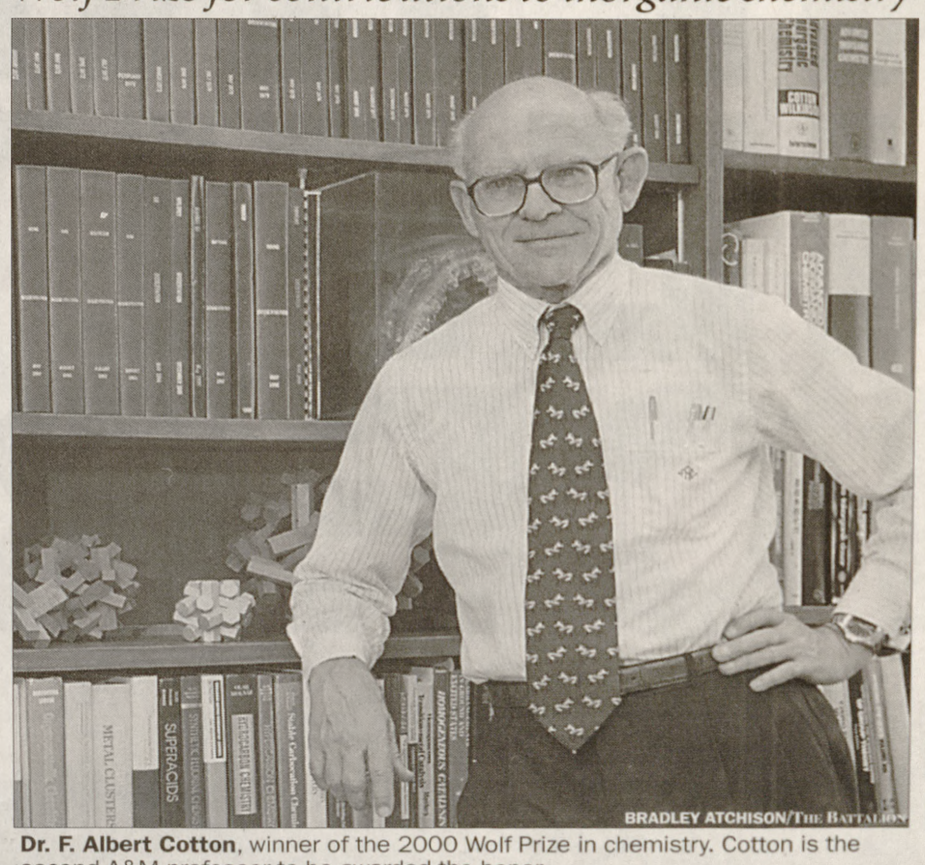
During a career spanning five decades, Cotton and those working in his laboratory have determined the structures of more than 2000 new molecules, including one of the first thorough determinations of an enzyme's structure. Even though this was done early in his career, the knowledge of that structure is still widely used today in studies of enzyme function. In addition, some of the first examples of compounds with double and triple metal-metal bonds were created in Cotton's laboratory.

Cotton's current research focuses on making new types of molecules, pushing metal atoms very close together to make new compounds with previously unknown bonds and then investigating their structures and properties. "We find out what makes them tick," Cotton said.

The atoms are pushed so close together that "the ideas of simple chemical bonds are tested, most certainly extended, and perhaps even questioned," Dr. Marcetta Darensbourg, professor and researcher in inorganic chemistry, said. Darensbourg said it is possible for new bonding principles resulting from Cotton's research to better explain phenomena for which only incomplete descriptions now exist.

Dr. Kim Dunbar, chemistry professor and former post-doctoral associate with Cotton's group, said that Cotton's work on metal-metal bonds is one of the most creative and influential accomplishments in chemistry this century. She echoed the assessment of the chemistry community in saying that the significance of his research is monumental.

The selection committee for the prize wrote that Cotton's extensive work in the chemistry of metallic elements is "a major contribution to chemistry," adding that his work has also had wide-ranging influences in biochemistry, physics and molecular chemical engineering.



Dr. F. Albert Cotton, winner of the 2000 Wolf Prize in chemistry. Cotton is the second A&M professor to be awarded the honor.

The impact of Cotton's accomplishments has spread beyond laboratory research. Darensbourg calls Cotton's textbook, Chemical Applications of Group Theory, "one of the most important books in all of chemistry."

His legacy includes many former students who have gone on to make significant accomplishments themselves, including four who have been elected to membership in the National Academy of Sciences.

Cotton followed in his engineer father's footsteps at the beginning of his undergraduate career, but soon realized that chemical engineering was not quite right for him. He entered the chemistry program at Philadelphia's Temple University, and went on to study inorganic chemistry at Harvard University.

