

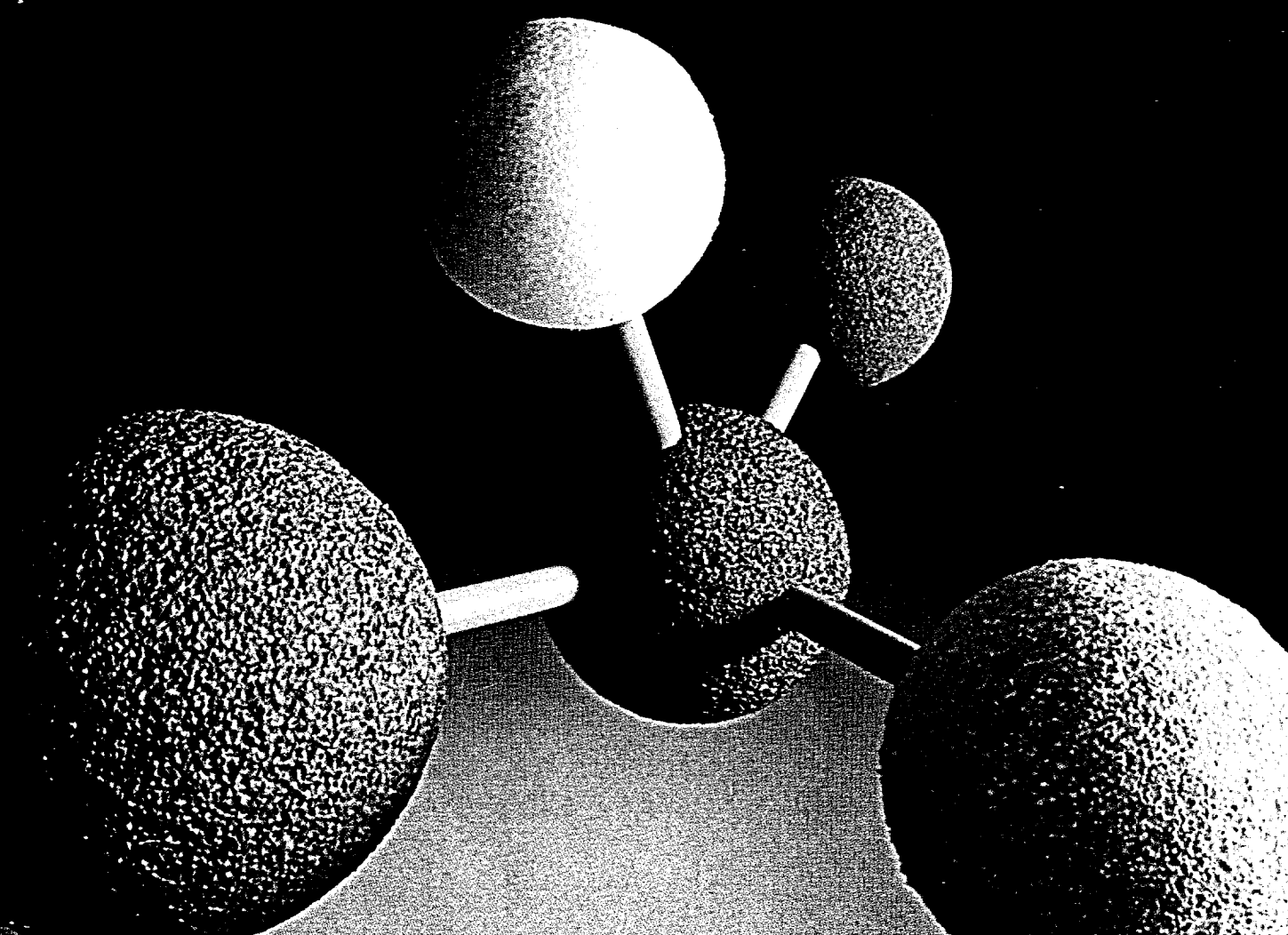
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SEARCH &  
LABORATORY  
PRODUCTS:

PRODUITS  
DE LABORATOIRE  
ET DE RECHERCHE:

Canada's  
manufacturing capability  
1982-83

Potentiel  
industriel du Canada  
1982-83



Compliments of:  
The Department of External Affairs  
Avec les compliments  
du ministère des Affaires extérieures



Natural Sciences and Engineering  
Research Council of Canada

President

Conseil de recherches en sciences  
naturelles et en génie du Canada

Président

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### Research equipment in Canadian universities: an NSERC priority

The Natural Sciences and Engineering Research Council (NSERC) is the major single funder of research in Canadian universities. As part of its Five-Year Plan, the Council has, over the last two fiscal years, awarded over \$57 million for the purchase of research equipment.

Council places a high priority on the provision of such equipment because the refurbishment of our university laboratories is essential to sustain a healthy research effort and effective manpower training programs. Council has also embarked upon a campaign to increase the Canadian content of equipment purchased with its grants.

Accordingly, NSERC is pleased to provide sponsorship for this catalogue of Canadian manufacturing capability in research and laboratory products. Copies of this catalogue will be provided to its 5,800 grant recipients in an effort to encourage the research community to buy Canadian and thus promote a broader capability in Canadian industry.

**G.M. MacNabb**

### L'appareillage de recherche dans les universités canadiennes: une priorité du CRSNG

Le CRSNG est la principale source de financement de la recherche dans les universités canadiennes. Dans le cadre de son plan quinquennal, le Conseil a accordé plus de \$57 millions en subventions pour l'achat d'appareillage de recherche au cours des deux dernières années financières.

Pour le Conseil, il est très important que nos universités acquièrent cet appareillage, parce que la modernisation de leurs laboratoires est indispensable au maintien de la vitalité de la recherche et à l'efficacité des programmes de formation des chercheurs. Le Conseil a également entrepris une campagne pour inciter les chercheurs qui achètent des appareils à l'aide de ces subventions à favoriser davantage le matériel de fabrication canadienne.

Le CRSNG est donc heureux de collaborer à la publication de ce catalogue des instruments de laboratoire et de recherche fabriqués au Canada. Les 5 800 bénéficiaires de subventions du CRSNG en recevront chacun un exemplaire; on espère ainsi encourager la collectivité scientifique à acheter des produits canadiens et, ce faisant, à contribuer au développement du potentiel de notre industrie.

