

# University of Wisconsin-Milwaukee Research Foundation 2010 Progress Report



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September 30, 2010

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September 30, 2010



The mission of the UWM Research Foundation is to foster research and innovation at the University of Wisconsin-Milwaukee (UWM). As the new Chairman of the UWM Research Foundation, I am pleased to provide you with this update on our progress towards achieving that mission.



The University of Wisconsin-Milwaukee continues to evolve to meet the needs of the community which it serves. The growth of UMW's research program is an important element of that evolution. In particular, new Ph.D. programs, research centers that work collaboratively with industry and new schools are helping shape research at UWM in a way that makes the University an economic driver for our region.

The UWM Research Foundation is also helping shape UWM's growth by working to create a culture of innovation and developing infrastructure to help bring UWM discoveries to the broadest possible audience. We measure success in terms of our research programs, partnerships, development of intellectual property and licensing of technology. As you'll see in this report, we're making important progress in each of these areas.

This report is being provided to our supporters and stakeholders, without whom our work would not be possible. We believe you have invested wisely in UWM and the UWM Research Foundation, and we are grateful for your continued support.

Sincerely,

#### Daniel J. Bader

Chairman, UWM Research Foundation, Inc. President, Helen Bader Foundation, Inc.



# **UWM Research Foundation**

The UWM Research Foundation (UWMRF), Inc. is a private, non-profit corporation organized in support of the University of Wisconsin-Milwaukee (UWM). The UWM Research Foundation is controlled by the UWM Foundation, Inc. and was created in 2006, as part of the UWM Foundation's strategy of expanding its support for the University through public/private partnerships.

#### **Mission – Research and Innovation**

The mission of the UWM Research Foundation is to foster research and innovation at the University of Wisconsin-Milwaukee. Research, the process of creating knowledge, is at the heart of UWM's mission as one of Wisconsin's only two public research institutions. Innovation, bringing that knowledge to a broad

audience – primarily through commercialization efforts, helps maximize the impact that these discoveries have on the world.

#### **Measuring Success**

The UWM Research Foundation has developed programs that promote discovery as well as innovation and commercialization. The leaders of the UWM Research Foundation measure its success in terms of its research programs (catalyst grants and fellowships), partnering efforts (aimed at established



companies and startups), the success of licensing efforts which bring technologies to the marketplace, and the development of its intellectual property portfolio (including patents and copyrighted works). In the four years since the UWM Research Foundation was formed, there has been significant progress in each of these areas, and the organization's leadership remains focused on delivering value to UWM in these areas.

#### Supporting UWM's Growing Research Enterprise

UWM research expenditures have grown from \$21 million in 2000 to nearly \$68 million in 2010. The University's doctoral programs have grown from 77 in 2000 to 152 in 2010. The University has launched a new School of Freshwater Sciences and a new School of Public Health, as well as several centers aimed at partnering with companies in water, energy, transportation and materials research.

The UWM Research Foundation is growing to meet UWM's needs. Through the Catalyst Grant Program, the UWM Research Foundation has provided over \$2 million in seed grants to foster research in strategic areas. The UWM Research Foundation manages a growing portfolio of intellectual property that includes

38 issued or applied for patents and additional copyrighted contents. The UWM Research Foundation has created an infrastructure of managing intellectual property that includes a new online inventor portal where UWM inventors can submit new ideas and stay current with efforts to market and license their technologies. In fiscal year 2010, the UWM Research Foundation licensed technology to a UWM-based startup company, NanoAffix Sciences and created an option agreement and partnership with a local water industry company.





# Programs

The UWM Research Foundation's programs are designed to help bridge the gap between research and commercialization. The Catalyst Grant Program provides resources to advance research while the UWM Research Fellows Program and Technology Transfer Intern Program help build talent.

### **Catalyst Grants Program**

The UWM Research Foundation's Catalyst Grant Program is designed to seed promising early-stage research and foster commercialization in key areas. Supporters of this important program include the Rockwell Automation Charitable Corporation, the Lynde and Harry Bradley Foundation, and the Richard and Ethel Herzfeld Foundation. Within the framework of the Catalyst Grant Program, the UWM Research Foundation has tailored the program to meet the desires of each supporting organization, while employing a proven model to identify the best opportunities and measure success of the program. To date, the program has awarded over \$2 million in grants while demonstrating important successes.

## Catalyst Grants Emphasize Strong Science and Commercial Potential

The Catalyst Grant Program uses a competitive process to select the projects with the highest potential for results based on strong science and commercial potential. Awards are made to researchers working at the University of Wisconsin-Milwaukee.

External scientific reviewers from leading institutions around the country are recruited to review proposals in their areas of expertise. Commercial potential is assessed based on existing or potential intellectual property, corporate partnerships and the potential for startup companies. The scientific and



commercial assessments are combined to select the best projects for funding. Final selections are made by a committee that includes representatives from industry, the University and the UWM Research Foundation Board of Directors.

