

# Science & Technology Newsletter

October 2002

Issue #010

*THIS MONTH'S THEME – "FUEL CELLS IN JAPAN"*

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# - INTRODUCTION -

## Foreword

We are pleased to announce the “return” of the Science & Technology Newsletter from Japan. After a few months’ break, the Investment, Technology, & Science (ITS) Section of the Canadian Embassy in Japan had a changing of the guard. Mr. Kaneko, the former Technology Development Officer (TDO) left our embassy, and has been replaced by our former S&T Newsletter editor, Mr. Salsberg. As the new TDO, he will continue to present us the TDO Corner. My name is Katsuko Kuroiwa and I have assumed the position of S&T Newsletter editor. I hope to maintain and develop the contents of the newsletter so it can serve as a useful source of information from the other side of the Pacific. As we will hold a fuel cell symposium on October 28-31, this month’s newsletter features fuel cells and hydrogen energy in Japan. In addition, we have recently produced a comprehensive report on this topic, available upon request.

As always, we welcome your feedback, whether it be positive or negative, and we will try to take your suggestions into consideration for future issues. All feedback should be directed to:

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## Upcoming Events

- The 12th International Symposium on Brain Edema and Brain Tissue Injury from Nov. 11-13, 2002 in Hakone. For more information: <http://square.umin.ac.jp/edema/program.html>
- 15<sup>th</sup> International Symposium on Superconductivity, Yokohama, from Nov. 11-13, 2002. For more information: <http://www.istec.or.jp/iss/iss.html>
- Impact of ITS deployment-system, legal and user aspects of advanced assistance technologies, on Nov. 12, 2002 in Kyoto. For more information: [iatss@db3.so-net.ne.jp](mailto:iatss@db3.so-net.ne.jp)
- IUPAC Polymer Conference from Dec. 3-5, 2002, in Kyoto. For more information: <http://www.spsj.or.jp>
- Internet World Asia 2002 from Dec. 4-6, in Tokyo. For more information: <http://www.idg.co.jp/expo/iw/>
- The 5th International Conference on Nano-Molecular Electronics (ICNME2002) from Dec. 10-2, 2002 in Kobe. For more information: <http://www.elct.eng.himeji-tech.ac.jp/ICNME/title.htm>
- JETRO (Japan External Trade Organization) Techno-Business Forum from Jan. 30-31, 2003 in Yokohama. For more information: [www.jetro.go.jp/maa/techno](http://www.jetro.go.jp/maa/techno)
- Nanotech 2003 + Future from Feb. 26–28 2003 in Tokyo. For more information: [http://www.ics-inc.co.jp/nanotech/e\\_future.html](http://www.ics-inc.co.jp/nanotech/e_future.html)

## Fuel Cell Symposium at Canadian Embassy

The Canadian Embassy in Tokyo will hold a “FUEL CELL SYMPOSIUM” in Tokyo, October 28–31, 2002. This event aims to position Canada as a high-tech leader in the field of fuel cells (FCs) and related technologies, as a future supplier of clean energy, and to provide a forum where Canadian companies in this sector can seek new business opportunities, partnerships, and investment. At the Symposium, Canadian participants will make presentations on the state of the industry and R&D in FC; simultaneously a trade show will allow business representatives and technicians from both countries to seek further collaborative opportunities on site. There are currently representatives from 10 companies, 2 associations and 4 government departments scheduled to attend. There will also be a Technical Session where experts from both countries in FC research will be engaged in scientific discussions.

For more information, please contact: David Steuerman, Project Manger, Canadian Embassy at: [david.steuerman@dfait-maeci.gc.ca](mailto:david.steuerman@dfait-maeci.gc.ca).

In addition, the Embassy publishes a "Fuel Cells and Alternative Fuels in Japan" newsletter providing an overview of news and activities in this sector. To be put on the mailing list, please contact David Steuerman.



### **Team of Tokyo Univ. Identified Regions of Human Brain Specialized in Understanding Syntactic Structures**

A group led by Prof. Kuniyoshi L. Sakai at the Graduate School of Arts and Sciences of the University of Tokyo announced that they successfully identified regions of the human brain, which are specialized in understanding syntactic structures of sentences. The regions include a part of the Broca's area in the left prefrontal cortex, which has been suggested to be involved in speech processing. The team directly compared cortical activations in syntactic decision tasks and in short-term memory tasks for sentences or word lists, and found that the left prefrontal cortex is specifically activated by grammatical processes. This finding was obtained through a functional magnetic resonance imaging (fMRI) experiment, in which sixteen native Japanese speakers participated.

In their following experiment, using a method called event-related transcranial magnetic stimulation (TMS), the team proved that magnetic stimulation to the same part of the brain, which they found as responsible for grammatical processes, actually enhanced syntactic decisions, but not semantic decisions.

This result could lead to the better understanding of the mechanisms of neurological diseases such as aphasia, and also to the development of a novel method for effective language education.

This research project has been conducted since 1997 under the title of "The Construction of a Language Acquisition Device based on Language Function in the Brain," funded by the CREST (Core Research for Evolutional Science and Technology) program of Japan Science and Technology Corporation (JST). These research results were published in August 1st and September 12th issues of US scientific magazine *Neuron*.

For more information, please contact **Prof.**

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Nikkan Kogyo Shimbun, Aug. 1, 2002  
Press Release No. 240 & 256, JST

### **RIKEN Team Discovers Proteins to Help Cure Familial Parkinson's**

A research group led by Dr. Ryusuke Takahashi of the RIKEN Brain Science Institute has discovered two proteins associated with degradation of parkin, a protein that is the cause of inherited Parkinson's disease.

Five-10% of Parkinson's patients suffer from the hereditary type of the disease and they develop it when they are still in their 40's. Although the cause of Parkinson's is still unknown, the cause of the hereditary form is a gene defect for a certain enzyme that results in the accumulation of parkin protein in the nervous system.

This discovery of two proteins, Hsp70 and CHIP, promotes degradation of parkin by assisting the activity of the defective enzyme. If a substance can be discovered to boost this effect, it might contribute to the development of new treatments for familial Parkinson's.

Since the accumulation of parkin protein is also hazardous and is seen in non-familial Parkinson's patients, the team's findings may help to understand the etiology of Parkinson's disease in general.

This finding appeared in July in *Molecular Cell*.

For further information, contact **Dr. Ryosuke Takahashi**, at the Brain Science Institute, RIKEN at [ryosuke@brain.riken.go.jp](mailto:ryosuke@brain.riken.go.jp)

The Nihon Keizai Shimbun, Jul. 19, 2002