**G.M. MacNabb**

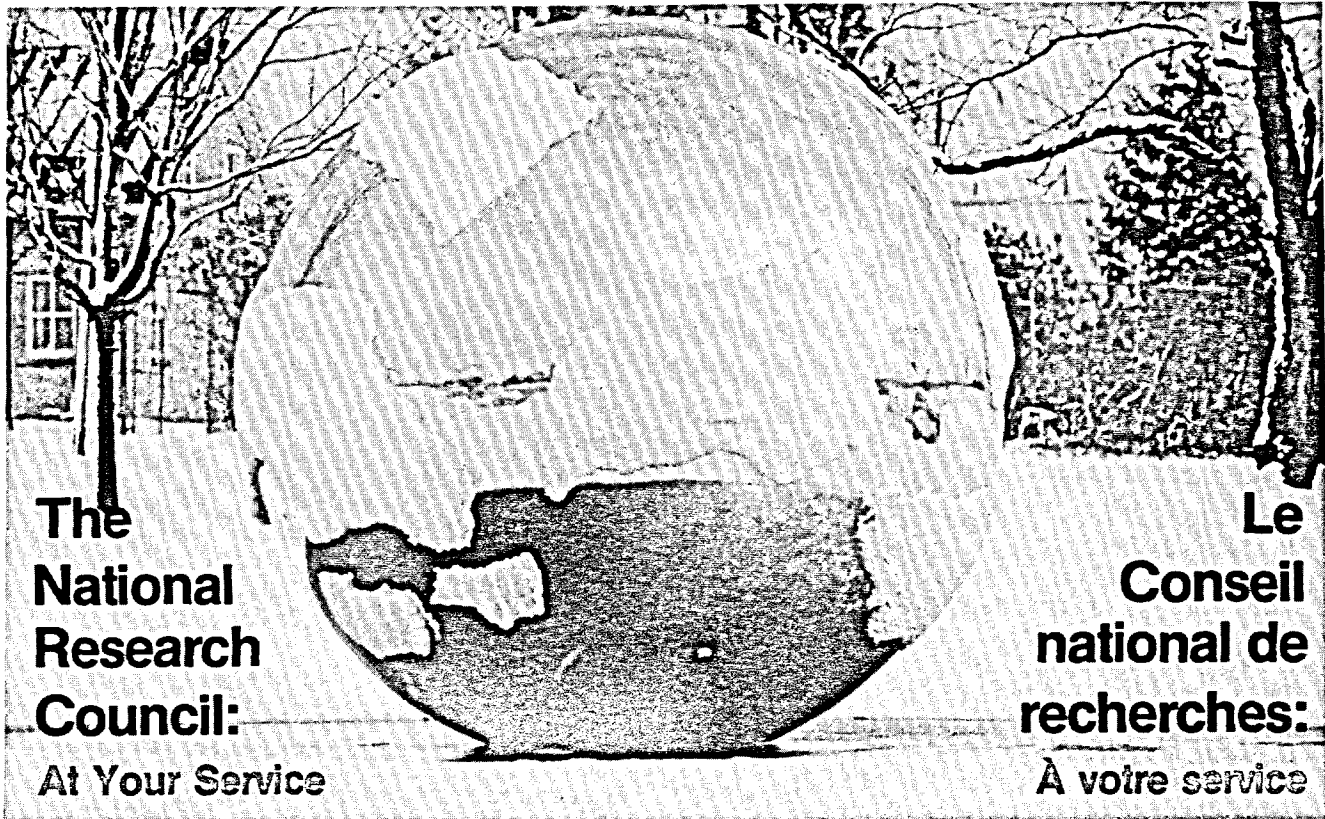
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Dept. of External Affairs  
Min. des Affaires extérieures

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**The  
National  
Research  
Council:**  
**At Your Service**

**Le  
Conseil  
national de  
recherches:**  
**À votre service**

The National Research Council (NRC) is the principal research agency of the federal government. With a staff of about 3 300 and a 1982-83 budget of \$350 M, NRC concentrates in the areas of industrial and regional development, energy issues and social concerns. In particular, NRC is implementing an ambitious long-term plan aimed at doubling the economic contribution of Canada's technology-intensive sector by 1990.

Of particular interest to Canadian industry are two NRC industrial assistance programs:

**Industrial Research Assistance Program (IRAP):**

NRC provides financial support for industrial research on a cost-shared basis, with the participating company retaining all titles and rights resulting from the project.

**Program for Industry/Laboratory Projects (PILP)**

This program is specifically designed to transfer research carried out in government laboratories to industry so that it can develop marketable products. This allows the participating company to strengthen its R & D capabilities and broaden its product base.

For more information on NRC programs and activities please contact: Public Relations and Information Services at (613) 993-9101

or, Industrial Research Assistance Program at (613) 996-2012

or, Program of Industry/Laboratory Projects at (613) 993-0695

or write to: National Research Council  
Ottawa, Ont. K1A 0R6

Le Conseil national de recherches (CNRC) est le principal organisme de recherche fédéral. Avec un effectif d'environ 3 300 personnes et un budget de 350 millions de dollars pour 1982-83, le Conseil concentre ses efforts sur le développement industriel et l'expansion régionale, ainsi que sur les ressources énergétiques et les problèmes sociaux. Il travaille notamment à la réalisation d'un ambitieux plan à long terme visant à doubler d'ici à 1990 la contribution économique des secteurs à forte concentration technologique canadiens.

Deux programmes d'aide à la recherche industrielle du CNRC intéressent particulièrement l'industrie canadienne:

**Le Programme d'aide à la recherche industrielle (PARI)**

Le CNRC fournit une aide financière à la recherche industrielle sur la base d'un partage des coûts, la compagnie étant propriétaire des droits et des titres résultant du projet réalisé.

**Le Programme des projets "Industrie-Laboratoires" (PPIIL)**

Ce programme a été spécialement conçu pour assurer le transfert à l'industrie du fruit des travaux des laboratoires gouvernementaux et permettre à celle-ci de mettre au point des produits commercialisables. La compagnie participante peut ainsi renforcer son potentiel de R et D et élargir la gamme de ses produits.

Pour de plus amples renseignements sur les programmes et les activités du CNRC, prière de vous adresser au:

Service de l'information et des relations publiques au (613) 993-9101,

au Programme d'aide à la recherche industrielle au (613) 996-2012

ou au Programme des projets "Industrie-Laboratoires" au (613) 993-0695

Ou, encore, écrivez au  
Conseil national de recherches  
Ottawa (Ontario) K1A 0R6



National Research  
Council Canada

Conseil national  
de recherches Canada

Canada



## Let's buy Canadian

The Natural Sciences and Engineering Research Council supports the acquisition of research equipment and the development of special research facilities in Canadian universities; Council also supports the effective use, operation and maintenance of research facilities.

- Equipment and Major Equipment Grants to assist university professors in the purchase of research equipment costing between \$7,000 and \$275,000.
- Major Installation Grants to assist competent research groups in Canadian universities in acquiring equipment or research facilities costing over \$275,000.
- Infrastructure Grants to assist in the operation and maintenance of major research facilities.

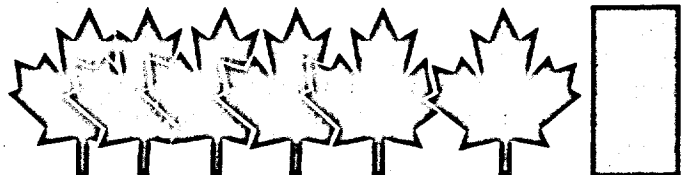
*For more information on NSERC's equipment grant programs, contact the Information Officer, NSERC, Ottawa, Ontario K1A 0R6 (613) 993-3659.*

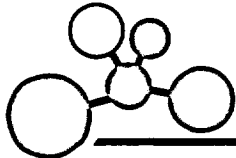
## Achetons des produits canadiens

Le CRSNG subventionne l'acquisition d'appareillage de recherche et le développement d'installations spéciales de recherche dans les universités canadiennes. Il subventionne également la mise en oeuvre, l'exploitation et l'entretien efficaces de ces installations.

- Les subventions d'appareillage et d'appareils spéciaux aident les chercheurs universitaires à acheter des appareils de recherche dont le coût se situe entre \$7 000 et \$275 000.
- Les subventions d'installations spéciales aident des groupes de chercheurs universitaires canadiens à acquérir de l'appareillage ou une installation de recherche coûtant plus de \$275 000.
- Les subventions d'infrastructure aident à couvrir les coûts de fonctionnement et d'entretien d'installations spéciales de recherche.

*Pour de plus amples renseignements sur les programmes de subventions d'appareillage du CRSNG, communiquer avec l'Agent d'information, CRSNG, Ottawa (Ontario), K1A 0R6, (613) 993-3659.*





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## How to use

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# RESEARCH & LABORATORY PRODUCTS:

## Canada's Manufacturing Capability

This catalog contains descriptive information on a number of Canadian companies that manufacture products for use in scientific laboratories. A product qualifies for inclusion in this catalog if 50% or more of its value has been added in Canada.

The purpose of the catalog is to give wider publicity to Canadian manufacturing capability in this area in the expectation that more Canadian scientists will purchase, or at least take into consideration, Canadian-made products when they are acquiring equipment or instrumentation.

In addition, it is hoped that distribution of this catalog overseas by the Federal Department of Industry, Trade and Commerce will stimulate export opportunities for these Canadian manufacturers.

This project has been spearheaded by the Natural Sciences & Engineering Research Council with the assistance and co-operation of the National Research Council of Canada, the Medical Research Council of Canada, the Department of Industry, Trade and Commerce, and The Institutional Market Program consisting of representatives of the 13 Federal, Provincial and Territorial Governments of Canada. It has been produced by Maclean Hunter Ltd.

Although complete address and telephone information is included in each company's write-up, we have included a convenient postage reply card at the back of the catalog which you can use to get information on any of the products described. Just fill out your name and address, answer the brief questionnaire, circle the number of the company that makes the product you're interested in, and drop in the mail. We will make sure the information gets to you as soon as possible.