#### Catalyst Grant Outcomes

The success of the Catalyst Grant Program is measured in four areas: research and scholarship, intellectual property, corporate partnerships and startup companies. These areas provide both leading indicators and final outcome measures related to economic development.

- **Research and Scholarship** measures include peer-reviewed publications and the ability to attract follow on funding. These measures demonstrate the basic strength of UWM's research program which is important to attracting partner companies as well as the best and brightest faculty and students.
- **Intellectual Property** Intellectual property measures (including invention disclosures, patent applications and issued patents) provide a measure of the generation of ideas which are a key driver for economic development.
- **Corporate Partnerships** measured through partner meetings and corporate sponsored research contracts that are fostered by catalyst grants.
- **Startups** measures include business plans, option agreements, license agreements and small business innovative research (SBIR) grant applications

Thirty-two projects have been supported by the Catalyst Grant Program since its 2007 launch.. These seed projects will undoubtedly yield results over many years, but the program has already demonstrated important successes as highlighted below. In addition, the Catalyst Grants help support other activities of the UWM Research Foundation, including corporate partnering and startups. Further details of the Catalyst Grant Program are shown in Exhibit A.



### **Bradley Catalyst Grants – Fostering Research and Economic Development**

Catalyst Grants supported by the Lynde and Harry Bradley Foundation are helping UWM to foster the talent and ideas that drive economic development. The Bradley Foundation has provided \$1.4 million over three years which has helped to fund twenty-two promising projects. These grants are closely linked with the other activities of the UWM Research Foundation including protecting intellectual property, marketing technologies and helping build connections with companies. The Richard and Ethel Herzfeld Foundation also provided \$75,000 to support grants made in conjunction with the Bradley Catalyst Grant Program.

Strong ideas and talent will ultimately draw capital needed to drive economic development. UWM and the UWM Research



Foundation are working to leverage broader efforts throughout the state, including BizStarts, efforts of the Wisconsin Angel Network and initiatives by the State government to incentivize institutional investment in the state. The UWM Research Foundation is building ties with investment groups that can serve as a source of capital through initiatives such as the First Look Forums that showcase promising UWM technologies to investors and entrepreneurs.



Intellectual property, including patents, is one way to measure generation of ideas that support economic development. Applications to the Bradley Catalyst Grant Program must be associated with an active intellectual property matter managed by the UWM Research Foundation such an invention disclosure (the first step toward a patent), a patent application, an issued patent or a copyright matter. This requirement has proven to be a strong incentive for driving faculty to disclose new ideas. Prior to each grant application deadline, there has been a surge of new disclosures with a total of 51 new invention disclosures tied directly to the Bradley Catalyst Grant Program. The Catalyst Grant Program is also closely tied with patent investments made by the UWM Research Foundation... In many cases, catalyst grants help provide important "reduction to practice," or proof of concept data needed for patent applications. This has made the Catalyst Grant Program a powerful tool for strengthening UWMRF's intellectual property portfolio.

Catalyst grants are also helping create a culture of innovation at UWM. Coupling grants with support for business development and partnering with companies is helping researchers find ways to bring discoveries to market.

#### Catalyst Grants – Ideas that Drive Economic Development

#### Intellectual Property

- ✓ 51 new inventions disclosed
- ✓ 13 patent applications related to catalyst grants

#### Licensing and Startups

- ✓ License Agreement with biomedical startup
- ✓ License Agreement with UWM startup company
- ✓ Option Agreement with local water company
- ✓ Equity Ownership in UWM Startup Company





Sensors & Software & Materials

esources

**Devices** Informatics

Talent

## **Rockwell Catalyst Grants – Creating a Regional Research Asset**

The Rockwell Catalyst Grant Program is building talent, capability and resources in key areas that make UWM's growing research program a strategic asset for Rockwell Automation. The Rockwell Automation

Charitable Corporation has committed \$850,000 over five years to support catalyst grants. These grants are targeted in three areas of research – materials, software/informatics and sensors/devices. These research areas



are important not only to Rockwell Automation and other companies in the field of advanced automation, but also to other regional industry segments including biomedical engineering, energy and water.

water. Rockwell Catalyst grants are helping shape UWM's research direction, ensuring that Rockwell Automation can draw on capabilities in materials, software/informatics and sensors/devices. To date, the Rockwell Catalyst Grant Program has made nine direct awards totaling \$520,000 and awarded an additional \$100,000 through the Wisconsin Energy Research Consortium (WERC). These grants support graduate students, which helps develop a trained workforce for Rockwell Automation.Research support also helps cultivate faculty experts that can collaborate with Rockwell Automation scientists and engineers. Rockwell Automation's support is also building resources by helping UWM launch research centers that align with the needs of Rockwell and other regional industry partners, such as the Wisconsin Energy Research Consortium.