Now, with decades of research behind him and a mantel full of awards, Cotton still has no shortage of ideas about new compounds to investigate and new reactions to try. "Probably more ideas than we have time for," he said.

In his laboratory, Cotton and his students are always striving to "do things that will broaden our understanding of the principles of chemistry."

The Wolf Foundation was established in 1976 by Dr. Ricardo Wolf, an inventor, diplomat and philanthropist, along with his wife Francisca Subirana-Wolf, in order to "promote science and art for the benefit of mankind."

Prize winners are selected by an appointed committee of experts in each field in which awards are given.

Artificial eyes may aid blin

NEW YORK (AP) — To the blind man with a tiny camera wired to his brain, the world looks like dozens of scattered specks of light, winking on and off like the stars when clouds roll by.

But as he showed a reporter last week, that's enough to let him find a mannequin in a room, walk to a black stocking cap hanging on a white wall, and then return to the mannequin to plop the cap on its head.

He can also recognize a 2-inch-tall letter from five feet away, researcher William Dobelle said. The man's performance is the first demonstration that an artificial eye can provide useful vision, Dobelle, who's developing the device, said.

"He can do remarkably well" with the limited visual signal, Dobelle said.

Dobelle is chairperson of the Dobelle Institute, a medical device company in New York.

He described the device and its performance in this month's issue of the ASAIO Journal, a publication of the American Society of Artificial Internal Organs.

Richard Normann, who studies artificial vision at the University of Utah, said he's encouraged by how much the blind man can do.

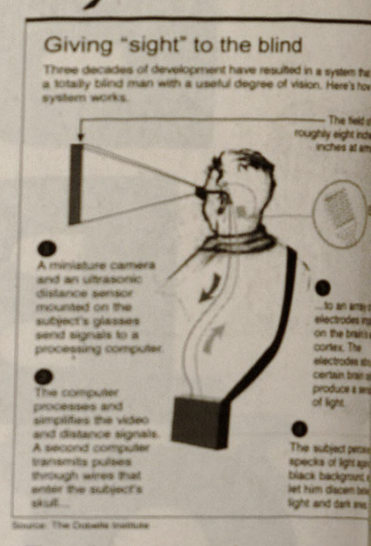
The new report suggests that someday, even limited signals to the brain will let blind people do relatively complicated visual tasks, he said.

It's the first demonstration of useful artificial vision, he said, but he stressed the device is still "a very limited navigational aid, and it's a far cry from the visual experience that normal people enjoy."

Dr. Bill Heetderks, who directs a National Institutes of Health program to develop electronic implants that work with the brain, said an implant that helps blind people navigate would be a major step forward.

"When Dr. Dobelle provides additional details on his methodology that establishes this result, we may be there," Heetderks said after reading Dobelle's report.

While Dobelle's device uses a brain implant, some other scientists are studying implants in the retina.



The retina strategy made news recently w entertainer Stevie Wonder expressed interes

Dobelle's patient, who asked to be identifi Jerry, has been blind since age 36.

Now 62, he volunteered for the study and g implant in 1978; scientists have been working to improve the software.

Jerry uses the device only two or three day Dobelle's lab, as researchers tinker with it. On is how best to provide depth perception, using sp the range finder. Jerry had to walk cautiously proached the mannequin and the wall duri demonstration, with an arm out to prevent colli

Dobelle said an improved version of t should go on sale overseas in limited quan year. It's not clear when it might become av the United States, he said.

NASA bids farewell to lost Mars prob

PASADENA, Calif. (AP) — NASA on Monday gave up trying to contact the missing Mars Polar Lander, confirming what had been suspected for more than a month: The $165 million spacecraft was dead on arrival.

Engineers at NASA's Jet Propulsion Laboratory listened for the spacecraft one last time and heard only silence.

"It is closure in the sense that I think we did everything we could to re-establish contact, and, yes, it's time to get on to other things," project scientist Richard Zurek said.

The spacecraft vanished Dec. 3 while trying to land on Mars. It was to have studied the atmosphere and dug for ice during a 90-day mission.

Among the possible explanations for its failure to call home: The three-legged lander burned up in the atmosphere, crashed on Mars or tipped over on the rugged surface and damaged itself.

An internal JPL board and a team of independent investi looking into the failure a loss of the Mars Clima which apparently burne atmosphere last Septemb of a mixup between E metric units. The investi also take a hard look at N tire Mars program.

At least some answe pected by mid-March, ab before the next Mars orbi der are set to launch.