It is expected this catalog will grow in size each year, with additional companies participating and with existing participants expanding their product offerings. However, if you would like to suggest companies for inclusion in future editions, please drop a note to: Research & Laboratory Products: Canada's Manufacturing Capability, c/o Maclean Hunter Ltd., 481 University Avenue, Toronto, Canada M5W 1A7. We will do our best to include them in the next issue which should be available in August, 1983.

Finally, towards the end of this year we will be circulating a questionnaire to selected recipients of the cata-

log to solicit their reactions to it and to determine to what extent it has been instrumental in increasing the use of Canadian-made products in laboratories at home and abroad. Should you receive a questionnaire, please fill it out and return it promptly as we will wish to incorporate your comments in the 1983 edition.

**Douglas E. Dingeldein**  
Project Co-ordinator

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# Comment utiliser

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## PRODUITS DE LABORATOIRE ET DE RECHERCHE:

### potentiel industriel du Canada

Ce catalogue contient des renseignements détaillés sur un certain nombre de sociétés canadiennes qui fabriquent des instruments pour les laboratoires scientifiques. Un produit ne peut figurer dans ce catalogue que s'il contient au moins 50% en valeur ajoutée de source canadienne.

Il vise à donner dans ce domaine une plus grande publicité au potentiel industriel canadien dans l'espoir qu'un nombre accru de scientifiques achèteront, ou tout au moins envisageront d'acheter, des produits de fabrication canadienne lorsqu'ils devront acquérir de l'appareillage ou des instruments.

Nous espérons également que la diffusion de ce catalogue à l'étranger par le ministère fédéral de l'Industrie et du Commerce stimulera les exportations de ces fabricants canadiens.

Ce projet a été lancé par le Conseil de recherches en sciences naturelles et en génie avec l'aide du Conseil national de recherches du Canada, du Conseil de recherches médicales du Canada, du ministère de l'Industrie et du Commerce et du Programme des marchés institutionnels, qui est composé de représentant des 13 gouvernements fédéral, provinciaux et territoriaux du Canada. C'est à Maclean Hunter Ltd. que l'on doit sa réalisation.

Bien que les articles rédigés par les compagnies participantes soient suivis de leur adresse complète et de leur numéro de téléphone, nous avons ajouté à la fin du catalogue une carte-réponse qui vous permettra d'obtenir plus facilement les renseignements que vous pourriez désirer sur les produits présentés. Il vous suffira d'inscrire vos nom et adresse, de répondre au bref questionnaire en cochant la case du numéro de la société fabriquant le produit qui vous intéresse et de poster la carte. Nous nous efforcerons de vous faire parvenir les renseignements demandés le plus rapidement possible.

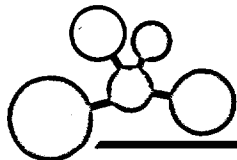
Avec la participation de nouvelles compagnies et l'augmentation de la liste des produits offerts par les compagnies participantes actuelles, nous nous attendons à ce que le volume de ce catalogue s'accroisse d'année en année. Nous vous invitons d'ailleurs à ne pas hésiter à nous soumettre les noms de compagnies que vous voudriez voir figurer dans nos prochaines éditions en écrivant à: Produits de laboratoire et de recherche: potentiel industriel du Canada, a/s Maclean Hunter

Ltd., 481, avenue University, Toronto, Canada M5W 1A7. Nous ferons notre possible pour les inclure dans notre numéro suivant dont la publication est attendue pour août 1983.

Nous enverrons vers la fin de l'année un questionnaire à un certain nombre de lecteurs pour leur demander de nous faire part de leurs réactions et déterminer dans quelle mesure le catalogue a contribué à faire augmenter l'utilisation de produits de fabrication canadienne dans les laboratoires nationaux et étrangers.

Nous vous demandons de bien vouloir le remplir dès que vous l'aurez reçu afin que nous puissions nous en servir pour préparer l'édition de 1983.

Douglas E. Dingeldein  
Coordonnateur du projet



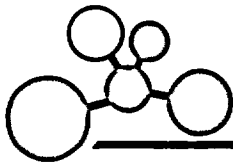
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Canadian Cabinets

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biologique - Canadian Cabinets  
chambres propres - Canadian Cabinets  
enceintes à atmosphère contrôlée - Canadian Cabinets  
postes de travail à circulation laminaire d'air pur - Canadian Cabinets  
postes de travail pour les liquides - Canadian Cabinets  
pour vapeurs délétères - Canadian Cabinets

## INSTRUMENTS POUR MESURER LA DURÉE DE FLUORESCENCE

Photochemical Research Associates

## LASERS

à infrarouge - Lumonics  
au néon et à l'hélium - Photochemical Research Associates  
excimer - Lumonics

## MAGNÉTOMÈTRES

Scintrex

## MICROSCOPES ÉLECTRONIQUES À BALAYAGE

Bausch & Lomb/Canada

## MOBIILIER

chariots de transport - Arlink Industries  
de laboratoire - Arlink Industries

hottes de confinement - Canadian Cabinets

systèmes de rangement - Arlink Industries

## MONITEURS

à main pour les radiations - Scintrex  
de radiations pour les mains et les pieds - Aptec Engineering  
de respiration - EKEG Electronics  
de température - EKEG Electronics  
de tritium - Scintrex  
fréquencesmètres cardiaques - EKEG Electronics

## PLAQUETTES ET SYSTÈMES DE MICROPROCESSEURS

dy-4 Systems

## PRODUITS D'AQUICULTURE

Syndel Laboratories

## PRODUITS CHIMIQUES

acides - Caledon Laboratories  
cliniques et de diagnostic - BDH Chemicals, Diagnostic Chemicals  
composés marqués avec des isotopes stables - Merck Isotopes  
composés spéciaux - Syndel Laboratories  
composés thérapeutiques - Syndel Laboratories  
conjugués d'enzymes et d'anticorps - Helix Biotech  
enzymes - Helix Biotech  
fluors de scintillation - Syndel Laboratories  
nucléotides - Syndel Laboratories  
peptides - Syndel Laboratories  
pour l'examen de l'haleine - BDH Chemicals  
pour l'immunoitragage des enzymes - Helix Biotech  
produits étalons - BDH Chemicals  
protéines humaines - Helix Biotech  
qualité "réactif" - BDH Chemicals, Caledon Laboratories,  
Diagnostic Chemicals, Syndel Laboratories  
réactifs biologiques - Diagnostic Chemicals  
solutions pour la dialyse - BDH Chemicals  
solutions volumétriques - BDH Chemicals  
solvants - Caledon Laboratories  
solvants deutériés pour les études de résonance magnétique nucléaire - Merck Isotopes  
solvants pour chromatographie liquide à haute pression - Waters Scientific

## SOURCES DE LUMIÈRE

à onde entretenue - Photochemical Research Associates  
pulsée - Photochemical Research Associates

## SPECTROMÈTRES

de masse tétrapolaires - Sciex  
en tandem de masse tétrapolaires - Sciex

## SPECTROPHOTOMÈTRES

infrarouges à transformée de Fourier - Bomem  
pour l'absorption atomique - Scintrex

## SYSTÈMES CRYOSTATIQUES

Aptec Engineering

## SYSTÈMES D'ANALYSE NUMÉRIQUE DES IMAGES

Dipix Systems

## SYSTÈMES INFOGRAPHIQUES

pour la conception assistée par ordinateur - Orcatech  
terminaux - dy-4 Systems

## SYSTÈMES NUCLÉONIQUES

Aptec Engineering

## SYSTÈMES DE TÉLÉMESURE POUR LA RECHERCHE

EKEG Electronics

## THERMOCOUPLES

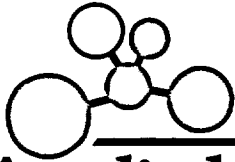
Engelhard Industries of Canada

## TUBES

de Geiger-Mueller - Aptec Engineering

## VASES DE DEWAR

Aptec Engineering



# Applied Physics Specialties Ltd.

Applied Physics Specialties Ltd., an all Canadian company, has been manufacturing high quality optical elements and instruments for the industrial and scientific community since 1964. The company specializes in the design and small scale production of optical elements and assemblies of all types including complete systems and instruments.

