Danto Donates $3 Million For Engineering Development Center

ALSO INSIDE:

• WSU Police To Operate World’s First F-Cell Powered Police Car
• Agreement With Chinese University To Bring 200 Grad Students A Year
• Concussions In The NFL: Assessing The Stress And Strains On The Brain by Distinguished Professor Albert King
• College/Karmanos Researchers Demonstrate Promising Breakthrough In Targeted Cancer Drug Delivery
Welcome back to the College of Engineering’s window into the life of the College – Exemplar Magazine. The great news of the summer was the approval by Wayne State University’s Board of Governors and the Michigan Legislature’s Joint Capital Outlays Committee to go ahead with the final design and construction of our new $1.5M Biodiesel Project featured in NextEnergy, to get started on our new Alternative Energy and Advanced Propulsion, but in the meantime we will rent space from our neighbor, Marvin Danto Engineering Development Center. (See Up Front, page 2.) The State of Michigan got the ball rolling last year by pledging $15 million. Ford, Yousif Ghafari and Western Michigan to secure a $15 million. Ford, Yousif Ghafari and Wayne State University’s President Reid is allowing us to use the bonding power of the university to get funds to get the job done now.

We expect to be in the building by fall of 2008. It’s not too late to get involved by buying a lab, equipment, or a brick to help out. Our development officer, Jack Van Hecke, (313 577-4707), would be delighted to tell you how to do this.

The new EDC will give us space for Alternative Energy and Advanced Propulsion, but in the meantime we will rent space from our neighbor, NextEnergy, to get started on our new $1.5M Biodiesel Project featured in this issue. (See page 7.) The chemical engineers under Professor Simon Ng will characterize the fuels, and the Center for Automotive Research under Director Naem Henein will characterize the bonding power of the university to secure a $15 million. Ford, Yousif Ghafari and Wayne State University’s President Reid is allowing us to use the bonding power of the university to get funds to get the job done now.

Finally, thanks goes to all of the faculty and President Reid for their hard work in negotiating Memoranda of Understandings with six schools at Tongji University in Shanghai, with whom we will be offering collaborative MS degrees to Tongji students who will take 12 credits in Shanghai and 20 credits in Detroit. (See Page 4.)

The College was pleased to be chosen by General Motors to be in the PACE (Partners for the Advancement of Collaborative Engineering) Program, but this is a secret just between us until the formal announcement early next year. It was a great victory for the faculty team, led by Associate Dean Michele Grimm, and should keep our students on the cutting edge for the next decade. A major laboratory in the EDC will be devoted to PACE software and hardware.

We are also delighted that Associate Dean Jerry Thompsons worked with the University of Michigan, Michigan State, and Western Michigan to secure a prestigious National Science Foundation Louis Stokes Alliance for Minority Participation grant to develop a summer program for incoming freshmen to improve minority student representation in our professions. (See Page 21.)

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Danto Donates $3 Million
For Engineering Development Center

With the Engineering Development Center, the college looks to create a unique environment to strengthen research concepts from its laboratories to development and commercialization as well as to the classroom, said Dean Ralph Kummler. “Our vision keeps our graduates on the leading edge of the workforce in Michigan and the world, and engenders an entrepreneurial attitude that results in spin-off innovations and companies from faculty and student research.”

Six pivotal engineering programs expected to gain the most from the new center include: the Advanced Propulsion Alternative Energy Lab, which is advancing fuels, emissions and vehicle automotive systems; the Smart Sensors and Integrated Microsystems Lab, which is developing micro-systems for artificial vision, real-time cancer detection, and other types of biological and neurological implants and smart sensors for automotive fields; the Nanotechnology Lab, which focuses on advanced research in surface science, tissue engineering, drug delivery and biomaterials; the Urban Infrastructure Research Lab, which concentrates on infrastructure and transportation systems; the Interdisciplinary MEMS/NEMS Lab, dedicated to interdisciplinary research on micro/nano-electromechanical systems; and the Team-based Student Project Lab dedicated to national collegiate projects such as Formula SAE and alternative energy powered vehicle competitions.

A $3 million contribution to the Wayne State Engineering Development Center by Marvin Danto, of Bloomfield Hills, stems from he and his wife Betty’s desire to give back, as well as what Danto likes to say is “just getting involved in what we like to do.”

Danto, 89, has had a successful career as a furniture retailer, real estate developer, and community leader. He and Betty Danto’s generosity as philanthropists spreads far and wide.

The Danto Engineering Development Center, Artists rendering of the new building as viewed from Warren Avenue.

Marvin Danto seen with Damon J. Keith, U.S. Circuit Court Judge and WSU donor.

Danto Family Generosity
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Marvin and Betty Danto

The Dantos also founded the Memorial Endowed Scholarship in Dance at the WSU Department of Dance.

The Danto's interest in supporting education also led them to establish the Jack Lenor Larsen graduate scholarship for textile design at Cranbrook Academy of Art. They continue to help fund a program that sends talented minority children to the Interlochen Center for the Arts each summer. And they supported the construction of the Gulf Coast Wonder and Image Zone, a museum of science for children of all ages.

Most recently, they contributed $2 million to the building of the new University of Michigan Cardiovascular Center.

The $3 million to the Marvin Danto Engineering Development Center is an investment to the future of Michigan, said Danto. “I see this endeavor helping create alternative fuels and more efficient automotive engines in America with subsequent growth in industries, new jobs and a sustainable society.”

Troy businessman and philanthropist Marvin Danto has donated $3 million to build the new Engineering Development Center that will accommodate educational programs as well as research and development in the growth fields of biotech, nano-science and alternative energy technology.

Groundbreaking for the $27.3 million Marvin Danto Engineering Development Center is expected to take place in the spring of 2007. The new four-story (including basement), $1,700 square-foot building will be integrated into the college’s main building along Warren Avenue.

“I see the people of Michigan as the direct beneficiaries of this new engineering center,” said Danto, 89, a former WSU engineering student. “I see this endeavor helping create alternative fuels and more efficient automotive engines in America with subsequent growth in industries, new jobs and a sustainable society.”

“Mr. Danto’s generosity is inspired by his insight and belief in the university’s role as a leader in the future of Michigan,” said WSU President Irvin D. Reid. “World events are highlighting the importance of our research in alternative and sustainable energy at our College of Engineering, at NextEnergy and at our research and technology park, TechTown. Mr. Danto’s gift greatly enhances those efforts and other research areas within the university.”

Danto’s contribution boosts the total financial support so far for the new center to $21.3 million. The state legislature has appropriated $15 million for the project, College of Engineering alumnus Youssif Ghafari has pledged $1.5, and the Ford Motor Company has committed $1.8 million. Danto is chairman and CEO of Danto Investment Company in Troy. He is founder and owner of the Michigan Design Center in Troy, and developer, founder and former owner of the Design Center of the Americas in Dania Beach, Fla., the largest and most successful design center in America. He was former CEO and chairman of Engineers, a fine furniture and interior design chain in Michigan and Florida. And he was the president of the National Home Furnishings Association, a 16,000 store organization representing the retail furnishings industry in Washington D.C.

Danto and his wife Betty reside in Bloomfield Hills. They have three children and five grandchildren.

Mr. Danto’s undergraduate engineering education at Wayne State was cut short by World War II. Entering military service as a private, he served in Europe, being commissioned as a captain, when after exiting the army as a captain, he went into Betty Danto’s family furniture business, Englander furniture stores. He ultimately became chairman and CEO of Englander-Triangle before leaving in 1973. Danto later founded Danto Investment Company and built the Michigan Design Center and the Design Center of the Americas in Dania, Fla. He is known internationally not only as a leader in bringing the best in design together under one large roof, but also with Betty Danto for generously supporting many worthy causes in health care, education and the fine arts. Together they founded the supporting grant for the Danto Family Home for the Elderly in West Bloomfield.

