Researchers improve performance of iron-based catalysts

August 10 2011

Having pioneered the development of the first high-performance iron-based catalyst for fuel cells, researchers at INRS recently achieved a second major advance. They developed a new and improved iron-based catalyst capable of generating even more electric power in fuel cells for transportation applications. Previously, only platinum-based catalysts could produce similar performance.

The new research findings from the team of Professor Jean-Pol Dodelet were published in *Nature Communications*, a prestigious scientific journal part of the Nature Publishing Group. With these new and promising results, we bolster the prospect of iron-based catalysts replacing platinum ones in the electrochemical reduction of oxygen, one of two reactions needed to activate the electric power generator we call a fuel cell. Platinum is rare and very costly, whereas iron is the second most abundant metal on earth and is inexpensive.

"Thanks to this breakthrough we are nearing the day when we will be able to drive electric-electric hybrid vehicles —i.e. battery and fuel cell powered—, which can potentially free us from our current dependence on oil to power our cars," said Professor Dodelet.

Working at the Énergie Matériaux Télécommunications Research Centre in Varennes (Québec), INRS scientists are now focusing on the improvement of the long-term stability (at least 5,000 hours) of these promising new catalysts. "The next step is the most important because it will automatically lead to a high value commercial product, not only for

car manufacturers but also for all industrial sectors that use electric power generators or manufacture their components," explained Mr. Dodelet.

Provided by INRS