## PRODUCT RANGE

### Lenses

Surfaces can be spherical, cylindrical or aspheric. Tooling is available for a large number of spherical radii; a list of these radii is available on request. Diameters to 460mm can be accommodated in all normal optical materials.

### Prisms

Non-Standard sizes, angles, tolerances or materials are a specialty.

### Windows, Flats, Étalons

These can be supplied in all optical qualities. For items requiring optically worked surfaces, limiting size is approximately 460mm equivalent diameter. Special shapes, edge configurations, material, or other requirements can be accommodated.

### Mirrors

First or second surface may be coated with gold, aluminum or other metal and overcoated for protection or enhanced reflectance. Dichroic and other coatings are available. Present vacuum plant limitations restrict sizes to the equivalent of approximately 400mm diameter.

### Reticles

Photographic or photo-etched metal (normally chromium) reticles on glass or other substrate can be made to specifications or from customer-supplied artwork.

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## APPLIED PHYSICS SPECIALTIES LTD.

17 Prince Andrew Place  
Don Mills, Ontario  
M3C 2H2

Telephone: (416) 445-1870

### President

J.D. Bain

### Technical Manager

A.M. High

### Q.C. Manager

H.W. Matthews

### Vacuum Coating

Single and multilayer, dielectric, metal and composite coatings for reduced or enhanced reflection, partial transmission, filters, electrical conductivity and other requirements can be applied to any compatible substrate.

### Tolerances

For work of the highest precision the following tolerances represent normal limits but may be finer in special cases:

Flatness: 1/20 wavelength (at 550 nanometers)

Regularity: 1/20 wavelength (at 550 nanometers)

Radius of Curvature: .001 x radius

Parallelism: 1 arc second

Angles (Prisms): 10 arc seconds (1 arc second in special cases)

Dimensions: Can be held to a few microns if required (depending on size and location)

Lens Centering: 1 arc minute

## SHOP FACILITIES

Complete machining facilities are available for prototype and limited production quantities of both glass and metal parts. A large stock of diamond tooling permits sawing, drilling, milling, grinding and radius generating of glass and similar materials.

The glass grinding and polishing shop has a variety of machine spindles, permitting the manufacture of a full range of curvatures and diameters, as single or multiple blocks. A cylinder machine provides for the grinding and polishing of convex and concave cylindrical surfaces. Cast iron grinding tools and fused silica master test plates are available for over 300 radii. Measuring equipment includes autocollimators, Foucault tests (for normal and short radius elements), electronic spherometer, Fizeau interferometer (280mm aperture) and precise divided circles for angle determination.

Vacuum coating with metals and dielectrics is carried out in a separate clean area. Three 45cm coaters are available. The recent addition of a 12kw electron gun evaporation source permits deposition of hard multilayer coatings.

Optical assembly and mountings of components is taken care of in special areas where cleanliness is maintained.

The precision photography section produces reticles and similar items. Several copy cameras of different sizes allow for a wide range of photographic work. A major product of this section is master fonts for use in phototypesetting machines and a number of special cameras, alignment fixtures and other similar items have been developed for this work.

## DESIGN CAPABILITIES

### Optical

Applied Physics Specialties is able to design simple fixed

focus optical systems using primary aberration analysis and finite raytrace capabilities. These systems can include the conventional spherical refracting and reflecting surfaces as well as conic sections.

#### Thin Films

Design capabilities include dielectric beamsplitters, high reflectance dielectric mirrors, hot and cold mirrors to customer specifications.

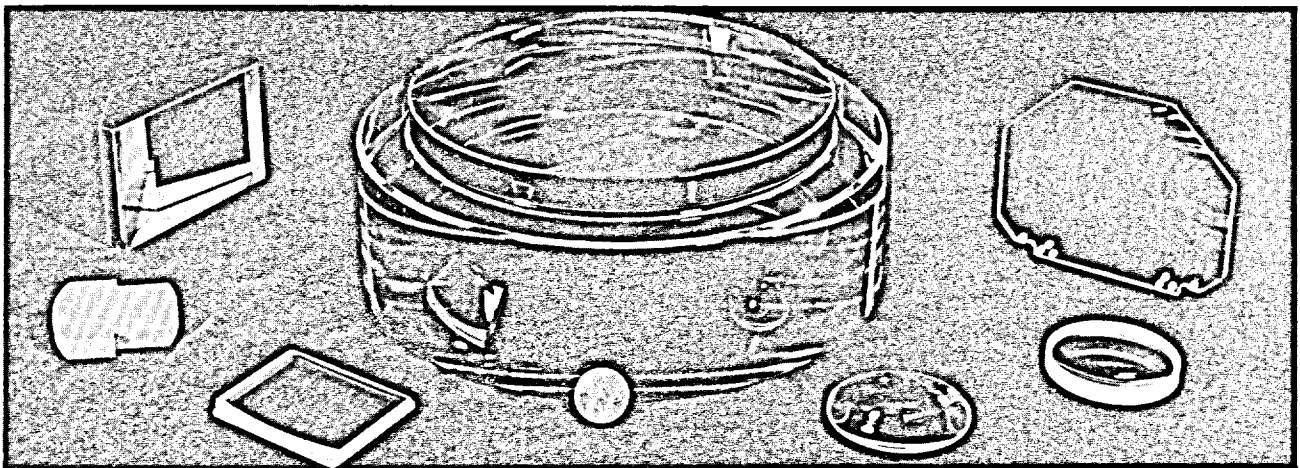
#### QUALITY CONTROL

The company has selected a quality control program conforming to C.S.A. Standard Z299.4 - 1979.

Final inspection is carried out on all finished parts for conformance to requirements and to ensure proper appearance, packaging and identification.

In addition to the usual complement of calipers, micrometers, depth gages, and gage blocks, the department has;

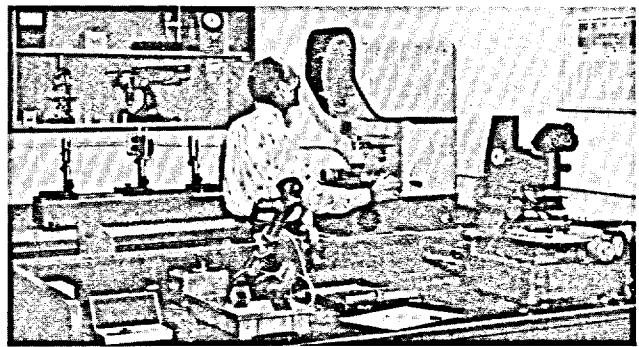
- Optical Comparators
- Spectrophotometer with transmission range of 185 nanometers to 2.5 microns.
- Jena Large Toolmakers Microscope
- Autocollimator
- Goniometer



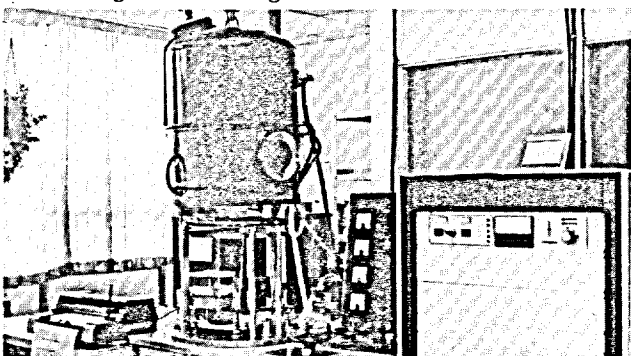
*Typical precision optics*



*Glass machining section showing  
Blanchard grinder & lens generators*



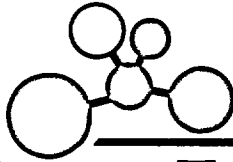
*Part of the quality control &  
measurement area*



*One of our three vacuum coating units*



*Grinding & polishing shop showing  
Fizeau interferometer and lens centering machine*



# Aptec Engineering

Aptec Engineering Limited was formed in 1967 as a manufacturers representative providing instrumentation to the nuclear, x-ray, laser and data acquisition marketplace. By 1975, sales offices had been established in Edmonton, Montreal, and Ottawa to provide better customer service. In 1975, the NRD (Nuclear Radiation Development) Division of Electronic Associates of Canada Limited was acquired by Aptec. NRD had been formed in 1946 as a manufacturer of geiger-mueller tubes and nucleonics (nuclear electronics) products. Aptec presently occupies 20,000 square feet of manufacturing and office space and employs about 50 people.

