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WU scientists develop coating to protect plastics in space-bound experiments

The concept was fairly simple. Lofted high into earth orbit by the space shuttle, specially developed plastic films would capture evidence of cosmic dust particles—bits of ancient, drifting matter that may hold clues to the formation of the solar system.

Or so WU scientists thought. Last fall, plans for this space-age dragnet operation of sorts nearly came to a halt. Something in space was destroying the plastic. The plastic surfaces were visibly cracked and eroded. The culprit, scientists believe, was atomic oxygen.

"You've got a big problem," the National Aeronautics and Space Administration (NASA) told scientists here, who have been collaborating with two groups in Germany to devise a cosmic dust experiment. Following the shuttle's return to earth last November, an analysis of the samples conducted at the University showed that a 20-atom-thick coating of a gold-palladium alloy was sufficient to protect the plastic from the erosion.

Concerned with the impact on a number of experiments, including WU's, NASA officials decided to test a variety of materials for erosion during the fifth shuttle.

Different types of plastic strips coated with thin metal films were hurriedly prepared at WU under the direction of Ernst Zinner, a senior research associate and principal investigator on the cosmic dust experiment. Following

"Of course, so-called empty space is not empty," said Robert M. Walker, WU McDonnell Professor of Physics and director of the McDonnell Center for the Space Sciences, "but this is a phenomenon we never dreamed of."

While its erosion troubles may be over, Zinner said, the WU experiment may encounter another unplanned obstacle in space—man-made debris in the form of old spacecraft scraps and rocket exhaust. "It's not an immediate problem" he noted, "but it could become severe."

Participating in the analysis were Zinner; Walker; Randy Korotev, associate and principal investigator on the cosmic dust experiment; and Patrick Swan, space engineer.

Meanwhile, NASA researchers and other scientists are taking a second look at plastic parts and equipment destined for space travel. "It's possible that erosion by atomic oxygen played a role in some of the past, unexplained space failures," Walker said. "It's certainly worth a study in retrospect."

Shepsle to study legislatures with Guggenheim

Kenneth A. Shepsle, WU professor of political science, has been awarded a fellowship from the John Simon Guggenheim Memorial Foundation. Grants totaling over $3 million were made to 292 scholars, scientists and artists this month, in the foundation's 59th annual competition.

The fellowships are awarded on the basis of demonstrated accomplishment in the past and strong promise for the future. There were over 3,500 applications for the grants.

Shepsle's proposed research topic was "Institutional Equilibrium." Shepsle described the work as a theoretical and mathematical approach that examines the division of labor and the extent of decentralization in organizations—corporations, government bodies and educational institutions. Shepsle will concentrate on legislative bodies and how their structure and procedures combine with self-interest to channel the consideration of alternative policy.


He joined the WU faculty as an assistant professor of political science in 1970. In 1978, he became professor of political science and research associate at the Center for the Study of American Business. He has received grants from the National Science Foundation, the Olin Foundation and was a national fellow, Hoover Institution, in 1974-75.

Shepsle received undergraduate degrees in mathematics and political science from the University of North Carolina, Chapel Hill, in 1966, and a PhD in political science from the University of Rochester in 1970.
Center proposes five easy ways to take the sting from acid rain

Acid rain conjures up some well-known images for many people in New England and Canada. Like dead fish. Dying lakes. Crumbling tombstones, statues of Queen Victoria.

Pretty emotional stuff, acknowledges the head of the world's largest academic center for air pollution and meteorological data — the WU Center for Air Pollution Impact and Trend Analysis (CAPITA).

But high emotions and hastily drawn remedies are not the best approach to controlling this phenomenon that occurs when sulfur and nitrogen gases from power plants, oil refineries, automobile exhaust and other sources are transformed with water vapor in the atmosphere.

So says Rudolf B. Husar, director of CAPITA and professor of mechanical engineering.

According to Husar, not enough is known about acid rain to justify drastic and costly new regulations. A good example of premature action, he says, is a bill passed by the U.S. Senate and now under consideration by the House. The bill would force a uniform curtailment of sulfur dioxide emissions across a 30-state area in the eastern half of the country.

Yet a study just completed by CAPITA shows that acid rain-causing pollutants do the greatest damage within a 300- to 600-mile radius of their sources.

This finding means that reducing pollution in most parts of the Midwest and Southeast (namely, Missouri, Tennessee, Alabama, North and South Carolina and parts of Kentucky) would do little to help the Northeast, where shallow, rocky soils make it particularly sensitive to the toxic effects of acid rain.

"In the past," Husar says, "we have substantially overestimated the long-range transport of these pollutants. And because our knowledge of acid rain is still inadequate, misunderstandings will continue to arise. But," he emphasizes, "doing nothing is not the right attitude, either." What Husar proposes instead of one major piece of legislation are five easy pieces — a quintet of relatively painless actions that can be taken while research continues.