They are the major contributors to the Sarasota Ballet of Florida. Their eldest daughter, Joanne, is a former principal dancer with the Joffrey Ballet.
Around Helios

200 Tongji University Grad Students Will Study At WSU Engineering College Each Year

Students from Tongji (tong-gee) University in Shanghai, China, will study and earn master’s degrees in engineering at Wayne State in a new pilot program. The memorandum of understanding, signed by WSU President Irvin D. Reid and Tongji University President Gang Wan on a recent trip to China by a WSU delegation, may result in 200 new Chinese students a year enrolled at the college by 2011.

“The College of Engineering sees a new mission and an opportunity unlike any challenge we have faced before,” said Dean Ralph Kummler. “Our challenge is to participate in the new global engineering environment. While previously, our graduates typically entered Michigan industry, now they will be entering the global market.”

After completing 12 credits of graduate coursework at Tongji, Chinese students may transfer those credits to Wayne State and take 20 additional credits to complete master’s degrees in industrial and manufacturing, civil and environmental, mechanical, or electrical and computer engineering.

“The Chinese students are very excited about this opportunity,” Kummler said. “The United States is still the number one choice for graduate engineering education abroad. And their faculties are just as enthusiastic.”

In addition to the agreement with Tongji, members of Wayne State’s delegation met with representatives of Fudan University in Shanghai, Tsinghua (Ching-wah) University and the Beijing University of Technology to explore other collaborative programs. Wayne State’s global forays have fostered a healthy international student population at the campus. The college faculty has had outstanding relationships with their colleagues at Chinese universities. The relationships have provided opportunities for outstanding Chinese PhD students to work with faculty and earn their degrees. These students have gone on to conduct successful careers in academia and industry in both the United States and China.

“As our US partner industries take their manufacturing, engineering and research global, with emphasis on China in the automotive sector, they are generating a tremendous workforce need,” Kummler said. “And the need for engineers outstrips the ability of China’s universities to produce engineers.”

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Drive Safely To WSU Campaign Encourages Drivers To Buckle Up

Wayne State’s faculty, staff and students drive daily from all corners of metro Detroit to reach the main midtown campus. With it comes the unwelcome hazard of traffic crashes.

In Michigan, there are 73,000 injury-causing crashes each year, resulting in 1,200 fatalities. That’s why the college’s Transportation Research Group (TRG) and the Department of Biomedical Engineering, in conjunction with the Michigan Office of Highway Safety Planning, hosted a Drive Safely to Wayne State campaign from Sept. 26-28. It was the second year of this annual campaign. The campaign is designed to help make the daily commutes of students, staff and faculty safer and raise awareness on such driving issues as aggressive driving (road rage), distracted driving, drinking and driving and safety restraint systems.

The three-day program is centered on Gullen Mall where state and local leaders gathered for the opening program, emceed by WJBK-TV 2-Traffic Reporter Jackie Paige. There were also numerous displays and activities. Among them were computer displays, safety belt convokers, rollover convokers, a driving simulator, a car seat safety check, “mocktails” and tons of information on crashes and other safety information.

After the campaign, TRG, which among other highway safety projects tracks safety belt use for the state, recorded safety belt usage at Wayne State. They reported that an impressive 90 percent of WSU students, faculty and staff buckle up. For their efforts in encouraging safety belt use at Wayne State, the Transportation Group, led by Tapan Datta, professor, was the recipient of the Buckle Up America Safety Belt Award from the National Highway Traffic Safety Administration.

First Robotics Brings ‘March Madness’ To Wayne State

While the rest of the country was saturated in March Madness, another kind of sport unfolded at Wayne State that required teamwork, and intensity, along with one other skill.

If you haven’t experienced it yet, a FIRST Robotics competition is tough to describe. Images from the FIRST Robotics regional held at Wayne State University for the third year on March 17 and 18 tell it better.

There is the referee in the center of the playing field between sounds dancing the Macarena with the mascot from the Utica High School Thunder Chickens. There is the emcee, a Canada Bell employee by trade, and a FIRST volunteer in his off time. He is sporting a spiked-colored hair arrangement resembling a parrot, announcing each team with the gusto of the Detroit Pistons announcer introducing the starting lineups in the NBA Finals.

There is the giant screen with video images projected in real-time of the robots maneuvering to shoot their loads of balls into the center goal, or one on defense knocking their opponents off their wheels. There are the rows of hot studio lights focused on the playing field. And the green lights above the center goals, indicating the current period of play, four periods in all.

There are the fans packed in the stands presenting a mosaic of colored t-shirts, banners and mascots of all species, waving and swaying. And the deafening sound of chanting and cheerleading, drowning out the play-by-play commentary by the announcer over the loudspeakers.

And, the robots, of course, guided by remote control, each individually designed by 133 teams, as distinct in their appearance as they are in function. Finally, there are the students, the future engineers, scientists and mathematicians, who, along with their mentors, are transformed by the experience. Surprised a bit by all the attention, surprised even more by what can be accomplished by an idea, a goal, belief, focus and some perseverance.

“A Real Round Table. The WSU delegation dining with officials from Tongji University

“Don’t try this yourself!”

photo by M.J. Murawka

FALL 2006
WSU POLICE

Features

To Operate World’s First F-Cell Powered Police Car

DaimlerChrysler Corporation has introduced the first fuel cell powered vehicle in the world. The Wayne State University Police Department will operate the Mercedes F-Cell as a supervisor’s vehicle on and in the immediate vicinity of the campus, located in Detroit’s Cultural Center. Outfitted with a third-generation police radio, decals, lights and sirens, the WSU Police F-Cell vehicle is a look into the future of fuel cell automobiles. The demanding operation of a police car will produce valuable data to help develop fuel cell technology. The car will also serve as a learning laboratory for students in the College of Engineering’s Alternative Energy Technology program, the nation’s first master’s-degree program in alternative energy.

“This event exhibits how DaimlerChrysler is taking on the challenge for industries and governments to create viable alternative-fuel solutions,” said Mark Chernoby, vice president, Advance Vehicle Engineering - Chrysler Group. “We’re pleased to be a driving force in this team effort to develop zero-emissions transportation.”

The WSU F-Cell police vehicle will be in full operation upon completion of NextEnergy’s new hydrogen refueling station expected sometime this summer. NextEnergy is a non-profit alternative energy development incubator located in TechTown, Wayne State’s technology park.

The college plans to display the car at various campus and public events as a way to educate the public about alternative energy and technology. “The WSU Police F-Cell car demonstrates tomorrow’s technology, but also reminds us how hard engineers, including our AET program faculty and students, are working toward getting us there,” said Ralph Kummler, dean of engineering.

The entire fuel cell system of the Mercedes F-Cell is housed in the floor of the vehicle, leaving full use of the passenger and cargo spaces. It has a range of approximately 100 miles and a top speed of 85 mph. The electric motor develops 88 hp (65 kW), enabling acceleration from 0 to 60 mph in 16 seconds. The stack was developed by DaimlerChrysler’s partner, Ballard Power Systems.

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Dean Ralph Kummler

Fuel cells release energy from the reaction of hydrogen with a catalyst and oxygen. This clean technology operates at a high level of efficiency and is true zero-emissions. Hydrogen-powered fuel cell vehicles emit only pure water vapor as exhaust.

As part of the world’s largest fleet of fuel cell vehicles, DaimlerChrysler has more than 25 fuel cell vehicles in customer hands in California and more than 100 around the world.

College Partners With NextEnergy To Open National BioFuels Lab

NextEnergy, Inc., Michigan’s non-profit alternative energy accelerator, is partnering with Wayne State University in opening the National Biofuel Energy Lab. Located in NextEnergy’s new facility in Midtown Detroit, the first-of-its-kind biofuel technology development lab is made possible through a $2.5 million U.S. Department of Energy grant.

“This lab will provide a much-needed biodiesel knowledge base, forming a solid technical foundation for the development of future fuels of this type,” said James Croce, CEO, NextEnergy. The ultimate goal of the National Biofuel Energy Lab is to develop and strengthen 820 specifications and standards in order to facilitate widespread warrant of 820 use by vehicle and engine OEMs and component suppliers.

Engineering faculty, graduate students and PhD candidates will conduct the day-to-day research and experiments carried out in the lab onsite at the NextEnergy Center. Professors Simon Ng and Naeim Henein will manage lab activity.