## GEIGER MUELLER TUBES

This Division manufactures a wide range of glass, stainless steel, and special purpose Geiger-Mueller tubes for the monitoring of alpha, beta or gamma radiation. At present there are about 25 different tubes which are

in standard production, however Aptec continuously works with its' customer base in developing new tubes to meet changing demands.

## GERMANIUM DETECTORS

In 1973, Aptec (NRD) expanded its nuclear detector capability by manufacturing high purity germanium detectors. Today, Aptec is one of the world's largest manufacturers of high purity germanium detectors and these products are sold throughout the world. The product range can be roughly split into four main areas; standard products, portables, environmental, and specials. The demand for the standard and special products continue in high demand. In addition, increased emphasis has been placed on portables and environmental detectors, both "in-field" or laboratory oriented.

## HAND AND FOOT MONITORS

In 1975 Aptec started the product development of a hand and foot monitor using its' very sensitive large area flat Geiger-Mueller counters. The resultant product was the Concept 7 and hundreds of these units are now in daily operation in nuclear facilities in North America. More recently, the electronics portion has been upgraded using a microprocessor-based system, resulting in the Concept 7M unit. Because of its' increased data analysis capability, faster and more accurate hand and foot monitoring has resulted. The product acceptance has been high and many nuclear facilities in Canada and the United States have chosen the Concept 7M as their primary source of personnel contamination monitoring.

## NUCLEONICS SYSTEMS

During recent years, a considerable portion of the company's business has involved the design and manufacture of special purpose nucleonics systems involving special detector design, custom electronics, sophisticated data acquisition systems and user-oriented software. The systems group is oriented around providing a total "turn-key" approach including all necessary training, servicing, and documentation that may be required by the customer.

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## APTEC ENGINEERING LIMITED

### Head Office

4251 Steeles Avenue West,  
Downsview, Ontario M3N 1V7

Telephone: (416) 661-9722  
Telex: 065-27210

### Montreal Office

7333 Place des Roseaies, Suite 100,  
Anjou, Quebec H1M 2X6

Telephone: (613) 232-9193

### Ottawa Office

85 Albert Street, Suite 1610,  
Ottawa, Ontario K9P 6A4

Telephone: (514) 354-3154

### Edmonton Office

1840 The Sun Life Place, 10123-99 St.,  
Edmonton, Alberta T5J 3H1

Telephone: (403) 425-0580

## APTEC NUCLEAR INC.

210 South 8th Street  
Lewiston, N.Y. 14092

### President

E.S. Zieba

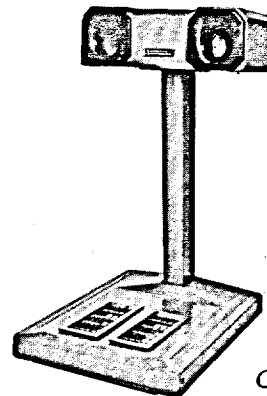
### Vice President Marketing

P.B. Stark

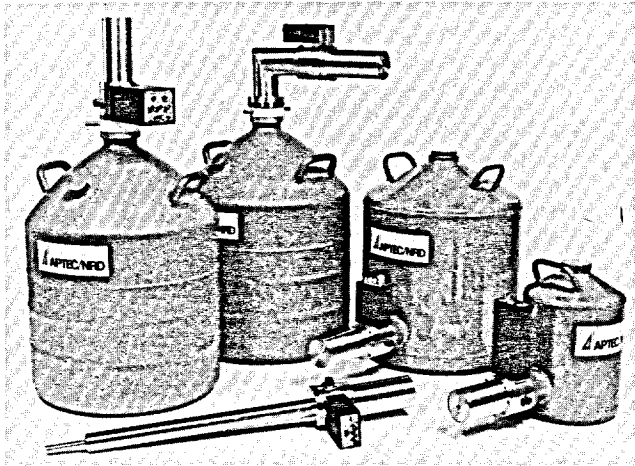
### Vice President Sales

K.T. Thompson

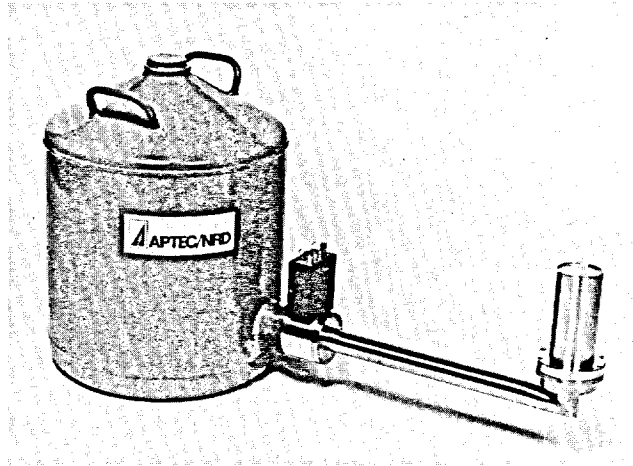
Aptec is actively interested in export opportunities and presently this accounts for approximately 50% of the manufactured items.



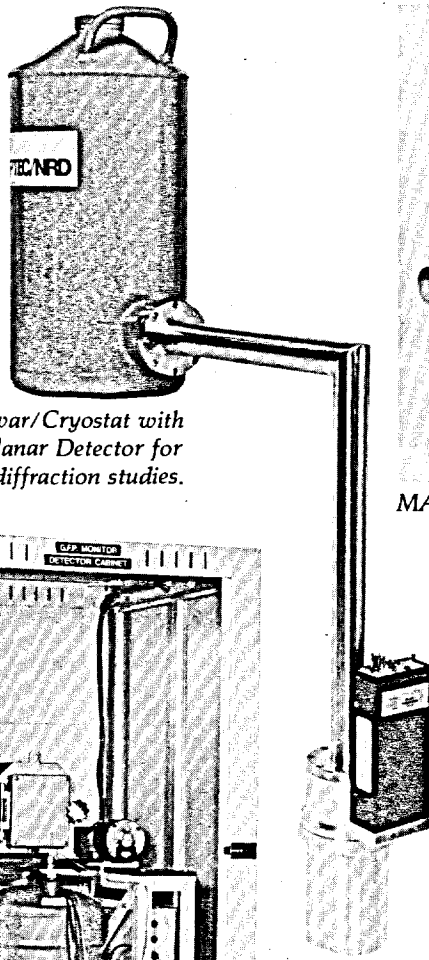
Concept 7M  
Hand & Foot  
Contamination Monitor



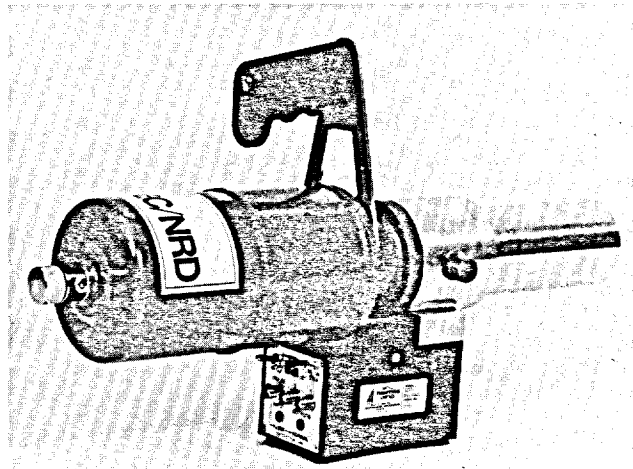
*Samples of Standard Aptec Dewar/Cryostat Systems*