Rockwell Catalyst awards have advanced materials research in advanced coatings and self-healing materials. Software and informatics research has also been advanced through standards that improve the reliability of wireless networks as well as broader architecture to connect the "shop floor" to the "top floor". Support for sensors and devices has led to the launch of a startup company (led by Dr. Junhong Chen to commercialize innovative nano-sensors) and is helping support new sensors for water as well as devices for waste water treatment.

Support for the energy center has helped UWM partner with other academic institutions as well as regional industrial partners to develop a research capability in energy research. This important center is leveraging funding from other federal, state and industrial sources.

#### Building Capability, Talent and Resources in Key Areas

#### Materials

- ✓ Collaboration in anti-corrosive surfaces
- ✓ Fundamental research in self-healing materials

#### Software and Informatics

- IEEE standards development to improve reliability of wireless networks
- Development enterprise data management architecture

#### Sensors and Devices

- Startup company launched to commercialize innovative nano-sensors
- ✓ New devices for energy production



Dr. Junhong Chen (right) and post-doctoral researcher Dr. Ganhau Lu are developing nano-sensors that have formed the basis of Chen's startup company, NanoAffix Sciences.



#### **Research Fellows Program**

The UWM Research Foundation's Research Fellows Program is designed to help UWM researchers attract and retain the best and brightest talent to improve the productivity of their research programs. The program makes awards of \$7,500 to \$10,000 directly to research assistants and post-doctoral



UWM Research Fellow Dr. Scott Mangan's work with Dr. Stefan Schnitzer on species diversity was recently featured in the journal *Nature*.

researchers working in the laboratories of faculty members in the sciences, engineering and business. These "kicker grants" are over and above base support, so they can help faculty members recruit the best talent. The program has \$160,000 in committed support, including \$80,000 committed by the UWM Foundation and UWM Research Foundation Board Directors.

Fifteen Research Fellow awards have been made in two rounds of the program in 2008 and 2009 for a total of \$141,000 in committed funds. Research Fellows have spanned disciplines in science and engineering including: atmospheric sciences, energy production, freshwater sciences, biomedical imaging, gravity wave physics, nanomaterial and surface chemistry.

#### Technology Transfer Intern Program

The Technology Transfer Intern Program employs student interns to support a continuum of intellectual property management activities that includes: identification and assessment of intellectual property, management of patent prosecution and marketing and licensing of technology. In addition, interns also support managing programs such as the Catalyst Grant Program. The program has received \$40,000 in support from the Helen Bader Foundation. Since the launch of the program in 2008, the program has employed four undergraduate student interns and helped attract Dr. Jessica Silvaggi. Dr. Silvaggi joined the UWM Research Foundation thanks to the support of the Helen Bader Foundation and has continued on in the capacity of Technology Licensing Associate.

# Partnering

Partnering efforts are aimed both at established companies, including those in key industries, and startup and early stage companies. The UWM Research Foundation's efforts are closely coupled with UWM's efforts under the Vice Chancellor for Research and Economic Development, the Vice Chancellor for

Development and Alumni Relations as well as the deans of key colleges such as the College of Engineering and Applied Science (CEAS).

#### **Investor Forums**

The UWM Research Foundation sponsors "First Look Forum" events, which showcase UWM technology to investors and local entrepreneurs. These events give UWM researchers an opportunity to share their work with a businessminded audience, and portray the scientific benefits in terms of market needs. Three forums to date have resulted in numerous follow up meetings between entrepreneurs and UWM faculty, and may soon lead to the launch of a startup company.





The UWM Research Foundation conducted its most recent First Look Forum in conjunction with the Medical College of Wisconsin Office of Technology Development. The event featured inventors from both institutions, highlighting complementary strengths in biomedical research and the development of new drug therapies.

#### **Fostering Entrepreneurship and Startup Companies**

The Research Foundation is working to move technology into area startup companies and assist UWM faculty members in launching their own companies that can grow in the region. This support includes coaching for faculty members, and support for business plan writing and linking UWM faculty with other resources such as BizStarts, a Milwaukee-based initiative to foster high growth companies. The Research Foundation also provides support for faculty members pursuing small business innovative research grants. This includes helping identify partner companies, coaching on university policies and procedures as well as support for grant writers.

#### Industrial Collaborations in Energy Research

Partnering efforts aimed at established industries include the regional companies working in energy. UWM's College of Engineering and Applied Science led the effort to launch a new center in energy research, the Wisconsin Energy Research Consortium. The center includes other academic institutions (Marquette University and the University of Wisconsin-Madison) as well as corporate partners (including Eaton, DRS Technologies, Kohler and Rockwell Automation).