“There are many reasons why biofuels are an important bridge toward our nation’s energy independence, sustainability and clean environment,” said Dean Ralph Kummler. “On behalf of Dr. Henein and the Wayne State Center for Automotive Research, a leader in diesel engine performance technology since 1980, we are extremely pleased to take on this project.”

In addition to NextEnergy and WSU, several partners will be involved in contributing to the National Biofuel Energy Lab.

DaimlerChrysler will supply engineering support for research; Biodiesel Industries, Inc., the nation’s largest biodiesel refiner, will aid in the production and development of biodiesel fuel; Delphi Corporation will provide emission management technology and fuel injectors; Bosch and the U.S. Army Tank and Automotive Research, Development and Engineering Center (TARDEC) the nation’s laboratory for advanced military automotive technology, located in Warren. Finally, Bosch and TARDEC will provide test facilities and personnel for fuel evaluation work.
Faculty Achievements

SSIM Program Selected For 2006 University Safety Award

The Smart Sensors and Integrated Microsystems lab at the college has been awarded the 2006 University Safety Award. The Award recognizes efforts to eliminate hazardous conditions and loss or damage to property.

SSIM was honored for going to great lengths to maintain one of the safest laboratory environments on campus. Due to the volatile and flammable hazards associated with the lab, the unit has instituted a strict safety program that consists of restricted access, continuous safety training for users and monitoring and testing of safety devices.

Professor Greg Auner, director of SSIM, and Donald Falkenburg accepted the award presented by the University Loss Prevention Committee at a ceremony April 3.

Engineering Faculty And Staff Honored For Years Of Service

A total of 17 engineering faculty and staff members were honored by the university for their continuing years of service, while two former faculty members were bestowed with retirement awards.

Donald Falkenburg, former chairman of Industrial and Manufacturing Engineering, and Donald Silversmith, former associate dean for research at the college, were among recently retired university employees bestowed with retirement awards at a special ceremony held March 23 at the Detroit Institute of Arts for their ingenuity that has led to breakthrough inventions.

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Sean Wu Named “Inventor Of The Year”

Sean Wu, distinguished professor of Mechanical Engineering, was honored with the Wayne State University Inventor of the Year Award. Wu was also honored last September when he became a “distinguished professor” for his work in acoustic engineering.

The Wayne State Technology Commercialization office honored more than 100 faculty members and staff inventors March 23 at the Detroit Institute of Arts for their ingenuity that has led to breakthrough inventions.

Wu of Troy, holds eight U.S. patents, leading to breakthrough inventions. Wu is chief technical officer.

Yong Xu Selected For Research Enhancement Grant

Yong Xu, assistant professor, Electrical and Computer Engineering, was one of five faculty members selected by the university for a 2006 Research Enhancement Grant.

Ibrahim Honored With WSU Faculty Recognition Award

Ibrahim Honored With WSU Faculty Recognition Award

Tsung-lung Ibrahim, professor, Mechanical Engineering, is among five university faculty members selected to receive this year’s WSU Faculty Recognition Award. Ibrahim was honored for his book, Liquid Sloshing Dynamics, which summarizes his many years of experience and surveys more than 2,600 publications on this important subject.

The awards are given annually to full-time faculty members who make outstanding contributions to scholarship and learning. Each recipient receives a citation from the board, an engraved wall plaque and a monetary award.

King Hay Yang Honored By Chinese Ministry

King Hay Yang, director of the Bioengineering Center, was selected for the Chang Jian Scholar program by the Chinese Ministry of Education for his outstanding research in poultry genetics and developmental biology.

The award acknowledges special contributions made by Chinese scientists and overseas scholars in various research fields. Since 1999, 24 ‘Chang Jian’ scholars have been chosen.

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Prasad Elects To National Academy of Engineering

Mechanical Engineering Alumnus Pryaranjan (Priya) Prasad, BSME68, PhDBioM73, has been inducted as a member of the National Academy of Engineering (NAE) for his advances in automotive safety and impact biomechanics that have led to safer vehicles.

Prasad, a technical research engineer for Ford Motor Company, was among 76 new US members of the academy announced in February. Election to the NAE is among the highest professional distinctions accorded to an engineer. Membership honors those who have made outstanding contributions to "engineering research, practice, or education, including, where appropriate, significant contributions to the engineering literature," and to the "pioneering of new and developing fields of technology, making major advancements in traditional fields of engineering, or developing/implementing innovative approaches to engineering education," according to the academy.

Prasad has been a Ford biomechanical and automotive safety researcher for the past 32 years. He is widely recognized in the industry as the foremost leader in this area, having conducted pioneering research in analytical and physical testing methods, including vehicle offset crash testing; development and validation of human anatomical computer models; and injury criteria for children.

He was instrumental in defining the need for and requirements of occupant crash simulation, leading to the widespread use of modeling in the automotive industry worldwide. The latest members bring total membership to the Academy of Engineering to 2,216.

Prasad was inducted into the College of Engineering’s Hall of Fame on Nov. 17, 2005. He is also the recipient of the Henry Ford Technical Award for Side Impact Model and the NHTSA Engineering Excellence Award for Safety.
Larry Patrick, Pioneer Auto Safety Researcher, 85

Lawrence M. Patrick, one of the early pioneers in impact biomechanics whose research led to many automotive safety design improvements, including the air bag, died Sunday, April 30, at a hospice in Hendersonville, N.C., of complications from Parkinson’s disease. He was 85 years old.

Patrick performed much of the early work in impact biomechanics with mechanical engineering colleague Herbert Lissner that was instrumental in the development of the Wayne State Tolerance Curve. The model is the basis for the current injury criterion for Federal Motor Vehicle Safety Standard 208 and other auto safety standards.

Patrick, who was born in Detroit, had been living in retirement with his wife, Bess, in Laurel Park, N.C., since 1982.

Patrick was researcher in the Bioengineering Research Center from 1946 and professor from 1958 until 1976. He became director in 1965.

Early and succeeding Wayne State researchers, including Patrick, used cadavers to test seat belts and other auto safety features today’s motorists take for granted. The data collected in these tests were critical in developing the crash sled dummies used by automotive safety researchers worldwide for testing safety devices.

Influenced by its close proximity to the auto industry and the white terrors, together with physicians at the WSU School of Medicine, began the first controlled laboratory research in trauma biomechanics in 1939. The achievements by these and succeeding WSU researchers, particularly Patrick and Albert King, chair of the Biomedical Engineering Department, put Wayne State on the map in the impact biomechanics community.

Patrick was a courageous researcher who volunteered himself for many different types of impact tests, including pendulum impacts to his chest as well as crash sled tests, to obtain living human data. Just last December, he was interviewed by British television Sky One film producers for a documentary entitled, “Tested on Humans”, about six leading American scientists who volunteered themselves for their own research.

As a researcher and educator, Patrick instilled in his researchers and students the ethic of hard work, intellectual integrity, and above all, a spirit to help those in need, said King. James Patrick, a civil engineer in Hendersonville, said his father’s kindness, compassion and caring touched anyone who met him. “He was a renaissance man and a wonderful father. His work made a difference to society. A lot of lives were saved from what he’s done.”

In 1976, Patrick resigned from the university to become vice president of research and development at Libby-Owens-Ford Company, in Toledo, Ohio, where he led research on windshield and automotive glazing safety materials. In retirement, he and Bess were active in golf and hiking and as members of the First Presbyterian Church.

Patrick received a bachelor’s in mechanical engineering in 1942, a bachelor’s in aeronautical engineering in 1943, and master’s in mechanical engineering in 1955, all from Wayne State University. He was a member of civil engineering for more than 19 years where he established a solid reputation for his work in geo-technical earthquake engineering. “He was exceptionally knowledgeable and a very noble person in character,” said Mumtaz Ussen, the department chair.

Kagawa was born in Nara, Japan on May 12, 1947. He graduated from the University of Tokyo in 1970, and earned his master’s of science and PhD from the University of California at Berkeley where he studied under the late Professor Harry Seed. Seed’s pioneering research in earthquake science led to the understanding of soil behavior and ground response during earthquakes that is the basis for present-day seismic design around the world.