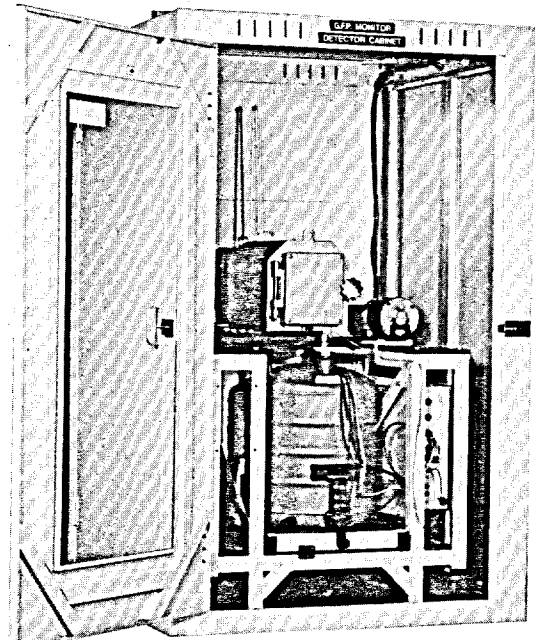
*NPR style environmental detector*



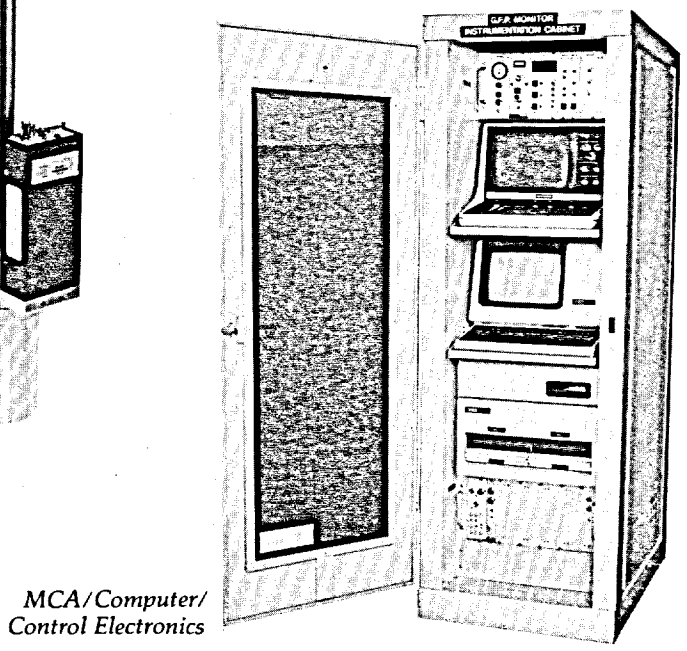
*Special Dewar/Cryostat with  
25mm<sup>2</sup> Planar Detector for  
X-ray diffraction studies.*



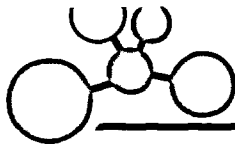
*MAP-101 portable Ge Detector with AUTO-BIAS.*



*Detector/Shield/Collimator Assembly*



*MCA/Computer/  
Control Electronics*



# Arlink Industries

ARLINK INDUSTRIES was formed in 1974 as the manufacturing affiliate of Arbell Inc., one of Canada's largest suppliers of production and test equipment to the high technology markets.

Today, ARLINK is possibly the best known Canadian designer and manufacturer of workbenches, workstations and related accessories specially suited to the diverse needs of the laboratory, electronics and light mechanical environments.

## A BASIC STYLE

As distinguished from the many types of basic stamped and welded industrial benches, the ARLINK designs entail tubular steel components, assembly with few tools, wide choice of standardized components, simple classic lines, and ease of cleaning and maintenance.

The traditional Series 77 as it is available today includes standard features such as fully enclosed tubular legs with levelling adjustment, structural load beams, a choice of work surfaces from solid maple to fully sealed laminate and particle board combinations with a wide selection of sizes and heights. To the basic bench can be added drawers, shelving above and below the work surface, built-in electrical circuits, lighting fixtures and utilities. This style of bench is a semi-permanent unit and if the laboratory requirement is fixed and predictable, the Series 77 is an excellent value in terms of styling choice and serviceability.

## FLEXIBILITY FOR THE FUTURE

Laboratories and industries are faced with the demand for a greater degree of adaptability to accommodate the requirements of new projects or rapidly changing technologies and the need for more efficient use of space.

To this end, the ARLINK Series 82 was conceived

and developed. Considered to be the first major innovation in workstation design in perhaps the last fifteen years, it truly offers the much desired "flexibility for the future".

In developing the Series 82, particular attention was given to the following criteria:

- Standardization of components
- Adjustability of height and inclination of work surface and shelves
- Ease of erection, change or modification
- Choice of illumination
- Adaptability to new accessories as developed
- Alternative uses

## THE NEW DESIGN

The design meets or exceeds all of the foregoing requirements. It is built around a repeatable columnar system from which you can create single station, back to back, or series units — and you can convert from one option to the other at any time without disturbing adjacent workstations.

All work surfaces and shelving are cantilevered from the central column system with the heavy duty components adjustable vertically in optional 3" (76 mm) or 1-1/2" (38 mm) increments and the light duty accessories on 1" (25 mm) increments.

Work surfaces, shelves and fluorescent fixtures are generally considered the heavy duty components. The light duty accessories include task lights, electrical and utility outlets, tool support brackets, parts bin rails, magnifiers, etc.

Everything is built around a nominal 48" (1215 mm) length module which not only provides an adequate workstation for most applications but also conforms to many industry standards such as for fluorescent tubes.

An interesting feature is the low profile outrigger leg which both stabilizes the vertical column, provides adjustment for uneven floor surfaces, and acts as the support system for a fully adjustable footrest.

The system relies almost entirely on an ingenious series of hook mechanisms to facilitate the ease of removal and relocation of any component without tools. There are only a few nuts and bolts and clevis pins required for each workstation and once the assembly of the basic structure is completed, these are seldom touched again.

Because of the column and hook-on concept, the same bench components are also used for storage racks and mobile transfer carts and all elements are interchangeable throughout the system.

The appeal of the Series 82 to the laboratory user or planner is the adaptability to future needs. A system can be set up for a project lasting as briefly as a few days to a few weeks with the knowledge that part or all of the arrangement can be dismantled, rearranged at will, put to other uses, or economically stored.

The basic structural members readily adapt themselves to highly specialized features such as work

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## ARLINK INDUSTRIES

Division of Arbell Inc.

### Head Office and Plant

mailing address: Box 215

Burlington, Ontario

L7R 3Y2

street address: 1187 King Road

Burlington, Ontario

Telephone: (416) 632-9494

Telex: 061-8408

### President and General Manager

W.F.B. Armstrong

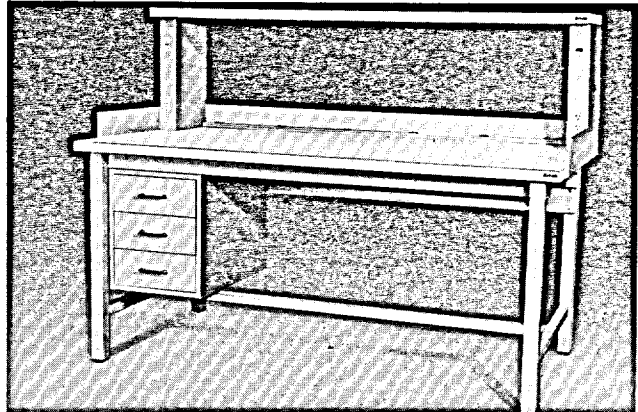
### Sales Co-ordinator

Peter E. Davidson

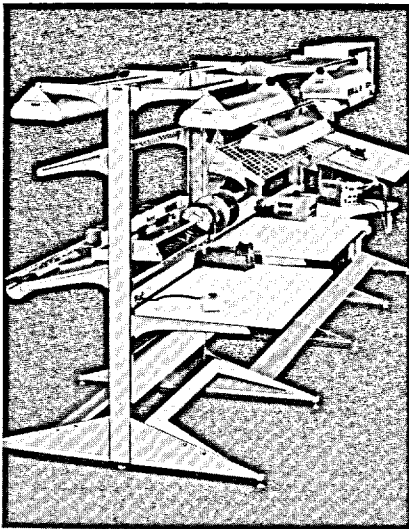


surfaces with sinks, including flexible plumbing to accommodate changes in working height, adaptations for instrumentation, and support systems for elaborate custom test apparatus. If a standard component is not available, at least the bracket attachments can be purchased for custom fabrication by the user to suit his own particular needs.