- Washing coal. Much of the coal that power plants burn is already partially washed to remove stones and dirt. In that process, sulfur is also removed. The more thoroughly coal is washed, the less sulfur it contains and the cleaner it burns.
- Engineering improvements into power plants. Between 5 to 10 percent of the energy a power plant produces literally goes up in smoke, heating most smokestack plumes to about 300 degrees Fahrenheit. If even a small percentage of this heat loss could be recycled back into the system, plants could save thousands of dollars a day in fuel. Also, emissions released in cooler air would stay closer to ground level, reducing the time pollutants have to recombine into more toxic substances. "It's the hot, buoyant air, not the height of the smokestacks, that really scatters emissions high into the atmosphere," Husar explains.
- Switching fuels. The impact of acid rain could be softened if extra-clean coal were burned during the spring, when sensitive northeastern lakes are hit with a massive dose of acid precipitation in the form of melting ice and snow. Cleaner, drier coal could be burned during periods that are less traumatic for plants and wildlife.
- Further emission controls on automobiles. Exhaust from gasoline-powered vehicles contains nitrogen oxides — the other major component of acid rain besides sulfur compounds. The reduction of both acidifying agents is important.
- Promoting energy conservation.

In the end, Husar notes, it's not the power companies causing acid rain. It's consumers of electricity.

Meanwhile, Husar says, we should study not only man-made pollutants, but the natural occurrence of sulfur and nitrogen compounds. "That's the only way to tell how much we are straining nature," he states. "In the past, that aspect of the environment — understanding the normal — has been pushed under the rug."
Announcements

Honor's Assembly
East St. Louis Mayor Carl E. Officer will be the keynote speaker at WU’s first All-University Honor’s Assembly at 11 a.m. Wednesday, May 4, in Graham Chapel. A reception will follow the assembly in the Ann Whitney Olin Women’s Building Lounge.

Officer will speak on “The Youth Shaping the Future of this Country.” The assembly, which is free and open to the public, is sponsored by the Alpha Kappa Circle of Omicron Delta Kappa, the national leadership honorary.

The honor’s assembly seeks to recognize undergraduate students who have displayed extraordinary leadership potential through participation in student government, sports, performing arts, service organizations, and never before exhibited, is also on display.

Boccia exhibition dedicated to May
Edward E. Boccia, professor of art in WU’s School of Fine Arts, has dedicated “The Boccia Retrospective Exhibit” at the Mitchell Museum in Mt. Vernon, Ill., to the memory of the late Morton D. May, who died April 13.

The 42-year retrospective includes 56 oil paintings and 24 drawings, the majority lent from private collections and institutions. Several of the works on view are from the collection of philanthropist and civic leader “Buster” May.

“For over 30 years, Buster’s encouragement has allowed me to paint freely, from the heart, never to compromise,” stated Boccia. “He was a great man who loved art above all else.” Included in the exhibition are three self-portraits painted in 1945, 1956 and 1982. Pensieroso, a five-panel polyptych standing approximately seven feet high and never before exhibited, is also on display.

Boccia joined the WU faculty in 1951. He studied at Pratt Institute, New York, the Arts Students League in New York and earned a BA and MA from Columbia University.

Boccia’s work is included in over 200 private collections in New York, Miami, South America, Belgium and Canada. He has exhibited at the L’Obelisco Gallery in Rome, Italy, and the Dada Gallery in Athens, Greece.

The exhibition will hang through May 29 at the museum located on Richview Road. Viewing hours are 1 p.m. to 5 p.m. Tuesday through Sunday.

Lady Bears break WU records at track meet
Kathy Johnstone qualified for the NCAA Division III women’s track nationals when she won the 5,000-meter run in the Southern Illinois University Edwardsville Relays April 16.

Her time of 18:05.9 beat the qualifying standard of 18:20.0. The nationals are slated for North Central College in Naperville, Ill., in late May. Her time also broke the University record, as well as the freshman record.

Lisa Commenti also broke the University and freshman records when she won the 10,000-meter run in 34:55.1.

Two relay teams were first in the six-team event in which the Lady Bears finished third with 96 points. The host team was first with 171, followed by Millikin, 110, in second place. Fourth was DePaul, 62; fifth was Principia, 45; and sixth was Greenville, 25.

The winning relay teams were the Distance Medley and the 3,200-meter. The Distance Medley team of Cheryl Kometzke, Kim Hubbard, Karen Palmer, and Jane Hall was clocked at 13:35.5 for a University record. The 3,200-meter quartet was composed of the same four women.

Marc S. Gluckman
Gluckman leads baseball Bears to victory
In the relatively short span of one month, the WU baseball Bears have become one of the top college baseball teams in the St. Louis area. They jumped from a 1-9 southern road trip to a 14-10-2 figure, or 13 victories, one loss and two ties in the last 30 days.