For his PhD at Berkeley, he developed a computer simulation model that analyzes how building foundations would behave in an earthquake. The model, called TRUSH, is used extensively around the world.

Kagawa suffered from Parkinson’s disease and died Oct. 24 in Tokyo, Japan. He was 58.

The College of Engineering extends its heartfelt sympathy to family, friends and colleagues of Takaaki Kagawa, associate professor, Department of Civil and Environmental Engineering, who died Oct. 24 in Tokyo, Japan. He was 58. Kagawa, an expert in the analysis of the effects of earthquakes on foundations and infrastructure lifelines, was diagnosed with liver cancer in 2004, but continued to teach through the end of winter semester 2005. Last summer he worked with his graduate students while traveling to a Tokyo hospital for treatment.

Kagawa was married for 65 years, James Edward Bedi, an associate professor in Electrical and Computer Engineering, who died Dec. 26 after a long illness. He was 62.

Bedi was an innovative researcher of fuzzy neural control methods and Wayne State professor since 1983 when he was invited to teach computer engineering at the college. He was appointed associate professor in 1986, and awarded tenure in 1989.

Bedi was born in Hazro, West Pakistan, in 1943 and graduated from Punjab University in 1965. In 1967 he received his postgraduate certificate from Indian Institute of Technology, New Delhi, and his PhD from the University of Roorkee, Roorkee, India in 1978. He taught at Thapar Institute of Engineering and Technology in Patiala, India until 1983 when he came to Wayne State.

Assoicate Professor Bedi is survived by his wife, Deep; mother, Sampuran Kaur; son, Harjanet; daughter, Tamman; five brothers and one sister.
CONCUSSIONS IN THE NATIONAL FOOTBALL LEAGUE

by Albert I. King, Department of Biomedical Engineering

On any Sunday afternoon in the fall, it is not uncommon to see an NFL player go down after a play and fail to get up. One of the reasons is a mild concussion or what is technically termed a mild traumatic brain injury (MTBI). Opposing players can run into each other at speeds in excess of 15 mph, and most concussions occur when there is helmet-to-helmet impact. The player who is struck on the side of the helmet is more likely to receive a concussion, possibly because the head is longer in the fore-aft direction and the skull is thinner along the side of the head. In some cases, MTBI can result from heavy ground contact, such as in the case of a diving quarterback.

The injury is exemplified by confusion, possible loss of consciousness, headache, dizziness, and temporary loss of memory and cognitive function. Shortly after the event, the injured player may not be oriented to time, place and person. He may also have vision problems. The injured player may be required by the team physician to sit out the next play, the next game or for longer periods depending on the duration of the symptoms of concussion. He is not allowed back on the field until he is clear of all symptoms. With regard to the risk of severe injury due to repeated concussions, there is a school of thought that recommends caution after sustaining a concussion. However, this is not accepted universally even though we can see the effects of multiple concussions on boxers, such as Mohammed Ali. Despite efforts on the part of helmet manufacturers to improve the protective ability of the helmet, concussions continue to occur. In a project with the NFL, Wayne State has been studying these concussion cases with the help of a computer model of the brain. Game videos of a collision producing a concussion were analyzed by Biokinetics, a consulting firm in Canada, to estimate the speed of the opposing players at the instant of collision. They then reconstructed the impact, using crash dummies that wore the same helmets that were worn by the players. Head accelerations of both dummy heads were measured and the data were fed into our model to assess the stresses and strains sustained by various parts of the brain during a concusive impact. The comprehensive model of the head includes not only all of the major components of the brain, but also the skull, scalp, face, facial and nasal bones and teeth. It was validated against several sets of data obtained by various researchers who conducted head impacts on cadavers and measured pressure in the brain as well as displacement of the brain relative to the skull.

The model revealed some interesting results. Most of the brain motion, and hence the strain in the brain, occurs near the center of the brain and not on the periphery. Also, the rate of strain is a good predictor of MTBI because the strain is not only sensitive to amount of strain, but also to the rate at which the strain is applied. Figure 2 shows model predictions of strain and strain rate in the brain following a side impact to the head. “Hot spots” for strain initiate near the site of impact, and gravitate towards the center of the brain at the end of the impact. These central regions are the seat of consciousness. Brain motion is more pronounced when there is a large amount of head angular acceleration or rotation as opposed to linear acceleration or translation. However, every impact has both components of acceleration, and it is difficult to determine the contribution of each to the resulting concussion. This is because concussion may not be entirely due to the high strains. Any impact produces transient pressure waves that traverse the brain, and the concusive effect of these waves is not clearly understood at this time. In fact, this may be the reason why we are unable to design a helmet that can be more effective against helmet-to-helmet impact.

Despite efforts on the part of helmet manufacturers to improve the protective ability of the helmet, concussions continue to occur.

The comprehensive model of the head includes not only all of the major components of the brain, but also the skull, scalp, face, facial and nasal bones and teeth. It was validated against several sets of data obtained by various researchers who conducted head impacts on cadavers and measured pressure in the brain as well as displacement of the brain relative to the skull. The model revealed some interesting results. Most of the brain motion, and hence the strain in the brain, occurs near the center of the brain and not on the periphery. Also, the rate of strain is a good predictor of MTBI because the strain is not only sensitive to amount of strain, but also to the rate at which the strain is applied. Figure 2 shows model predictions of strain and strain rate in the brain following a side impact to the head. “Hot spots” for strain initiate near the site of impact, and gravitate towards the center of the brain at the end of the impact. These central regions are the seat of consciousness. Brain motion is more pronounced when there is a large amount of head angular acceleration or rotation as opposed to linear acceleration or translation. However, every impact has both components of acceleration, and it is difficult to determine the contribution of each to the resulting concussion. This is because concussion may not be entirely due to the high strains. Any impact produces transient pressure waves that traverse the brain, and the concusive effect of these waves is not clearly understood at this time. In fact, this may be the reason why we are unable to design a helmet that can be more effective against helmet-to-helmet impact.

This article first appeared in the 2006 December-January Issue of Technology Century, published by the Engineering Society of Detroit.
Researchers achieve promising breakthrough delivering cancer drug to targeted tumor cells

by David Reich
College of Engineering
Public Affairs Officer

Chemotherapy has been the primary tool in cancer treatment for some years. Usually, it involves treatment with small molecules that are able to affect healthy tissue.

With the advent of nanotechnology, a promising new front has opened in the fight against cancer, and researchers are focusing on new “targeted” drug delivery systems capable of honing in and attacking tumor cells without affecting healthy tissue.

Chemical engineers, together with medical scientists, are working with tiny polymer constructs called dendrimers (~5-10 nanometers) that act as cancer-drug carrying “vehicles” to target cancer cells, which can be highly resistant to drugs. At Wayne State’s College of Engineering, a team led by Chemical Engineering Professor Ranganamanujam Kannan has shown how to effectively deliver a cancer drug to the doorstop of a tumor. More significantly, their unique dendrimer formulation can manipulate the resistance cancer cells to open themselves for drug delivery. Through collaborations with researchers at the Karmanos Cancer Institute, the investigation is set to move to the animal model stage. Kannan’s team has demonstrated their method to be as much as 20 times more effective against resistant cancer cells than current treatment methods. Their nanovehicles were the first reported polymer-based delivery vehicles that performed better than the drugs in cells. Considering the built-in advantages of these vehicles in vivo over free drugs the potential of their technology is significant.

A successful targeting method using nanotechnology not only introduces a powerful new tool in fighting cancer, but has other applications. One application is in cancer detection. Kannan’s team is working with other Karmanos researchers in developing imaging agents using dendrimers to create improved cancer detection. Other applications include the background of the area of his expertise – polymer nanomaterials and drug delivery – which involves more than a bit of knowledge in biology.