The UWM Research Foundation leveraged support of the Rockwell Catalyst Grant Program to help UWM launch an important new center in energy research. The UWM

UWM inventor Dr. Adel Nasiri leads one of the new energy center's projects in wind turbine control.

Research Foundation earmarked \$150,000 in Rockwell Catalyst Grants to help fund projects through the center.

#### **Bulding a Regional Water Cluster**

The University of Wisconsin-Milwaukee is part of regional efforts to foster development of water-related industries. UWM's College of Engineering and Applied Science along with Marquette University and six



Dr. Peter Geissinger (right), received a Bradley Catalyst Grant to adapt his fiber optic sensing technology to an industry need identified by partner company, Advanced Chemical Systems.

regional water companies launched a National Science Foundation (NSF) center in water technology and policy research.

Industrial/University Water Cooperative The Research Center (I/U CRC) uses and industrydirected model to select research projects conducted by faculty researchers working in collaboration with industry partners. The UWM Research Foundation has supported these efforts and leveraged its programs, including the catalyst grant program to support water-related research. Five catalyst grants, directly related to water research and several of the researchers supported by these projects, have linked their efforts to the water center.



# Intellectual Property Management

Management of UWM's intellectual property is central to the role of the UWM Research Foundation. This function includes protecting intellectual property through patents and copyrights, marketing technology and licensing technology.



UWMRF IP Management Process now includes a new online Inventor Portal and detailed process documents.

#### **Process and Infrastructure**

The UWM Research Foundation continues to refine its processes for the management of intellectual property. In the fall of 2009, the UWM Research Foundation implemented a software system, Inteum CS, for internal tracking of intellectual property, marketing and licensing. This system includes over 165 UWM technologies and provides a central online resource for UWM staff to collaborate and track matters in a systematic manner.

The UWM Research Foundation is now launching a new inventor portal which will enhance this process. The Inventor Portal will allow UWM researchers to create, edit, save, and submit invention disclosures electronically. Researchers can also use the Inventor Portal to check, in real time, the status of their invention disclosures and related patent applications from any web enabled computer. With the launch of this system, the UWM Research Foundation has also published a user's guide for the Inventor Portal and an intellectual property management process document that details the responsibilities for the inventor and the UWM Research Foundation at each step of the patenting, marketing and licensing process.



## **Intellectual Property Portfolio**

Scientific discovery at the University of Wisconsin-Milwaukee has led to a growing portfolio of intellectual property that now includes thirty-eight issued or applied for patents and additional copyrighted matters. This intellectual property spans a range of disciplines that includes biological sciences, materials, imaging, water, energy and communications.



UWMRF's Intellectual Property Portfolio



# Marketing and Licensing

The UWM Research Foundation has created a structured process to market technologies to maximize the chances of completing a successful license agreement. Working collaboratively with the inventor, the UWM Research Foundation creates marketing materials and identifies licensing prospects. The UWM Research Foundation leads the process of contacting companies, providing detailed information that can ultimately lead to evaluation of materials and license agreements.



The UWM Research Foundation is currently marketing 40 UWM technologies. Since launching the structured marketing effort at the end of 2009, over 240 prospective licensees have been contacted. The UWM Research Foundation also works collaboratively with technology transfer organizations at other institutions to jointly market and license technologies. Currently, UWMRF is working with four other institutions to market technologies that include inventors at both institutions. The UWM Research Foundation is currently managing five active license or option agreements.

Exhibit B shows highlights of UWMRF in the news, including recent success in licensing technologies.



# UWM Research Foundation Leadership

The UWM Research Foundation Board brings a complementary mix of experience from for-profit and notfor-profit organizations and includes expertise in research management, venture capital investing and industry leadership. The Board is led by Chairman Daniel J. Bader, President, Helen Bader Foundation and Sujeet Chand, Sr. Vice President and Chief Technical Officer, Rockwell Automation.

## **Board of Directors**



Daniel J. Bader President Helen Bader Foundation Chair, UWMRF



Sujeet Chand Sr. Vice President and Chief Technical Officer Rockwell Automation Vice Chair, UWMRF



William Berezowitz Vice President and General Manager, Imaging Subsystems GE Healthcare



Trevor D'Souza Director Mason Wells



Jacquelyn Fredrick President and CEO BloodCenter of Wisconsin Past Chair, UWMRF



David Gilbert President UWM Foundation



Michael Major President and CEO Cambridge Major Laboratories



**Colin Scanes** Vice Chancellor for Research and Economic Development and Dean of the Graduate School, UWM



Andrew Schiesl Vice President, General Counsel and Corporate Secretary Quad/Graphics