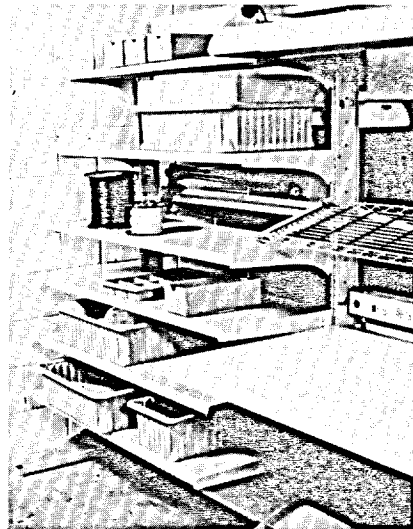
Between the traditional Series 77 and the flexible Series 82, the ARLINK workstation systems can accommodate the widest possible range of laboratory and industrial facility requirements.



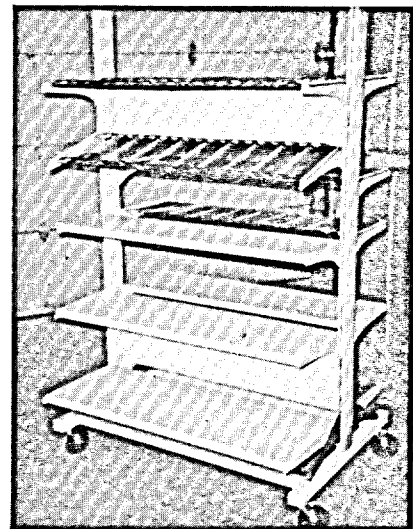
*SERIES 77 Workbench with typical accessory features.*



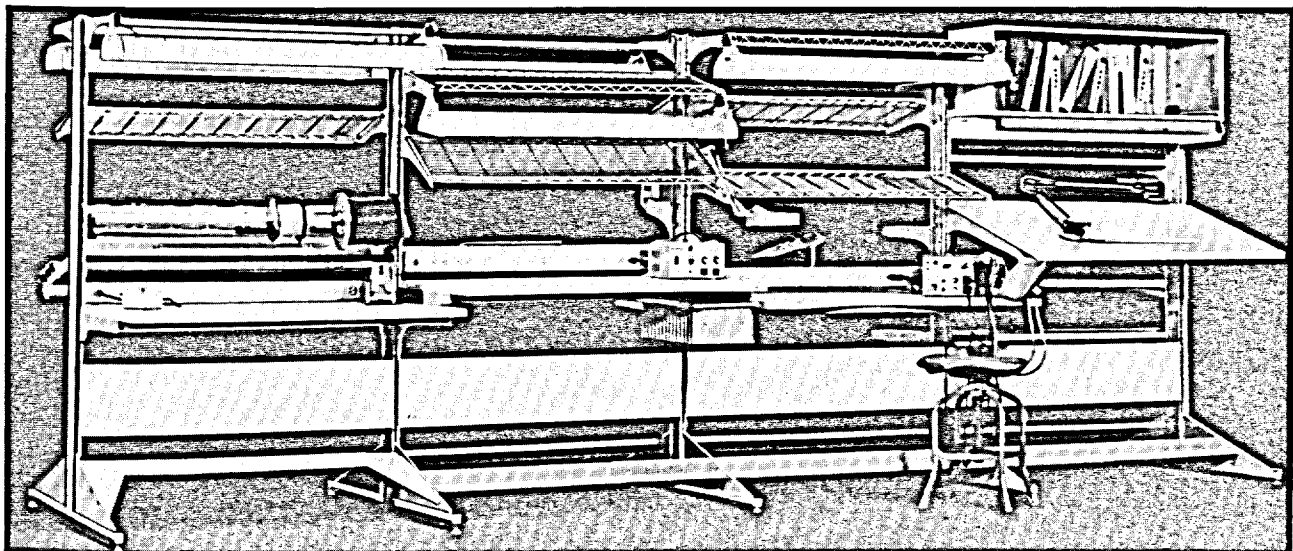
*The SERIES 82 System provides maximum flexibility in lighting configurations and can be used as a single-sided or back-to-back unit.*



*SERIES 82 Storage System - shelves and columns same as for carts and Workstations.*



*SERIES 82 Transfer Cart with both Open Wire and Flat Steel Shelves.*



*SERIES 82 Workstation System with variety of work surfaces, shelves and options. Note choice of heights and inclinations.*





# BDH Chemicals Canada Limited

BDH Chemicals is a major manufacturer and distributor of reagents and related products for the laboratory, as well as of a wide range of fine chemicals for industrial production.

BDH has been known in health service circles for a full century and in Canada since 1931. BDH began manufacturing in Canada in the mid-fifties.

Dramatic changes started at BDH when, at the beginning of 1974, it became the Canadian subsidiary of the E. Merck group of companies — a substantial multinational organization comprising 70 companies in 50 nations, with a total turnover of over one billion U.S. dollars. The group employs staff of 20,000 worldwide, about 8,000 of them at the main manufacturing facility at Darmstadt, West Germany. It is a policy within the group to encourage local manufacture, and Canada is no exception.

In 1974, a 20,000 square foot warehouse and office facility in Toronto was purchased. A major addition consisting of manufacturing, packaging and quality assurance facilities was completed by September 1975.

BDH always had an unquestioned reputation for first class quality. It was the service image that most needed improvement.

By the end of 1975 much had been accomplished. Inventory control, order processing and accounts receivable were computerized. Branches were opened in Montreal and Vancouver, and the first full BDH catalogue in seven years was published. Inventory and manufacturing levels were raised to the point that 97 percent of all items ordered were delivered from stock. Staff had increased from 47 to 90.

Not satisfied to rest on its laurels, BDH continues to grow. Since 1979 major progress has been made. At that

time it became apparent that the federal government might introduce a duty on reagent chemicals used in hospitals, universities and research institutions. When the new duty came into effect BDH did not increase its prices; rather, it took advantage of the duty protection to expand and capture a larger share of the market.

In 1981, a second major expansion of the Toronto manufacturing facility was completed. New branches were opened in Dartmouth, Edmonton and Saskatoon, increasing BDH's stocking points from three to six. The Vancouver branch moved to a much larger location and is now setting up to begin local manufacture - a first in the industry!

These vigorous changes required an increase of staff from 90 to 120. One of the secrets of BDH's success is its highly motivated staff of professionals. Over a third of them are science graduates, working not only in manufacturing, packaging and quality assurance but also in sales and marketing, not counting graduates in other disciplines.

Another of BDH's success secrets is its modern manufacturing plant in Toronto.

The spacious, new Quality Assurance Laboratory is a model of efficiency - it must be. The laboratory staff is responsible for the quality of each and every one of the over 9,000 products sold by BDH. Within the laboratory is an instrument room containing the battery of instruments necessary to analyze very pure laboratory reagents.

The manufacturing area is as impressive as it is versatile. A sophisticated water purification system is in place to prepare the large volumes of specially pure water needed to manufacture analytical and clinical solutions. Manufacturing routinely prepares batch sizes that range from a few litres to as much as 4400 litres.

The packaging area displays as much versatility as manufacturing. Versatility is a must when handling products that may be flammable, corrosive, explosive, poisonous, irritating, carcinogenic or any combination of these.

A spacious warehouse stores the vast inventory necessary to service customers promptly, as well as BDH's five regional stocking points. Solvents and other flammable materials are packaged and stored in a separate solvent building for safety. Each of the four rooms in the building has its own exhaust system, explosion proof equipment, lights, fittings, safety showers and static-proof floors.

All of this adds up to a considerable amount of Canadian value added, which is replacement of imports.

BDH manufactures a large array of laboratory products including reagents, volumetric solutions, standards, clinical and diagnostic products, solutions for artificial kidney dialysis and also breath testing reagents and standards.