In April, Kannan’s group caught the attention of nanotech and cancer scientists when he reported in the journal Bioconjugate Chemistry success in attaching the common cancer drug methotrexate to the cell 100 times better than without the dendrimer. “On the cell surface there are receptors which can welcome the drug into the cell,” Kannan explains. “To make these things go, first it has to be harmless, it has to get where you want it to go, it has to be taken by the cells, and finally, the dendrimer has to let go of the drug in the right place.”

Scientists have shown that if you attach folic acid to a dendrimer, then attach the cancer drug to it, the dendrimer will reach a tumor cell 100 times better than without the folic acid. Kannan calls the targeting agent folic acid “the roadmap” in his school bus analogy.

“On the cell surface there are receptors who can welcome the drug into the cell,” Kannan explains. “Some tumor cells over-express folic receptors. And you can attach some molecules like folic acid on your dendrimer that will find these receptors very effectively.”

Resistant cells are very sophisticated, but they can be tricked. “They are clever enough to figure out that the drug is coming,” says Kannan. “But they are not clever enough to figure out that the dendrimer is hiding it.”

Getting in the cell is certainly a big step, but not a “big deal” since it’s already been done, Kannan says. “Besides that, you need the right environment around the dendrimer and the drug. And that is the big, big deal. That is where we are able to get significantly better performance than what people have gotten in the literature before.”

The dendrimer formulation with the “correct charge” – so the drug will be released inside the cell in the right place – is the key. “Inside the cell all kinds of things happen,” Kannan explains. “It first gets into something like early endosome, then late endosome, then goes into lysosome. Lysosomes are places where the drug can be released from excessive amounts of cancer drugs delivered intravenously. Typically, although effective, a significant percentage of the drug fails to reach the intended tumor and is absorbed by other parts of the body with undesirable side effects.

With the advent of nanotechnology, a promising new front has opened in the fight against cancer, and researchers are focusing on new “targeted” drug delivery systems capable of honing in and attacking tumor cells without affecting healthy tissue.
Student Achievements

Engineering Alumni Association Student Awards

Chelsa Zenk is the 2006 recipient of the Engineering Alumni Association (EAA) Outstanding Senior Award. She was also one of the four recipients of the Robert J. Wingerter Award (see below). EAA bestows its most prestigious award to the top Wingerter award winner.

Jasna Bektas is the 2006 winner of the EAA Fresh/Soph Award.

Robert G. Wingerter Awards

The Wingerter Awards are presented to outstanding seniors with exceptional qualities of scholarship, character and leadership. The award is the college’s top honor.

Shelly Davis, CEE’06, excelled in academics as well as providing leadership to the student body as president of the student chapter of American Society of Civil Engineers, vice president of Chi Epsilon and member of the Society of American Women Engineers.

Jessin John, ECE’06, demonstrated strong leadership qualities as an officer in the IEEE Student Chapter and president of the REACH Christian Club. As a member of Tau Beta Pi, he achieved a high scholastic level.

Joseph Scott, ChE’06, performed undergraduate research and remained active in the student chapter of the American Institute of Chemical Engineers, all the while maintaining an exceptionally high grade point average. Joe will pursue a doctoral program at MIT, Cal Tech, Berkeley, or at one of several other top-ranked PhD programs where he has been accepted.

Chelsa Zenk, IME’06, was a student role model, balancing schoolwork, practical field work and volunteer service. She served as project manager for her senior design team assignment at GM’s Hamtramck assembly plant. She volunteered at freshman orientation events and tutored at Shelters Elementary School in Southgate. Finally, she was president of Delta Phi Epsilon Sorority and was an active member of Tau Beta Pi.

Howard M. Hess Awards

The Howard M. Hess Award for academic excellence is given to the outstanding Engineering Technology graduating seniors from each semester.

Vanco Stojanowski, BSET’05, graduated from Macomb Community College with an AA in Automation Systems Design. He worked for Comau Pico, Inc. for five years before enrolling at Wayne State. He graduated in December magna cum laude.

Bryan Wakely, BSET’06, graduated from Macomb Community College with a degree in vehicle design, enrolling at Wayne State in 2003. Bryan maintained a 3.9 GPA at both institutions. He has worked as co-op student at GM and was considering it’s offer to continue with them after graduation.

Two CEE Graduate Students Earn National Scholarships

Suvra Chakrabarti and Chirag Safi, graduate students in the college’s Transportation Research Group led by Professor Tapan Datta, were selected to receive Michigan Institute of Transportation Engineers Scholarships for the 2005-2006 academic year. The scholarship is awarded each year to four students from Michigan universities based on academic performance, leadership, professional activities and a brief essay on the transportation profession.

Lu Wins “Best Paper Award” At Stapp Conference

Biomedical Engineering doctoral student Ying Lu has won best student paper of the 2006 Stapp Car Crash Conference for her paper on whiplash pain mechanism. Co-authoring the paper, which was part of Lu’s dissertation, were Chaoyang Chen, Srinivasu Kallakuri, Ajit Patwardhan and John Cavanaugh, professor, Department of Biomedical Engineering, and her advisor. Their work comes out of the Biomedical Engineering Spine Lab where researchers are honing in on the specific source of whiplash pain. Lu’s paper describes the dynamics occurring when the cervical facet joint capsules are stretched in a whiplash.

Piluso Earns AWMA National Scholarship

Chemical Engineering graduate student Cristina Piluso has been selected to receive a $2,000 scholarship from the Air and Waste Management Association. She is among 11 students throughout the country selected for the award presented at AWMA’s annual conference June 22 in New Orleans. The organization bestows the scholarships annually to promising environmental students pursuing studies and research leading to careers in air quality, waste management, and/or environmental management/policy/law.

As an undergraduate, Piluso was among the four Wingerter Award winners in 2004 distinguished for their outstanding academic performance and leadership. Piluso’s graduate research project will introduce a general mathematical framework of a sustainability decision-analysis methodology.

New CEO Student Chapter Formed At Wayne State

A new student organization on campus for students who want to become captains of their own businesses held its first official meeting Jan. 26. Students at the college formed Collegiate Entrepreneur Organization, or CEO for short, a chapter of the national organization, for the first time at Wayne State University. The students began meeting informally last fall when they invited engineering alumnus Jim Anderson to share his experience starting his one-man consulting service, Urban Science, in 1977. His company has grown to a global engineering services company with $70 million in revenue.

Anderson is mentoring the students in developing their own individual entrepreneurial career plans.

The new CEO group is open to all Wayne State students, said President Daniel Thomas, a mechanical engineering senior who wants to design and develop new inventions, and became involved in CEO to learn how to “be in control of them.”

Chemical Engineering student Cristina Piluso (left) and mechanical engineering student Chirag Safi (right) pose for a picture.

Future and current CEO’s Daniel Thomas (R), CEO Student Chapter president, with (right to left) Jim Anderson, CEO, of Urban Science, Marcus Nosr, and Dean Ralph Kammler.

Photo by Darril Ritchie

FALL 2006
Students Flock To Engineering Job Fair

by Wojciech Dudek

More than 450 students crammed the halls of the college Oct. 13 with their resumes in hand, eager to talk to engineering company recruiters and get a foot in the door of the industry.

Co-hosted by the college and WSU Career Services, the 2005 Job Fair attracted representatives from 29 companies seeking qualified individuals to fill full-time positions, COOP placements and internships. The companies included private companies along with federal and state government agencies. Most students lined up at tables represented by Detroit Diesel, Bose, Yazaki and EDS, where lines were 10 students deep.

“I came for GM, the CIA and Ford,” said electrical and computer engineering senior Bradley Bezzina. “These are companies I would like to work for.”

There were fewer job opportunities in the region because of the sluggish economy, but companies still came here to offer jobs, said Gerald Thompkins, associate dean of students for the college.

The recruiters are looking for fresh graduates with leadership abilities, communication skills, languages and high grade point averages. They also said that candidates must be flexible and ready for travel relocation. About 300 students spoke with EDS recruiters during the daylong Job Fair, said John Coschino, senior recruiter at EDS, which needed computer engineering graduates for positions in software applications, development and programming.

Coschino said he was impressed with the quality of the Wayne State engineering students. “Wayne State engineering students are well prepared, bright and they know what they want. You can see they have done their homework.”