John Torinus Chairman Serigraph Corporation



Gregory Uhen

President, Eppstein Uhen: Architects

## Staff



Brian Thompson President



John Minnick Senior Licensing Manager



Jessica Silvaggi, Ph.D. Technology Licensing Associate





# Key Facts and Accomplishments (since formation in 2006)

#### **Research Foundation Organization**

- **UWM Research Foundation Formed in 2006** The UWM Research Foundation was formed in 2006 as an independent non-profit corporation to support research and innovation at the University of Wisconsin-Milwaukee.
- Designated Intellectual Property Manager In July 2007, the UWM Research Foundation was designated by the UW System Board of Regents as UWM's Intellectual Property Management Organization (IPMO).
- Research Foundation Leadership The UWM Research Foundation Board has grown to include a diverse leadership team with background in research, non-profit management, venture investing, and corporate technology management. The Board is currently led by Chair Daniel J. Bader, President, Helen Bader Foundation, Inc. and Vice-Chair, Sujeet Chand, Ph.D., Senior Vice President of Advanced Technology and Chief Technology Officer, Rockwell Automation, Inc.

#### Key Donor Support

- We Energies, \$1 million The Wisconsin Energy Foundation committed \$1 million in 2006 to help launch the UWM Research Foundation. Funds were provided for a combination of operating funds and endowment.
- *Harley-Davidson, \$1 million* The Harley-Davidson Foundation committed \$1 million in 2006 to help launch the UWM Research Foundation. Funds were provided for a combination of operating and endowment support.
- **Rockwell Automation, \$850,000** The Rockwell Automation Charitable Corporation has committed \$850,000 over a period of five years to support the Rockwell Catalyst Grant Program in Advanced Automation.
- **Bradley Foundation, \$1.4 million** The Lynde and Harry Bradley Foundation has provided \$1.4 million in support for the Bradley Catalyst Grant program.
- **KBS Construction, \$300,000** KBS Construction has committed \$300,000 to help support operations of the UWM Research Foundation.
- **Bader Foundation**, **\$40,000** The Helen Bader Foundation is helping support the UWM Research Foundation's Technology Transfer Intern Program with grants totaling \$40,000.
- **Herzfeld Foundation, \$100,000** The Richard and Ethel Herzfeld Foundation contributed \$100,000 in 2009 in support of the Catalyst Grant Program and operations.
- **Wisconsin Preservation Fund, \$15,000** The Wisconsin Preservation Fund contributed in 2009 to support operations.
- Other Local Foundations, \$115,000 contributed in 2009 to support operations.
- **Research Fellowship Support, \$80,000** Directors of the UWM Research Foundation Board and the UWM Foundation Board have committed \$80,000 to support the Research Fellows Program to help UWM faculty attract and retain the best and brightest graduate students.

#### Licensing and Intellectual Property

 4 Completed License Agreements – The UWM Research Foundation has completed four technology license agreements based on UWM technologies, including two licenses to early stage biotechnology companies formed in the Milwaukee region and another to a startup company led by a UWM professor.



- **38** Issued or Applied for Patents As of June 2010, the UWM Research Foundation has four issued patents, two patents with allowed claims, 32 U.S. patent applications and multiple related international applications as part of its growing portfolio of intellectual property.
- **Copyrighted Content** The UWM Research Foundation also manages copyrighted content that includes software tools and assessment tools for care management.
- Equity Interests in Startup Companies As part of its licensing activities, the UWM Research Foundation now holds equity interests in two startup companies. This structure allows the startup company to conserve cash at a critical time in its development while offering UWMRF and its stakeholders a share in the success of the company.

#### **Research Foundation Programs**

- \$2 Million in Catalyst Grant Awards Over \$2 million in funds have been awarded to date to support 32 promising projects in the sciences and engineering through Catalyst Grants supported by Rockwell Automation, the Bradley Foundation and the Herzfeld Foundation.
- \$141,000 in Research Fellowship Awards The UWMRF Research Fellows program has made awards to 15 graduate students and post-doctoral researchers with a program designed to help UWM researchers attract and retain the best and brightest talent for their research programs.
- **\$150,000 in support for Madison-Milwaukee Grants** In 2010, the UWM Research Foundation helped coordinate the first ever, Madison-Milwaukee Intercampus Research Incentive Grants to foster collaborations between UW-Madison and UW-Milwaukee. Under the direction of UWM Chancellor Carlos Santiago and UW-Madison Chancellor Biddy Martin, a total of \$400,000 was awarded to eight teams (including \$150,000 in support provided by the UWM Research Foundation).
- \$750,000 in Additional Research Awards The Research Foundation has been designated by the UWM Chancellor to make awards to support research at UWM with funds from the UW System Uihlein Trust fund. The Milwaukee Technical Assistance Grant (MiTAG) program awarded \$600,000, and an additional \$150,000 has been awarded through the Technology Development Fund to support various research activities.

