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ITALY/CANADA *High Technology* NEWSLETTER



Italian Trade Commission

The High Technology Centre is a department of the Italian Trade Commission at its Toronto office. It offers specialized services to foster industrial collaboration and technology transfer between Italian and Canadian firms. The Centre is intended to add to the services already offered by the Trade Commission by focusing specifically on the requirements and needs of Canadian and Italian firms operating in the area of high technology.

Canada and Italy are major developers and purchasers of high technology products and services and real opportunities exist for synergy and co-operation. The High Technology Centre will help Canadian and Italian companies to take advantage of their often complementary knowledge-based resources and facilitate the exchange of information on advanced technologies.



Italian  
Trade  
Commission

## The Electronic Nose

ROME - TORONTO APRIL 2000

The Videoconference presented by the Italian Trade Commission between the University of Rome "Tor Vergata" and the University of Toronto on April 4, 2000 was an opportunity for academics and industry to explore the activities in microchemical sensors in Canada and Italy. The goal of this event is to identify areas where Canadian and Italian researchers and academics may share expertise in the area of microchemical sensors.

As part of this event, Prof. Hans Kunov, cross appointed faculty member of the Institute of Biomedical Engineering, Electrical & Computer Engineering, Otolaryngology and the Institute of Biomaterials and Biomedical Engineering at the

University of Toronto, visited the University of Rome "Tor Vergata". During his visit, Prof. Kunov visited the Department of Electronic Engineering, University of Rome "Tor Vergata", the CNR (Italian National Research Centre), the laboratory of sensors and microsystems (CNR), COSMED, a leading international company in medical product manufacturing, Dr. Cocco, scientific director of Technobiochip, a Corporate Company with Limited Liability active in both basic and industrial R&D in bioelectronics, microelectronics and biotechnology.

Prof. Corrado Di Natale from the Department of Electrical Engineering at the University of Rome "Tor Vergata" visited Prof. M. Thompson, Department of Chemistry, Faculty of Arts and Science; Prof. A. Venetsanopoulos, Associate Chair - Graduate Studies of the Department of Electrical and Computer Engineering; Prof. S. Davies, Institute for Biomaterials and Biomedical Engineering and Department of

This newsletter is just one of the High Technology Centre's initiatives. Other initiatives include:

- Organizing thematic seminars and workshops
- Organizing trade missions and trade show participation in both Italy and Canada
- Establishing and maintaining relations with the technology communities in both countries
- Identifying actual and potential market opportunities for new technologies
- Providing resources and assistance to interested Canadian and Italian companies
- Disseminating information on technological and marketing developments in Canada and Italy

Information from the Centre's data banks is available to all qualified Italian and Canadian companies.



# TECHNOLOGY VIDEOCONFERENCE

*"It was encouraging to hear first hand of the exciting progress being made by scientists at the University of Rome in applying the 'Electronic Nose' to the diagnosis of serious diseases like lung cancer"*

**Graham Strachan**  
Senior Advisor, Business  
Development



Electrical and Computer Engineering. Prof. Di Natale also had the opportunity to meet with Dr. Chris Findlay of Compusense and Dr. Graham Strachan, Executive Chair at Caduceon Inc. and Senior Business Development Officer and Special Advisor to VP (Biotechnology) with the Technology Transfer branch of Research and International Relations, University of Toronto.

The videoconference was opened by Prof. I.B. Turksen, Department of Mechanical and Industrial Engineering, University of Toronto. Dean Michael Charles of the Faculty of Applied Science and Engineering welcomed our guests and applauded the initiative that the Italian Trade Commission has taken in creating a forum for Canadian and Italian academics. Dr. Fortunato Celi Zullo was also present to open the event and to voice his commitment to the continuation of such initiatives. Giovanna Picarreta of the Italian Consulate in Toronto was present to report that the Italian government is thrilled about these interchanges of ideas, research and technology and to stated that all such enterprises have the support of the Italian government.

The event focussed on the innovations of the University of Rome "Tor Vergata" in the field of microchemical sensors. Prof. Corrado Di Natale, spent the first hour explaining the uses and applications of the Rome "Tor Vergata" LibraNose. The researchers at the University of Rome are truly breaking new ground with this technology, and it was exciting to hear of their developments and specific applications to a variety of industries.



This was followed by a videoconference between faculty and guests of the University of Rome "Tor Vergata" and the University of Toronto. Andrea Caruso, High Tech Director at the Italian Trade Commission, Rome, welcomed all participants to the event. Presenters included:

**Prof. Hans Kunov**, spoke of Italian advances for the benefit of the Canadian audience.

**Prof. Arnaldo D'Amico**, Director of Sensors and Microsystems Group, University of Rome "Tor Vergata" addressed Current research at the University of Rome "Tor Vergata".

**Prof. Alessandro Finazzi-Agro**, Rector of University of Rome "Tor Vergata" spoke about Applications of the Electronic Nose for Clinical Purposes.

**Prof. A. Paoletti**, Head of MADESS project (of the CNR), University of Rome "Tor Vergata" discussed Project MADESS and its influence on the development small and medium sized enterprises.





# M I C R O S E N S O R S

## T E C H N O L O G Y

*"I hope there will be more integration in the not traditional sectors. I am referring to the high technology sector where Italy is strong and has great opportunities to increase its trade exchange with Canada, The R7D in the microsensors and electric nose field represent a pint of excellence in Italy"*

**Fortunato Celi Zullo**  
Italian Trade Commissioner  
Canada

*"This conference was particularly exciting because of the pressing need by Canadian industry for the technologies developed in Italy, the potential for continued collaboration between Canadian and Italian researchers."*

**Leslie Dolman**  
Professional Development Center



**Prof. I.B. Turksen**, Department of Mechanical and Industrial Engineering, University of Toronto explored Fuzzy Data, Data Mining and Intelligent Systems.



**Dr. R. Paolesse**, University of Rome "Tor Vergata" addressed Development of Materials for the sensors being used in Artificial Olfaction and Taste Systems.



**Prof. Corrado Di Natale**, Department of Electronic Engineering, University of Rome "Tor Vergata" summarized LibaNose applications.



**Dr. Chris Findlay**, President, Compusense Inc. (Canada) talked about the issues of human testing panels and integrating human perception into the benchmarks that microchemical sensors use as "acceptable".

**Mr. M. Cocco**, Technobiochip (Italy) spoke about Commercial Development of the Electronic Nose.

**Mr. Graham Strachan**, Executive Chair, Caduceon Inc. (Canada) addressed Medical Diagnostic Technologies.

The presentations generated excellent discussion related to the suitability of the LibaNose to

Canadian agricultural and medical applications. Issues raised for further exploration included:

1. In order for sensors like the LibaNose to be able to interpret scents, there must be a common criterion to which human testers adhere, as the human data is what the microchemical sensor uses as its measuring benchmark.
2. Fuzzy data research shows that there are a variety of models for understanding the range of meanings of that which is graphed by a machine and that human linguistic variables are not an exact fit. Fuzzy data analysis techniques lend themselves to the challenges in the data-interpretation of LibaNose readings.
3. The development of sensors for specific detection of disease.

There was general agreement between the participants that all would benefit from continued interaction and collaboration.



# C A N C E R

## D E T E C T I O N



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**The "Rome Tor Vergata" Electronic  
Nose is a research and Development  
product of:**

**The Sensors and Microsystems Group**

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QUESTIONNAIRE

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