Recruiters spent from five to 10 minutes with each candidate who left resumes for further review by human resource offices. During informal talks, they asked simple questions such as, “Why are you interested in our company?” and “What would you like to work at?”

The Engineering Job Fair in its present form with numerous companies setting up shop at one time first took place in 1996 when more than 60 companies were represented, said Thompkins. It was created to increase the opportunities for engineering students who tended to just interview with the Big Three automakers - GM, Chrysler and Ford, he added.

Summer Program To Support Minority Engineering Students

The college is offering a new summer program for incoming pre-engineering freshmen as part of a new four Michigan university alliance to address under-representation of minorities earning bachelor’s degrees in science, technology, engineering and math.

The “Engineering Pre-First Year” (EFPY) program at Wayne State and those of the other alliance partners - Michigan State, University of Michigan and Western Michigan – are part of an effort to boost graduation rates of African Americans, Native Americans and Hispanics by 50 percent in five years.

The universities announced their new partnership in the Michigan-Louis Stokes alliance for Minority Participation (MI-LSAMP) program last January. The MI-LSAMP is a five-year, $2.5 million program funded by the National Science Foundation (NSF). The college will receive $100,000 annually for the next five years to run its summer program.

The new program will help strengthen Wayne State’s role of increasing the diversity and numbers of Michiganians from all communities going into high tech fields, said WSU President Irvin D. Reid. “I know these students can benefit immensely from our support in their successful pursuit of studies in math, science and engineering, which can lead to a wide range of careers.”

Wayne State has long attracted a large percentage of minority students. But it shares the problem of other universities nationwide of retaining minority students in engineering and the sciences. “The gap in minority graduation rates in science and technology across the country is widening,” said Gerald Thompkins, associate dean of engineering, and director of WSU’s MI-LSAMP program. “We haven’t done a good job to help our students see the opportunities and options. Our program will work directly with incoming minority freshmen and ensure they make a smooth and informal transition to college, thereby increasing their chances to succeed in engineering.”

According to the 2000 US Census, African Americans, Hispanics and American Indians comprise 26.4 percent of the total US population with steady growth expected. However, they represented only about 14 percent of all the engineering baccalaureates in 2002, according to the American Association of Engineering Societies.

Two Students Create Catchy College Slogans

Civil and Environmental Engineering sophomore Alexander Prysiaziuk could have a future in marketing if he wasn’t so passionate about a career in engineering. Prysiaziuk, 19, and another student, Nicholas Bashour, were the winners of the College of Engineering’s Best College Slogan Contest.

A panel made up of college deans and administrators, along with the college’s Board of Visitors, chose Prysiaziuk’s and Bashour’s slogans from 64 submissions by students, faculty and staff.

“Engineering the world’s future and your own...WSU College of Engineering”

Prysiaziuk said it only took him a moment to come up with his slogan, “Engineering the world’s future and your own...WSU College of Engineering.”
Reflections

Helios Trail: A Symbol of Light

By Santiago Aguilar and Mark C. Kehoe

Engineering has very strong ties to art that are too often forgotten.

From now on whenever you enter the courtyard of the Engineering building, the first thing you’ll see is the College of Engineering’s sleek new symbol that seems to touch the sky. The new structure is called “Helios Trail.” It represents our constant striving to

inspire us to continue our efforts to realize our dreams, one step at a time.

The engineering college began the quest for representative sculpture in early 1988 specifying that the sculpture be composed of material that could withstand the changing weather condition of Southeastern Michigan.

Thirty-two national submissions for proposed structures to represent the College of Engineering were sent in.

Of the submissions, four finalists were chosen by panel chaired by Katherine Martin, the Dean of the College of Fine, Performing and Communication Arts. The panel consisted of Mel Shaw, Professor of Electrical Engineering, Richard Bilalitis, Assistant Dean of the College of Fine, Performing and Communication Arts, Ann Tobey, an artist and musician, artist Mary Jane Hock and Dean Beaufait.

Each of the four finalists were awarded $500 and asked to submit a scale model of their proposed sculpture. These models were then displayed in the engineering building’s Hall of Fame lounge, where students and faculty were invited to view the models. People viewing the models were polled to determine which sculpture appealed to them most. With the results of this poll in mind, the selection committee chose Bruce White’s sculpture Helios Trail to represent the Engineering College at Wayne.

Bruce White is a professor at the Northern Illinois School of Art. In his proposal, Mr. White stated that the sculpture speaks “of the coming together of man’s limitless intuitive and rational powers. The angular upward thrust of the diminishing form...(points) to the future and... (creates) a sense of dynamic energy.”

The 40-foot high sculpture, fabricated form both polished and brushed stainless steel, was named Helios Trail, according to Mr. White, “…with the idea of the sun god lighting the sky, creating a trail of light.”

The contoured edge of the structure, facing the building, was designed to take advantage of the attractive properties of light. Lighting would create what Mr. White called a “changing silhouette of the...contoured edge.”

The sculpture was also designed to look different when seen from various places in the courtyard, creating a “dynamic” effect.

The angular form was chosen so the sculpture’s shape would contrast the straight lines and horizontal bridging wall of the engineering building. The triangular base also “relate(s) to the angular divisions of the interior landscape.”

Mr. White said that these were “a vital part of the concept.”

The sculpture was transported on the back of a flatbed truck from Illinois, where it was constructed by its designer and a welder, to the delivery area of the engineering building. It arrived about a month before dedication. It was then lifted by its designer and a welder, to the delivery area of the engineering building courtyard by a large crane. As luck would have it, the base’s mounting bolts were not quite correct and adjustments had to be made. Once this problem was resolved, the sculpture was secured and prepared for its unveiling.

The Helios Trail was officially unveiled on September 22 to an audience of engineering faculty, alumni, students, and those curious on-lookers that just happened to walk by despite inclement weather. Following Dean Beaufait’s opening remarks, David Adamany lauded the symbol, saying it spoke “…very well of the College of Engineering.” Bruce White, Katherine Martin and Lou Ross, executive vice-president of Ford Motor Company, also spoke highly of the engineering college and its new symbol. Dean Beaufait said the sculpture was “…the realization of a dream which I had for this college from the first day at Wayne State. To me this marks the beginning of a new era for the College of Engineering at Wayne State.”

Dean Beaufait also added, “Engineering has very strong ties with art; one which is too often forgotten.” To help reinforce the engineering college’s ties with art, the sculpture has become the symbol of our college. A line art illustration of the sculpture is going to be used on all official engineering college stationary and publications. In support of this decision, beginning with this issue, the new logo will appear on all Wayne Engineer covers. As Dean Beaufait said this logo will give the engineering college, “a special identity within the university community.”

Indeed the sculpture will be a symbol of the College of Engineering for years to come and will be “…a gift to students past, present and future.”

On a recent trip to Florida, alumnus Brian Geraghty, MSME’72, took these photographs of a sculpture in front of the Jacksonville City Hall and plaque.

Look familiar? This sculpture by Bruce White, the same artist who created the college’s Helios Trail, was erected in 2001 and commemorated to the “Great Fire of 1901” by the citizens of Jacksonville. Thank you Bruce for discovering our new connection with Jacksonville.
Dear Alum,

As you read through this issue of Exemplar, you will see how your Engineering Alumni Association has a lot to offer for you. Whether you are looking for information about current projects at the Engineering College or what your fellow alums are doing, belonging to the Engineering Alumni Association is a great way to keep in touch. But if you want to do more than keep in touch, we have lots of programs in which you can participate.

The WSU Capital Campaign “Wayne First” is in high gear and with contributions from many alums, the $27.3 million Engineering Development Center has been given the go ahead. Funding for equipment is still needed if you have not yet sent in your contribution.

The Engineering Alumni Grants for Education and Research (EAGER) funds today’s students in collaborative projects that promote teamwork, engineering ingenuity and creativity. If you give to EAGER, either with your time or money, you will experience the enthusiasm of our Formula SAE team and other teams as they compete, often on a national scale, against other universities. This year’s FSAE competition was attended by 125 colleges and universities from all over the world. Wayne State has produced at least two overall winners in engineering competitions over the past few years. So the talent and drive is outstanding on our teams. The Alumni Association also funds student events like the Senior Breakfast in April and supports the Student Honors Convocation.