Instrumental in that streak has been junior pitcher Marc S. Gluckman, who has won seven games in a row, including six victories among the 13 played in the St. Louis area.

Gluckman’s only loss was in the first game of the season, 1-0, at the University of Central Arkansas. The run scored in the first inning on a walk and a double.

The left fielder has not lost since then. He won the team’s only game on the road trip and unted a string of 38 consecutive innings without giving up an earned run.

The streak was snapped by Maryville, but Gluckman still won and has continued his winning ways through April 19 when he beat the University of Missouri-St. Louis, 8-2. UMSL is a Division II school, which helped make the victory a little sweeter.

A 6’4”, 215-pounder, Gluckman has an earned run average of 0.77 for 58 innings. He’s given up five earned runs and a total of 25 hits, with the only extra base knocks being five doubles.

The smooth-throwing southpaw has fanned 75 batters over the same span and walked only 28. He also has four thouns.

Rick Larsen, in his second year as head baseball coach, has spotted his star hurler against the best opposing teams, and, other than the hard-to-take opening loss, Gluckman has not let him down.

The Bears advanced to the Midwest Regional tournament last year and Larsen hopes to use Gluckman’s strong pitching to go further this year.

New facilities
The Mallinckrodt Institute of Radiology’s Division of Radiation Oncology at the School of Medicine commemorated its recently expanded facilities April 21-23 with an inaugural scientific program.

The program marked the installation of a new Clinac 6 linear accelerator and completion of the new Hyperthermia Treatment and Research Center at Mallinckrodt Institute. With the addition of the Clinac 6, Mallinckrodt Institute now has four linear accelerators, which provide a high energy beam used to destroy cancer cells. The Hyperthermia Center will research the use of heat to shrink cancer cells.

The New Greek, an oil painting by Edward E. Boccia, is one of 56 oil paintings and 24 drawings to be shown at the Mitchell Museum in Mt. Vernon, Ill. through May 29.

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Ann Strehler took second in the hop put and Lori Davis was runner-up in the 200-meter dash. The team of Tracy Berry, Karen Kimbo, Jeanette Cricht and Linda Thomas was second in the 800-meter relay.

Wesley Harris was the only male to win an event as the Bears finished fourth with 78 points. Harris took the 400-meter dash in 49.7. Chuck Rohrer was second in the pole vault and Barry Surber was runner-up in the long jump for a WU freshman record of 22 feet, 5% inches. The quarter of Matt Green, Ken Moehringer, Rod Erd and Sean Surber was second in the Distance Medley Relay.

DePaul won the men’s division with 138; followed by the host team, 139; the University of Missouri-Rolla, third with 117; WU, Principia, fifth with 44; and Maryville, sixth with 24.
April 28-May 7

Performing Arts

Thursday, April 28
4 p.m. Art Theatre and Hillel Foundation present the St. Louis premiere of Ronald Kibman's "Social Dystagogy," Hillel House, 6490 Forsyth Blvd. (April 30 and May 1, same time. Hillel.) Gen. adm. $4; students, seniors, groups $3. For more information, call the Edison Theatre box office at 890-6543.

Friday, April 29

Saturday, May 7

Music

Sunday, May 1

Friday, May 6

ESL courses offered

A four-week course for WU’s international graduate students who are teaching assistants will be offered by the International Office and the Summer School beginning July 18.

"Communication Skills for International Graduate Teaching Assistants" will be an in-depth study of the fundamentals of lecture preparation and speech strategies involved in classroom teaching. Participants must be recommended by their academic departments and obtain permission from Patricia Eldadah, coordinator of the English as a Second Language program.

The course will meet from 8:30 to 10:30 a.m. Monday-Friday, from July 18 to August 12, the fee will be $200.

The International Office is also offering two "Intensive English" sessions, June 20-July 15 and July 18-August 12. These are for intermediates and high intermediate-level students. Both sessions will meet from 8:30 a.m. to 3:30 p.m. Monday-Friday. Tuition is $375 for each course.

For more information on English as a Second Language courses, call Patricia Eldadah, International Office, Stix International House, 6470 Forsyth Blvd., at 889-5660.

AISL fellowships

The American Institute of Indian Studies (AISL) has announced a variety of fellowships for research in India available for the 1984-85 academic year. Applicants should be engaged in research or teaching at the college level and should hold a doctorate or equivalent degree. Information and applications must be submitted to AISL, 1150 5th St., Chicago, IL 60657, by July 1, 1984. The awards will be announced in the spring of 1984.

The awards, which may be held for three to 10 months, will support senior research fellowships, faculty training fellowships, post-doctoral student travel awards, libraries and archives fellowships, professional development fellowships, junior fellowships and travel grants and translation projects.

For more information, contact Ruth Joob, Office of International Studies, Ext. 3958.