

Bringing Research to LIFE

In Brief

New Appointment

Associate vice-president (research) Gary Glavin has been reappointed to a second, four-year term on the Board of Directors of Canadian Blood Services. In addition, he has been appointed as Chair of the Safety, Science and Ethics Committee of the Board as well as Chair of the Ad Hoc Enterprise Risk Management Committee of the Board. Canadian Blood Services is a not-for-profit, charitable organization whose sole mission is to manage the blood and blood products supply for Canadians as well as the One Match Stem Cell and Marrow Network.

Upcoming

Bringing Research to Life Speaker Series

The Pursuit of Better Roads:

Safe, Smart and Sustainable

Wednesday, April 14, 2010

7:00 PM

Room 290

Education Building

FREE ADMISSION

For more information:

umanitoba.ca/research

Café Scientifique

What affects women's health? It's complicated!

Monday, April 26, 2010

7:00 PM

McNally Robinson, Grant Park

1120 Grant Avenue

FREE ADMISSION

For more information:

umanitoba.ca/research/cafescientifique.html

Finding the Trouble Spots

Pavement technology developed at the U of M could save lives

BY KATIE CHALMERS-BROOKS

Civil engineering professor Ahmed Shalaby cringes when he drives by "Slippery When Wet" signs posted on the side of the road. He insists streets don't need to be slippery and potentially dangerous for motorists no matter what the weather is.

Shalaby, who is doing a free public presentation April 14 about his research into safer roads, has developed with his graduate students a device that can identify these hazardous areas, which are essentially polished areas of pavement.

He hopes this technology will one day be adopted by pavement engineers who currently identify potential trouble spots from crash statistics.

"We should be more proactive and not have to wait for an accident," Shalaby says.

His device records images of the road's surface under different directions of lighting and constructs a 3-D model of the texture. Shalaby then mathematically develops a correlation between the texture (how rough the surface is) and its skid resistance (how easily a vehicle can stop).

There are other methods to identifying trouble areas, but the existing technology is infrequently used – other than on airstrips – since it's cumbersome and expensive.

Salt and sand do the trick to roughen up polished spots but are only temporary solutions. A longer lasting option is to restore the texture of the road itself to improve the contact between tires and the road surface. The result? Reduced braking distance and roads less prone to icing in the winter or becoming slippery when wet, Shalaby says.

His device, called a photometric stereo imaging system, could provide maintenance workers with an affordable means of identifying areas that could lead to collisions – before they happen.

"You could act on it in the summer before snow hits. You would literally keep your roads at a stage where they don't become slippery," says Shalaby. "It's common sense, but we still have to convince the public and the rest of world that this makes sense."

A better understanding of skid resistance is particularly important in cities like Winnipeg and neighbouring municipalities where icy conditions are a regular occurrence.

He has worked to develop this technology for five years. There is a pending patent. Shalaby says a growing number of researchers around the world are looking for ways to assess and improve pavement texture, and ultimately reduce the number and severity of crashes. He is collaborating with a researcher at Virginia Tech and has heard of a few other groups developing similar technology but with lasers.

"This is becoming a hot area now," he says, noting potholes are also a



Photo by Katie Chalmers-Brooks

Faculty of Engineering Prof. Ahmed Shalaby and his grad students have developed a device that could improve road safety.

popular area of study.

A motorist's constant aggravation come spring, these gaping holes are left behind after pockets of ice that have formed in the road structure begin to thaw. Shalaby says the solution is to build "roads that are smart."

He is working on a project that involves a highway fitted with sensors. He is trying to figure out if the tire pressure on trucks can be reduced – which means less cracking and potholes – while still allowing them to carry heavier loads. The sensors are providing a comparison of road damage at varying tire pressures across all seasons.

Potholes are a big problem in Winnipeg since, Shalaby says, there was little investment in maintenance for "a very long time" which has deteriorated the roads considerably. He encourages motorists to become part of the solution. "The public has to get involved in directing policies for road construction, and insisting that preventive maintenance be performed."

Join Shalaby for his free public presentation *The Pursuit of Better Roads: Safe, Smart and Sustainable* April 14 at 7 p.m. in Room 290 of the Education Building. His talk is part of the *Bringing Research to Life Speaker Series*.