We have a new annual event, The Golf Outing, and as our treasurer, David Chegash, reported, “The record crowd enjoyed good golf, great food and prizes.” The EAA EAGER account enjoyed the outing, too, as we set a new record for contributions. The records Way State University Engineering alumni. The Alumni Association helps to promote a positive image of Wayne State and The College of Engineering. We promote professional development and networking opportunities with our activities and our membership roster of 1200 is growing every year. In 2005, the Engineering Alumni Association was named the Outstanding Alumni Group at WSU.

More work needs to be done as our vision is to be the principal affiliation of engineering graduates, providing leadership and direction in “giving back” to our alma mater. We accomplish this by contributing to the growth and image of the college and to strengthen alumni bonds via communication and programming for alumni.

Learn more about the Engineering Alumni Association by visiting your website at www.wsueaa.org and contacting any member of the board.

Wayne State University Engineering alumni. The Alumni Association also funds student events like the Senior Breakfast in April and supports the Student Honors Convocation.

We have a new annual event, The Golf Outing, and as our treasurer, David Chegash, reported, “The record crowd enjoyed good golf, great food and prizes.” The EAA EAGER account enjoyed the outing, too, as we set a new record for contributions. The records

Hall of Fame Gallery Launched Online

The College of Engineering has a new feature on its homepage, the COE HALL OF FAME ONLINE GALLERY.

More than 17,000 students have attended Wayne State's College of Engineering since it first opened its doors more than 70 years ago, graduated and gone out in the world to pursue their individual careers. In 1983, the college began to recognize some of its most outstanding graduates by creating a Hall of Fame. More than 100 alumni with distinguished careers and life experiences are now members. Now, you can visit the Hall of Fame without leaving your computer by simply logging onto the Alumni link on the college's homepage.
Robert Kupp

Aug 6, 1945. His superiors, even if they knew, never told him about the project. The only one knew was Robert Kupp himself, who was working on the Manhattan Atom Bomb Project. Drafted into the army one semester shy of graduation at Wayne State with a chemical engineering degree, Kupp found himself six months later in the Special Engineers Detachment at Oak Ridge, Tennessee. It was January 1945, and top secret activities were in full swing. It was January 1945, and top secret activities were in full swing. Top scientists and engineers were involved in the Manhattan bomb project. The project "put two and 2 together" after reading a book by two physicists who described in 1942 the concept of using enriched uranium to create a nuclear explosion. While Kupp knew he was part of a project making material for a powerful new bomb, he and his group were not privy to its timeline, nor how far along the Manhattan Project scientists "somewhere in the southwest" were. Kupp recalls hearing the news of the Hiroshima bombing on the radio. "We were very, very excited and exhilarated," he says. "We knew we had created something that was substantive in the world, and that it would end the war much quicker than otherwise."

After his army discharge in July 1946, Kupp returned to Wayne State in January 1947 to earn his degree. He was able to complete the 23 credit hours he needed in one semester with the assistance of the chemical engineering chair at the time, Harold Donnelly. Kupp remembers the popular professor fondly as willing to help him graduate. Kupp landed his first civilian job in August 1947 as a process engineer with the Kellex Corporation (later changed to Vitro Engineering Corporation) located in the Oak Ridge area and the company that designed and built the Oak Ridge Gaseous Diffusion Plant. After Vitro Manufacturing bought Kellex in 1952, Kupp worked as the chief nuclear engineer. He was involved in designing one of the first nuclear plants in the United States – Indian Point I, New York. In 1960, Kupp partnered with Sidney Stoller (previously the vice president of engineering at Vitro) to form Stoller Associates. Their corporation served the growing commercial nuclear power industry in the development of this new technology. They specialized in the nuclear fuel cycle, safety and power generation economics. Their company provided consulting work for the electric utility industry, the US Department of Energy, the United Nations and many other clients. While at Stoller, Kupp taught nuclear engineering as an adjunct professor at New York Polytechnic Institute. Kupp says he enjoyed reliving his experiences and reflecting on the nuclear industry in the process of writing his self-published book. A Nuclear Engineer in the Twentieth Century offers readers an opportunity to learn much about the development of nuclear technology in the United States, depicting important problems facing the industry from its early beginnings to the present. Kupp writes about radiation safety, power economics, risk/benefit analyses and the societal issues of nuclear waste disposal. Moreover, his first-hand experience in the industry adds an important personal dimension. A Nuclear Engineer in the Twentieth Century by Robert Kupp, BSCE '47, can be purchased by googling Robert William Kupp, or visiting www.trafford.com/04-2811
Leonard Myron Salle, BSE’59, Dies In Palo Alto, Calif.

Leonard Myron Salle, a college alumnus and founder of the California progressive think tank, the Commonwealth Institute, died May 5 at Stanford University Hospital as the result of complications of coronary bypass surgery. He was 69.

Salle was born in Detroit, graduated from Mumford High School in 1954 and Wayne State in 1959 as a civil engineer. He moved to the San Francisco Bay Area in 1960 and worked in executive positions in civil and environmental engineering design and construction firms. “He was a good man who did good in his lifetime,” said longtime friend and fellow Wayne State alumnus Harvey Gotliffe, a professor of journalism at San Jose State in California. “From his days at Wayne in the 1950s, Leonard has been passionately devoted to try and do what is right and beneficial for his community and for society as a whole.”

In 2001, Salle co-founded the Commonwealth Institute that seeks to maximize the visibility and the power of progressive ideas and values. “The issues closest to his heart included those with a liberal bent—protecting the environment, reducing classroom size, buttressing election security and supporting the tort system,” according to his obituary in the San Francisco Chronicle. Salle was president of the Santa Clara County Engineers and Architects Association, a fellow in the American Society of Civil Engineers, and a charter member of the Association of Environmental Professionals in California. For the past 16 years, Salle and his wife, Katherine Forrest, have resided in Palo Alto, Calif.

Salle is survived by his wife, Katherine Alden Forrest; sons William F. of Agoura Hills, Calif., and Stephen K. of Sacramento, Calif.; stepsons Eric John Finseth of McLean, Va., and Ian Frederck Finseth of Denton, Texas; a brother, Donald of San Mateo, Calif.; sister-in-law, Adele, wife of his deceased brother, Richard Salle, of Saratoga, Calif.; and six grandchildren.

A special fund in Salle’s name has been set up at the Commonwealth Institute to carry out his long-term work on strengthening the public education system. Donations can be mailed to the Leonard M. Salle Memorial Education Fund, the Commonwealth Institute, 325 Sharon Park Drive, Suite 332, Menlo Park, CA 94025.

Emmett Leith, BAAS’50, MSPhy’52, PhDnee’78, Holographic Innovator, Dies At 78

Holographic innovator and Wayne State University electrical engineering alumnus Emmett Leith was planning to retire Dec. 31 after 52 years at the University of Michigan. But Leith, a professor of electrical engineering and computer science, died of an internal hemorrhage Dec. 23 after falling ill the day before at his home in Canton. He was 78.

“He’s known as the person who made practical holography possible,” Gary Adams, who worked for Leith at the U-M Institute of Science and Technology lab, told the Ann Arbor News. Leith uncovered the principles of the hologram while working at the lab in the mid-50s. Between 1961 and 1964, Leith and fellow researcher Juris Uptaineks made a series of presentations to the Optical Society of America describing three major advances in holography, which uses lasers to create three-dimensional images.

Leith was born in Detroit. He earned all his college degrees from Wayne State: a bachelor’s in liberal arts and sciences in 1950, a master’s in physics in 1952, and a PhD in electrical engineering in 1978. Just before he fell ill, Leith was honored at his retirement party. He had worked at U-M for 52 years.