#### **Corporate Partnering and Startups**

- **Two Startup Companies Launched** Projects supported by the Catalyst Grant program have led two faculty members to launch startup companies that are currently pursuing funding from the Small Business Innovative Research grant program. A third faculty member is working to launch a startup company and raise angel investment.
- Water Industry Partnering The Research Foundation partnered with UWM's College of Engineering and Applied Science to help launch a National Science Foundation Industry/University Cooperative Research Center. This center brings together six partner companies with UWM and Marquette University to conduct industry-directed research projects. In addition, UWMRF has coordinated a partnership between local water company, Advanced Chemical Systems and a UWM professor to adapt technology for the water industry.
- **Energy Center Launch** UWM's College of Engineering and Applied Science has launched a first-of-a-kind collaboration among Milwaukee's engineering programs (UWM, Marquette University and the Milwaukee School of Engineering) to bring industry and academic institutions together for research in energy and the environment. The UWM Research Foundation has supported these efforts by earmarking \$200,000 in catalyst funds to support grants through this center and helping administer the first round of grants in 2009.



# Exhibit A – Catalyst Grant Program

#### **Rockwell Catalyst Grants**

The Rockwell Catalyst Grant program was established in 2007 with an \$850,000 commitment from the Rockwell Automation Charitable Corporation. Rockwell Catalyst Grants are helping create talent, capability and resources in three strategic research areas: materials, software and sensors. In supporting these important areas, Rockwell is helping create a regional resource that can strengthen the region's industrial companies and serve as an asset to Rockwell Automation.

To date, the program has directly funded nine grants totaling \$520,000, and provided an additional \$100,000 in support through the Wisconsin Energy Research Consortium and its predecessor organization, the Southeastern Wisconsin Energy Technology Research Center.





## **Bradley Catalyst Grants**

The Lynde and Harry Bradley Foundation has provided a total of \$1.4 million in support to fund 22 researchers in three phases of the Bradley Catalyst Grant Program. Additional support has been provided by the Richard and Ethel Herzfeld Foundation.





# Exhibit B – UWM Research Foundation In The News

http://milwaukee.bizjournals.com/milwaukee/stories/2010/03/29/daily17.html?ed=2010-03-30&ana=e\_du\_pub



Tuesday, March 30, 2010, 10:27am CDT

# UWM Research Foundation, startup complete licensing deal

The Business Journal of Milwaukee

A Milwaukee startup company, **NanoAffix Science** LLC, has completed a licensing agreement with the **UWM Research Foundation** for intellectual property that the company will use to develop tiny "nanoscale" products and devices, according to a UWM statement Tuesday.

NanoAffix Science LLC was founded by Junhong Chen, a UWM associate professor of mechanical engineering. The company's goal is to commercialize techniques Chen has developed for creating tiny custom "nanoparticles" and also depositing them onto carbon nanotubes.

According to Chen, his methods of combining structures are low-cost, and also yield high-performance materials that have potential uses in medical diagnostics, green energy technology and sensors.

NanoAffix director Ed Corrigan says the company objective is to bring practical molecular-scale nanosensor products to market and pursue other innovative manufacturing technology applications. The company currently is pursuing federal Small Business Innovation Research grants to focus on commercial development of gas sensors.

"We've been fortunate to work with Dr. Chen for several years to protect intellectual property and foster this research, in part through our Catalyst Grant Program," said Brian Thompson, president of the UWM Research Foundation.

This is the sixth licensing or option agreement completed by the UWM Research Foundation, a nonprofit corporation that supports research and innovation at UWM through a variety of programs including patenting and licensing.



http://www4.uwm.edu/news/stories/details.cfm?customel\_datapageid\_11602=2995735

# Startup licenses UWM nanotechnology

A Milwaukee startup company founded by an engineer at the University of Wisconsin– Milwaukee (UWM) has completed a licensing agreement with the UWM Research Foundation for intellectual property that the company will use to develop nanoscale products and devices.

NanoAffix Science LLC, founded by Junhong Chen, UWM associate professor of mechanical engineering, aims to commercialize technologies Chen has developed. Those include novel techniques for creating custom nanoparticles and also depositing them onto carbon nanotubes.

"We have found new ways of combining nanocomponents to produce valuable technologies which are superior to existing approaches," said Chen. His methods of



Photos by Alan Magayne-Roshak

Junhong Chen, UWM associate professor of mechanical engineering (right), is commercializing his nanotechnology research.

combining structures are not only low-cost, but also yield very high-performance materials that have potential uses in medical diagnostics, green energy technology and sensors.

NanoAffix Director Ed Corrigan says the company objective is to bring practical nanosensor products to market and pursue other innovative manufacturing technology applications. The company currently is pursuing federal SBIR (Small Business Innovation Research) grants to focus on commercial development of gas sensors.

