Nano researchers build new and improved humidity sensors

September 13 2006

University of Alberta researchers have built a humidity sensor that can do much more than monitor weather and the likelihood of rain - it may one day help to save lives.

The researchers have used their own patented nanotechnology to build one of the fastest humidity sensors in the world. Although not yet available commercially, the device may be used one day in doctors' offices and hospitals around the globe.

"You can monitor respiration with a fast humidity sensor, and the faster the sensor the better the monitor," said John Steele, a PhD student in the U of A Department of Electrical and Computer Engineering and lead author of a paper that will appear in the journal *Sensors and Actuators B, Chemical*.

Steele noted that a fast humidity sensor can be a valuable tool to help doctors monitor the respiration of neonates and patients under anesthesia, among other potential medical uses.

"Current commercial humidity sensors need at least five seconds to detect humidity changes. We've been able to see changes in less than half a second, which makes our device one of the fastest in the world," Steele added.

The key to the sensor's swiftness is a patented thin film developed by Steele's PhD supervisor, Dr. Michael Brett. Brett's thin film is more

porous than most other films and can be adjusted in various ways to offer a larger surface area that is easily accessible to fluids, thus enabling faster sensory detection.

"It's cool to think that the technology we're working on now might one day end up in doctor's offices and hospitals around the world," Steele said.

However, Steele and his colleagues also have their sights on creating sensors to use in non-medical environments. For example, a sensor that could instantly detect harsh or flammable gases would have many applications, he said.

"But it's hard to predict all of the possible applications of this research, because the field of nanotechnology is diverse and you need to collaborate with other researchers in order to develop your ideas to their full potential," Steele said.

"There are a lot of exciting things happening in nanotechnology - the field is booming," he added. "The University of Alberta is right in the middle of it. The facilities here are fantastic - it's a great opportunity to be a student and be able to conduct research here."

Source: University of Alberta, By Ryan Smith