Mr. Kenneth Smith, research associate at the UW-Stout Discovery Center, has been selected to receive the 2012 WiSys Innovation Scholar Award based on his outstanding work in fuel cell design.

Sponsored by intellectual property law firm Quarles & Brady, the WiSys Innovation Scholar Award recognizes innovative UW System faculty, staff, and students who make discoveries that benefit society. Selection for the award is based on the innovative concept, broad use, value, and industrial application of the invention(s).

Mr. Smith’s research focuses on the development of a pressure balanced proton exchange membrane fuel cell, also known as polymer electrolyte membrane (PEM), fuel cell. PEM fuel cells transform the chemical energy liberated during the electrochemical reaction of hydrogen and oxygen to electrical energy. While contemporary PEM fuel cells are an attractive clean energy option for both stationary and portable power applications, they are plagued with problems related to crossover, where the fuel crosses through the electrolyte from one side of the cell to the other, creating heat and thus reducing efficiency. In addition, contemporary PEM fuel cells require costly and complex control mechanisms to maintain pressure balances between the chambers in stacked assemblies.

WSTS 2012: Innovative Ideas, Vibrant Future at Marshfield Clinic and UW-Marshfield/Wood County July 23-24

The fifth annual Wisconsin Science & Technology Symposium will be held in Marshfield, Wisconsin on July 23-24, 2012 at Marshfield Clinic and the University of Wisconsin-Marshfield/Wood County. Sponsored by Wisconsin Medical Entrepreneurship Foundation partners Aurora Health Care, BayCare Clinic, Marshfield Clinic Applied Sciences and WiSys Technology Foundation, and jointly organized by Marshfield Clinic and WiSys, the event highlights groundbreaking research throughout the state and will focus on the establishment of collaborative partnerships to accelerate innovative research.
Taking an innovative approach, Mr. Smith provides a simple yet effective method of auto-balancing the pressure of hydrogen and oxygen/air within a PEM fuel cell via a diaphragm which allows gas flow between the two chambers without intermixing. The diaphragm eliminates the need for complex gas flow regulation, greatly extends the life of the membrane which is susceptible to damage by small pressure differences, and leads to cost reduction as well as overall improved fuel cell efficiency.

The technical innovations of the new fuel cell are protected through WiSys.

Two dedicated teams have been instrumental in supporting the project, Destin Peters, Anish Pokhrel and Rachel Wengelewski of the UW-Stout student research group and Mark Swanson, Ted Schonebaum and Jayson Nicol of Schmit Prototypes.

Mr. Smith’s work is an example of the exemplary progress comprehensive campus researchers are making in developing cutting-edge products that will drive Wisconsin’s knowledge-based economy. We congratulate Mr. Smith for his valuable contributions to the UW System.

An award ceremony will take place on April 24th at UW-Stout as part of UW-Stout’s Research Day.

The event will kick-off at Marshfield Clinic on Monday, July 23 with a late afternoon session devoted to digital tools, followed by a welcome reception in the Laird Center for Medical Research. On Tuesday, July 24, UW-Marshfield/Wood County will host presentations from faculty, industry partners, and clinical collaborators. Featured research topics include biomedical devices, renewable energy, new therapeutics, digital tools, foundry technology, and innovative polymers/composites. A public welcome session and faculty/student poster presentation will also be featured.

Please visit WiSys.org for continuous event updates and registration information. For sponsorship opportunities, please contact Jon Cook (jcook@wisys.org; 608.316.4036).

Be sure to save the July 23-24 dates!

The Marshfield Clinic system provides patient care, research and education with 57 locations in northern, central and western Wisconsin, making it one of the largest comprehensive medical systems in the United States.

UW-Marshfield/Wood County is one of 13 locally-owned campuses, which collectively are the UW Colleges, the liberal arts transfer institution of the University of Wisconsin System. WiSys is the designated technology transfer office for these 13 campuses as well as 11 of the UW-System’s four-year campuses.

The Wisconsin Medical Entrepreneurship Foundation network, a groundbreaking effort to advance medical innovation, patient care and entrepreneurship, leverages the unique skills and resources available at Wisconsin’s leading clinical institutions including Aurora Health Care, Marshfield Clinic and BayCare Clinic with the technical expertise of the UW System campuses.
Join the Wisconsin Pavilion at the 2012 BIO International Convention

The largest global event for bioscience related industries, BIO International, will take place June 18-21 in Boston, Massachusetts. BIO attracts more than 15,000 attendees including C-level leaders, researchers, business developers, up-and-coming innovators, sponsor companies, and solution providers.

Take Note: the Wisconsin pavilion at the 2012 BIO International Convention is going to look a little different this year.