This is the sixth licensing or option agreement completed by the UWM Research Foundation.

"The caliber of UWM technology resulting from one of our excellent research programs is evident in the formation of this new company," says Colin Scanes, UWM vice chancellor for research and economic development. "Growing our own' is another way of bringing companies and universities together supporting economic vitality in metropolitan Milwaukee."



"We've been fortunate to work with Dr. Chen for several years to protect intellectual property and foster this research, in part through our Catalyst Grant Program," says Brian Thompson, president of the UWM Research Foundation. "This technology needs an organization committed to helping it realize its potential, and we believe NanoAffix is the company that can do that."

The UWM Research Foundation Inc. is a nonprofit corporation that supports research and innovation at UWM through a variety of programs including patenting and licensing. http://www.jsonline.com/business/84424877.html





# **UWM foundation announces research grants**

By Kathleen Gallagher of the Journal Sentinel

Posted: Feb. 15, 2010

The University of Wisconsin-Milwaukee Research Foundation has reeled in more financial backers to help support a program that seeds promising research projects with high commercial potential.

A \$100,000 commitment from the Richard and Ethel Herzfeld Foundation will bring to \$500,000 the amount the university plans to allocate to select research projects sometime this summer, said Brian Thompson, the UWM foundation's president. The Lynde and Harry Bradley Foundation already committed \$400,000, he said.

Four other new supporters - all local foundations - are providing \$130,000 to fund technology commercialization activities that complement the Catalyst grant program, Thompson said. Three of the foundations didn't want to be identified, and the fourth is the Wisconsin Preservation Fund Inc., he said.



Gary Porter

University of Wisconsin-Milwaukee researcher Zhen He takes water samples from a microbial fuel cell. His research, funded by a UWM Catalyst grant, is studying the best way of treating wastewater by filtering it through the cells that also generate electricity. The results could be used in developing countries to treat wastewater that is now flowing into lakes and rivers.

The 3-year-old Catalyst grant program has helped boost licensing agreements for UWM technologies and is prodding the development of some start-ups, Thompson said.

"It's starting to change the culture, and that's a hard thing to do," he said.

On Tuesday, the UWM foundation will announce three Catalyst grant awards funded with \$180,000 from Rockwell Automation Charitable Corp., Thompson said. They are being given to the following UWM engineering researchers:





Gary Porter

University of Wisconsin-Milwaukee researcher Zhen He looks at a sample from a microbial fuel cell that filters wastewater.

• Zhen He, assistant professor of civil engineering and mechanics, to develop a microbial fuel cell that could produce energy from wastewater.

• Nikolai Kouklin, assistant professor of electrical engineering and computer science, to develop an optical sensor that would use advanced nanomaterials to detect trace concentrations of chemicals in water.

• Krishna Pillai, associate professor of mechanical engineering, to further work on software that helps manufacturers model reinforcing composite materials such as carbon or glass fibers that are used for making high-strength, low-weight products.

This is the third year Rockwell's foundation has funded Catalyst grants, and it brings the total the Milwaukee maker of factory automation systems has contributed to \$570,000, Thompson said. Researchers who receive the Rockwell grants will often come in to the company to discuss their work and seek ideas about commercialization paths, said Sujeet Chand, chief technology officer for Rockwell Automation.

"Basically, we want the Catalyst grants to have a snowball effect," Chand said.

More than \$1.5 million in Catalyst grants have been awarded to UWM researchers in the last three years, Thompson said.



http://www4.uwm.edu/news/stories/details.cfm?customel\_datapageid\_11602=2515433

Posted: January 26, 2010

By Laura L. Hunt

# **UWMRF** fellowships support growth

After receiving a research fellowship last year from the UWM Research Foundation (UWMRF), doctoral student Vishwa Potharla is now preparing a manuscript on the work for journal submission this spring.

His project was anything but ordinary: It involved genetic dissection of a complex bacterial gene cluster that is responsible for the production of a newly approved anticancer drug.

Potharla was one of the first six to be chosen for the UWMRF Research Fellows program, designed to help UWM faculty attract the best talent to their laboratories, improving research productivity in the sciences, engineering and business.

Eight new graduate students and postdoctoral researchers have been named in this, the program's second year. They represent a range of disciplines, recognize both junior and senior faculty, and help foster the growth of important research clusters at UWM.



Alan Magayne-Roshak

Awards of \$7,500 to \$10,000 are allocated directly to research assistants and postdoctoral researchers, and are in addition to base support.

The program has \$160,000 in committed support, including \$80,000 committed by UWM Foundation and UWMRF board members.

A committee of the UWMRF, including members of the board and an outside industry representative, determine the awards based on the following criteria:

- Base funding is available to the Research Fellow, and the sponsoring faculty member's research is in the field of science, engineering or business.
- The research is judged as high quality, and the Research Fellow demonstrates the ability to impact outcomes and leverage other sources of funding.
- The research program is aligned with the UWMRF's mission.