Laser Light: One Man’s Life Work

Leonard Salle with wife, Katherine Forrest

Louis Silverman, BSChHE ’41, died Nov. 15, 2005. He received a master of science in metallurgy from Stevens Institute of Technology, NJ, in 1950. He was a member of the Wayne Alumni in New York City for several decades. Over the 50-year span of his career, he worked at the Bowen Products Division of the L.A. Young Corporation, RCA, Chromatic Television Laboratories (Paramount), Raytheon, General Precision Corporation and the Electronics Semiconductor Corporation.

Donations

Engineering Development Center Support Hits $21.3 Million

A total of $21.3 million has been pledged to the building fund for the new Engineering Development Center, which is expected to cost a total of $27 million. In addition to the state of Michigan’s $15 million commitment, a $1.5 million donation from chemical engineering alumnus Yousif Chahani has been pledged. An additional $1.8 million will come from Ford Motor Co. as the university gears up for the second phase of its capital fund-raising campaign.

Ernest Kirkendall Family Bequeaths $25,000

Promising engineering students will benefit from a $25,000 donation left by former alumnus Ernest Kirkendall and his family. Kirkendall, who died last August, earned his bachelor’s degree from Wayne State in 1934 and master’s and PhD from University of Michigan in 1935 and 1938. He was an assistant professor of chemical engineering at Wayne University from 1941 to 1946. Kirkendall’s doctoral thesis experiments on the inter-diffusion between copper and zinc proved that the individual component atoms in a solid alloy diffuse at different rates. His discovery, which took the scientific world 10 years to accept, became a well-known theory in metallurgical science, providing guidance for materials research and practical engineering problems.

Singh Development Donates $50,000 For Scholarships

Students in India will have the opportunity to pursue graduate studies in engineering at Wayne State, thanks to a $50,000 donation from Singh Development LLC of Troy. Lushman Grewal, a 1967 electrical and computer engineering graduate and treasurer of Singh Development, helped establish the scholarship fund. Grewal, a native of India who emigrated to the United States in 1961, said Singh’s interest is in strengthening cultural understanding between the two countries. In addition to Singh’s donation, two area Sikh institutions have donated $10,000 each to the endowment to encourage collaboration between the college and educational institutions in India.

Clare and John Morrison Bequeath $120,000 For Scholarships

Thanks to Clare and John Morrison, engineering students will receive financial support in the form of scholarships. A total of $120,000 was bequeathed by Clare and her brother John, who was an electrician at Ford Motor Co. John Morrison died in 1997, and Clare, an attorney who lived in Detroit, just this last February. Clare’s sister was a Wayne State University alumnus.
The Man Behind The Wingerter Award

Robert G. Wingerter, BSEngg’38

The Wingerter Awards for excellence in engineering scholarship are the highest honor an engineering student can receive, and only the top students are selected. Most people affiliated with the college recognize the name and the image of Wingerter, which often appears in college publications in articles announcing the award winners. But few people know the man himself. The man behind the Wingerter Award, Robert G. Wingerter, talked to Marion Ringe, Office of Development and Alumni Affairs, on his student years at Wayne State and explained how he came to establish the first award in 1968.

After graduation in 1938, Wingerter joined Timken Roller Bearing Company in Canton, Ohio, as a trainee engineer for sales and moved up through the ranks over the next 20 years, culminating as director of sales for four years. He then went to Rockwell-Standard Corporation, serving as executive vice president, director and president of the automotive division. His last career move took him to Libbey-Owens-Ford Company, where he served first in the position of executive vice president, then president and chief executive officer, and finally, chairman of the board.

This October, Wingerter will celebrate his 90th birthday. He and his wife, Dorothy, a Wayne State education graduate (1939), live in Perrysburg, Ohio. In August, they celebrated their 67th wedding anniversary.

by Marion Ringe

“In the 1930s when I was in high school, my father’s business had failed and finding work was almost impossible. My mother prepared food for several grade school lunchrooms to bring in a little money. Life was tough. At that time, the Detroit Board of Education awarded one tuition scholarship to what was then Detroit City College, the predecessor to Wayne State University, to each high school graduating class. When I graduated from Denby High School in January 1934, I was the fortunate recipient. That was the way I was able to enter college.”

I was good in math and mechanical challenges and had an early interest in studying engineering in college. I did well academically, and I also enjoyed sports. I pitched baseball for my high school team and also played on the high school golf team. I was introduced to golf as a caddy. Wayne didn’t have a baseball team at that time, but I did make the varsity golf team, which put me on crowded streetcars from the east side, toting an armful of books and a loaded golf bag. I was captain of the Wayne golf team for two of the three years I played varsity golf and was able to arrange my classes to leave afternoons available for golf matches.

“At the end of my sophomore year and early in 1936, the city of Detroit converted from manufactured gas to piped-in natural gas. That meant all gas appliances throughout the city had to be converted to accommodate the new service. A number of college students took advantage of the opportunity to make the good-paying work. I became a trouble-shooter, handling difficult conversions, and was earning as much as $60 a week, depending on overtime opportunities, which seemed a small fortune during the mid-30s. I worked at that job for eight months until the conversion was complete, and I returned to my academic studies. Then I bought a 1933 Ford V8. No more golf bags on the streetcars. Being able to drive to school was a dream-come-true, but parking was a problem. The only place to park was on the street. With the bumpers on the Ford, I developed a handy skill — nudging parked cars front and rear just a bit until there was room for mine.”

Establishing the awards

“A long-time friend from my grade and high schools, Ray Hayes, was active in the leadership of the university’s alumni association in the mid-1960s, and he urged me to sponsor some new support for the university. I was motivated to recognize superior scholastic performance in the engineering college.”

“I established the awards in December 1967 to reward senior students for their outstanding scholarship, character and leadership. Back then, the awards were $250, and I gave $1,000 each year to fund the four annual awards. Today, each awardee receives $1,000, and my hope is that the endowment I created will support some future increases to carry the erosion of inflation.”

“Since 1968, 130 awards have been presented, and it is gratifying to receive photos and occasional notes of thanks from the students. Reading about past Wingerter award winners who are succeeding in business also is a great pleasure for me. Although it is difficult now to attend the award ceremonies as I occasionally used to, I still feel connected to the College of Engineering and am proud to stimulate students through this award recognition.”

Marion Ringe is a development officer in the WSU Office of Development and Alumni Affairs.

Robert Wingerter with Dean Ralph Kannerather and Jack Vanhecke, the college’s development director

The researchers have been working with mice in preliminary tests to learn more about the behavior of dendrimers. “Now that we know what kind of construct is working, we can go back and put targeting moieties (agents) on dendrimers and go and test them in animals,” Kannan says. "Larry can take a sensitive cell and knock out the receptor that takes in the drug, and treat it with the dendrimer and make the cell resistant. You treat them with the drug and you find the sensitive line gets killed. The resistive line puts up a big struggle even after being given a factor of 100 times more drug. If we take that same cell line, and treat it with the dendrimer conjugate we created, we need to give a factor of 8-25 times less drug.”

R.M. Kannan is an associate professor in the Department of Chemical Engineering and Materials Science, and Biomedical Engineering. He is also a co-inventor, co-founder and chief technical officer of nanoScience Engineering Corporation, a nanotech start-up partly owned by Wayne State, that researches, develops and markets novel neofi ller dispersion technologies.

Dendrimers story continued from page 17

An Alumnus Remembers

This October, Wingerter will celebrate his 90th wedding anniversary.

Robert Wingerter with wife, Dorothy

Researchers at Karmannos, Children’s Hospital of Michigan and Kresge Eye Institute, that will lead to several clinical applications through translations of this nanomaterials research platform. “Our collaborators have animal models to test our dendrimer-based delivery systems,” says Kannan. The collaborations are with Anthony Shields, Fazlul Sarkar, Bonnie Sloane and Kami Moin and Neb Duric (all at Karmannos), Ray Lezzi (Kresge), Mary Lieh-Lai (Children’s), David Bassett (College of Pharmacy). Another close collaborator is Sujatha Kannan (Kannan’s wife) who was his mentor and is on the faculty at Children’s. She is working on using dendrimers for delivery to the brain.

“It's a relatively new technology with very broad applications, and Wayne State is a great collaborative environment to make it happen”, he says.
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