Wisconsin representatives plan to brag (indeed brag a lot) about the outstanding academic institutions and innovative businesses in our state. The pavilion will feature companies, institutions and economic development groups from across the state, a reflection of the increasing diversity and reach of Wisconsin’s biosciences economy.

Don’t miss this opportunity to sketch out a brighter future through bioscience!

For more information on this event, please visit www.wisconsinatbio.com or contact Sarah Bownds, Events Manager for the WEDC, at 608-261-0458 or SarahBownds@wedc.org

UW-Oshkosh Generates Newest Startup – CoreTxt Plus

In an effort to decrease the cost and provide updated versions of textbooks for students, M. Ryan Haley, professor of economics at UW-Oshkosh, and colleagues started CoreTxt Plus, Inc. Prof. Haley’s team created a base online statistics text book that can be tailored by each professor in his/her department to create their own version of the text. Within the department, there is 80 to 85 percent consistency in topics covered and the remaining material differs between professors.

The ability to tailor such content gives instructors the flexibility to customize educational materials according to their preferences.

Prof Haley also notes that most published books have questions written by graduate students. His book contains only questions written by UW-Oshkosh Business School professors. The content has been peer reviewed like any published textbook. There has also been substantial validation of the technology through positive learning outcomes.

The technology enables professors to be concise, pose challenging questions and provide insightful answers to improve understanding of underlying concepts.

Haley says his department has saved students between $100,000 and $150,000 over the past three semesters and the savings to students by the end of 2013 will be greater than the initial grant given to fund the project.

The UW-Oshkosh Math department is also in the process of creating an online text book.

CoreTxt Plus is the 8th Startup company formed based on technology developed at UW comprehensives.

WiSys worked closely with the faculty to facilitate the startup.

New Program Honors Innovation in Advancing Patient Care

The Wisconsin Medical Entrepreneurship Foundation (WisMEF) is unveiling a program to honor an inventor from each founding clinical institution (Aurora Health Care, BayCare Clinic and Marshfield Clinic) and UW System comprehensives campuses based on his or her innovative discovery in advancing superior patient care.

The focus of the program will be to publicize the invention of the individual or group to the institution, local communities and state, as well as to build awareness of the innovation capabilities of WisMEF partners and their roles in facilitating transfer of these innovations to the commercial sector.

Watch for details at WiSys.org.
Developing thorough and competent researchers is a key goal of Dr. Toivo Kallas, professor of Biology and Microbiology at the University of Wisconsin-Oshkosh. It appears he has done just that with Mr. Matthew Nelson, research associate, whose decade long collaboration with Dr. Kallas began at UW-O, where Dr. Kallas served as Matthew’s graduate advisor.

Returning to the Kallas lab in 2005 after three years of industry experience as a microbiologist, Matthew has since played a central role in a multitude of research projects, including the successful genetic engineering of isoprene production in fast-growing marine cyanobacterium.

Cyanobacteria are among the most ancient organisms on Earth with ancestors dating back over 4 billion years. They have evolved very successful and efficient pathways for capturing solar energy and converting atmospheric carbon dioxide into carbon polymers.

A fundamental goal of Dr. Kallas and Mr. Nelson is to understand cyanobacterial protein complexes and electron transfer pathways in solar energy conversion, and the mechanisms used by these organisms to adapt to changing and stressful environments. “We can genetically modify cyanobacteria and investigate the impacts of mutations, we can measure fast electron transfer reactions occurring within living cells, we can follow genome-wide gene expression responses, and we can use mass spectrometers to investigate the structure and dynamics of protein complexes,” says Dr. Kallas. This research, funded by the NSF, USDA, UW-Oshkosh and UW System, has involved 60+ undergraduates, 20 Master’s students, and rewarding collaborations with colleagues in this country and abroad.

Recent collaborative work with Dr. Eric Singsaas (UW-Stevens Point) has focused on the metabolic engineering of cyanobacterium to produce isoprene using solar energy and waste CO2 streams. Such production of isoprenoids could have a potentially significant economic and environmental impact on the manufacture of thousands of chemical intermediate products such as synthetic rubber, vitamins, pharmaceuticals, pesticides, as well as high density biofuels.

Work so far has been promising; they now have a bacterial strain that produces isoprene at rates viable for commercial development. WiSys is working with Dr. Kallas’s team to facilitate their research and protect and commercialize their discoveries.

When not in the lab or teaching, Dr. Kallas enjoys family time with his wife, a developmental biologist at UW-Oshkosh, and his children, who are both enrolled in Ph.D. programs in California. Matthew enjoys spending time outdoors sailing and skiing (both downhill and water), as well as playing handyman around the house.

- by Jack Collins, WiSys Intern