Potharla had already been working on the project before being chosen for the fellowship, says Principal Investigator Eric Cheng, assistant professor of biological sciences.

"He made a pretty strong contribution to this work," Cheng says of Potharla. "I wanted to inspire and motivate him."

#### 2010

Vincent Larson Mathematical Sciences Brian Griffin, Ph.D. student "Numerical Modeling of Clouds and Turbulence"

#### Sandra McLellan

Great Lakes WATER Institute, School of Freshwater Sciences **Ryan Newton**, Postdoctoral Research Associate "Genetics Signatures to Pinpoint Pollution Sources"

#### **Christopher Quinn**

Biological Sciences Yan Xu, postdoctoral research associate "Axon Guidance – Neural Circuit Formation Processes That May Underlie Autism and Down Syndrome"

#### Stefan Schnitzer

Biological Sciences Scott Mangan, postdoctoral research associate "Species Diversity – a Driver for Carbon Budgets and Climate Change"

Lei (Leslie) Ying Electrical Engineering and Computer Science Dong Liang, postdoctoral research assistant "Improving the Speed of MRI."

Masha Ranji Electrical Engineering and Computer Science Ph.D. student to be recruited "Noninvasive Optical Tissue Diagnostics Tools"

#### Vladislav Yakovlev

Physics Ph.D. student to be recruited "Spectroscopic Tools for Biology and Medicine"

#### Zhen (Jason) He

Civil Engineering and Mechanics Ph.D. student to be recruited "Microbial Fuel Cells"

#### 2009

Luis Anchordoqui Physics Lisa Goggin, postdoctoral research assistant "Search for Gravity Wave Signatures"

Jian Chen Chemistry Ryan Kohlmeyer, Ph.D. student, research assistant "Organic Nanomaterials"

Junhong Chen Mechanical Engineering Bo Zhang, postdoctoral research assistant "Nanotechnology Applied to Environmental Protection"

Yi-Qiang (Eric) Cheng Biological Sciences Vishwakanth Potharla, Ph.D. student, research assistant "Novel Compounds for Treatment of Cancer"

Adel Nasiri Electrical Engineering Goran Mandic, Ph.D. student, research assistant "Innovative Control Techniques for Wind Turbines"

#### **Abbas Ourmazd**

Physics Graduate research assistant to be recruited\* "Determining Molecular Structures from the Diffraction Patterns of Single Molecules"

#### Wilfred Tysoe

Chemistry **Zhenjun Li**, Ph.D. student (awarded summer 2009) "Surface Chemistry for Palladium-Based Catalysts"

\* Ourmazd's fellow will use the award in the second round



## FOR IMMEDIATE RELEASE

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#### UW-Madison, UWM Award Intercampus Research Grants

MADISON -- Eight hybrid teams of faculty from the University of Wisconsin-Milwaukee (UWM) and the University of Wisconsin-Madison have been awarded the first batch of Intercampus Research Incentive grants, awards designed to foster inter-institutional collaboration.

The awards, announced today by UWM and UW-Madison, total \$398,000 and will support a suite of projects ranging from the development of new materials to combat air pollution to the use of algae to clean wastewater and generate energy. Each award is in the range of \$50,000 for one year.

The Intercampus Research Incentive Grants Program, announced in January by UW-Madison Chancellor Biddy Martin and UWM Chancellor Carlos E. Santiago, is an initiative to foster research projects and scholarship undertaken jointly by researchers at the two institutions.

The program is funded by UW-Madison and UWM donors. Projects were selected by a committee of faculty and administrators from UWM and UW-Madison.

"We received many excellent proposals and we're excited by the prospects for each of the projects that received funding," says UW-Madison Provost Paul DeLuca. "Success here will not only yield valuable research results, but will also draw our institutions closer and provide a roadmap for future collaborations. That is a critical outcome."

Colin Scanes, UW-Milwaukee Vice Chancellor for Research and Economic Development commented, "I was very impressed by the quality of the proposals and the new collaborations being developed between Madison and Milwaukee. This bodes so well for the future. It is unfortunate that only eight can be funded".

Projects funded by the new initiative include:

- •The use of algae for wastewater remediation and bioenergy production.
- •Synthesis and characterization of gold nanoparticles for cell-based therapies.
- •Enzymes as possible treatments for infections.
- •Nano-scale film sensors for use in advanced manufacturing.
- •Laser-assisted cold gas spraying for energy manufacturing.
- •Photocatalytic and superhydrophopic materials to combat air pollution.
- •Improving detection and infrastructure to better treat diabetic retinopathy.

•Psychological and neurological effects during fear conditioning in psychopathic offenders.

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