Under the trade name BDH Assured, BDH markets a wide range of products, including ACS grade chem-

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## BDH CHEMICALS CANADA LTD.

### Head Office

350 Evans Avenue  
Toronto, Ontario M8Z 1K5

Telephone: (416) 255-8521

Telex: 06-967678

Toll Free: 1-800-268-2129

(In Area Codes 519, 613, 705)

### President

Mr. John White

### Vice-President Sales and Marketing

Laboratory Products

Robert Kamino

### Vice-President Sales and Marketing

Industrial Products

Jochen Ladendorff

icals, other analytical reagent chemicals and standardized volumetric solutions. All of these items in the BDH Assured line are manufactured in Canada.

BDH sells a wide range of clinical diagnostic products designated by the name Harleco. In this range are reagents for automatic analysis, UltraZyme and UltraChem diagnostic kits, manual kits, a wide range of reagents, standards and sundries for the clinical lab. A large proportion of the Harleco line is manufactured in Canada by BDH.

BDH is a major Canadian manufacturer of solutions for artificial kidney dialysis. Most breath testing solutions sold in Canada are also manufactured by BDH. We also have the capability of custom manufacturing a wide range of products to customers' specifications.

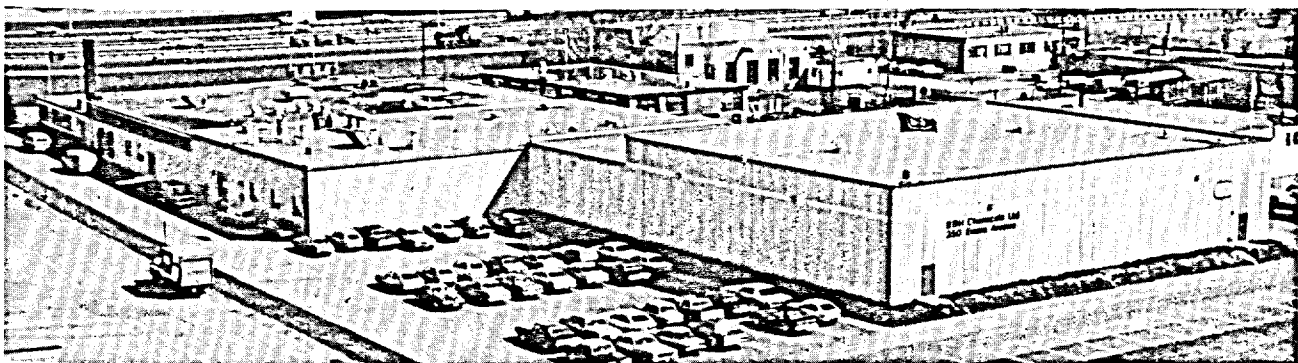
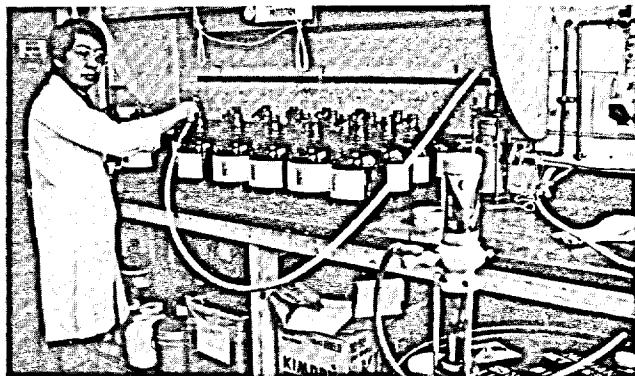
Included in its product line are AnalaR premium

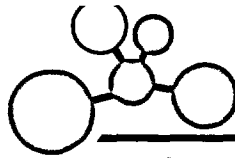
quality analytical reagents, OmniSolv solvents for all high purity applications, Serono radioimmuno-assay kits, Alpha Resources products for combustion analysis, E. Merck chromatography products, Aristar and Suprapur ultra-pure reagents, Difco culture media and reagents, Ames products for urinalysis and a wide range of products for the photographic, optics, food, pharmaceutical, cosmetic and electronics industry.

Through its international affiliates, BDH has access to one of the most staggering arrays of reagent and fine chemicals available, anywhere.

Why not make BDH Chemicals THE SOURCE for all such needs?

Customers are invited to come and tour BDH's Toronto facilities or any of the branches. Please call to arrange a visit.





# Bausch & Lomb/Canada

From its base of operations in Ottawa, Bausch & Lomb/Canada has become internationally known as one of the most respected — and innovative — companies specializing in the design, development, and manufacture of scanning electron microscopes (SEMs). B&L/Canada was formed in 1980, when SEMCO Instruments Company, Ltd. of Ottawa joined Bausch & Lomb. By combining SEMCO's technological virtuosity with Bausch & Lomb's manufacturing expertise and international marketing experience, the operation has flourished over the past two years. Staff has increased from 40 to 75 in less than two years, thanks to a coordinated employment plan that concentrates on local hiring.

The manufacturing capability — always a limiting factor in SEMCO's early years — has been upgraded and expanded. Last year B&L/Canada occupied a new facility with a manufacturing area with more than twice the size of the previous plant. At the same time, research and development programs continue, with increased budgets supporting developmental programs in several promising areas of SEM technology.

## ADVANCES IN ELECTRON MICROSCOPY — LaB6

With more than ten years of experience in the design and development of SEMs, the Ottawa group has already achieved several important 'firsts'. The most notable development of the mid-70's (undertaken with the support of the National Research Council) was a practical electron emitter of lanthanum hexaboride (LaB6). The LaB6 emitter improves image resolution and clarity by providing a brighter, more durable source than the relatively inefficient tungsten emitter used in almost all other SEMs. In 1977 the Nanolab® 7 system, the first commercial SEM with a directly heated LaB6 emitter, was introduced. The effectiveness of the new LaB6 emitter was readily apparent when the instrument proved capable of resolving features as small as 5nm (2nm better than comparable SEM with a conventional emitter).

While the instrument was recognized as an advance in the field, and was attractively priced, limited manufacturing capacity and the lack of an experienced mar-

keting organization kept the Nanolab 7 SEM from achieving its full measure of success. However, development of the next generation of SEMs came to fruition rapidly with the formation of B&L/Canada. Early in 1981 two new instruments were introduced — the Nanolab 2000 and 2100 SEMs, and more recently an improved single-crystal LaB6 emitter has been demonstrated.

## THE NANOLAB 2000 SERIES

The Nanolab 2000 and 2100 SEMs refine the advances that the Nanolab 7 introduced, with resolution down to 4nm now possible. Paying close attention to the environments in which SEMs are used, B&L/Canada's R&D and applications experts joined forces to create an instrument that places the needs of the operator foremost. Both Nanolab SEMs offer conveniently grouped and functionally arranged controls, easily readable displays employing the latest in microprocessor technology, and smooth yet precise stage controls that make specimen manipulation rapid and exact. Furthermore, samples susceptible to damage from the electron beam can be safely inspected with the low-beam-voltage feature (ideal for semiconductor samples and insulators).

The Nanolab SEMs can provide magnifications as high as X300,000 or as low as X5, and can also scan at television rate throughout the entire magnification range. Both instruments feature dynamic focus control to ensure that micrographs are as sharp as possible. Furthermore, both instruments provide a high-stability photographic recording system that compensates for all scan rates, which, together with an auto-brightness control, makes microphotography virtually fail-safe. To complete the picture, these state-of-the-art SEMs also provide alphanumeric data with each micrograph, identifying the micron marker, voltage, magnification, photo number, and an identification logotype.

Sample handling with a Nanolab 2000 or 2100 SEM offers a new level of convenience for the operator. The large, multiport sample chamber is extremely versatile and maneuverable — at the touch of a button, the top plate and column assembly of the specimen chamber can be hydraulically raised, allowing complete access to the specimen area and detector systems.

The Nanolab 2100 SEM is the fully configured model of the current series, and includes split-screen video, scan rotation/tilt correction, and a video interface unit. Both instruments can be used with a variety of Nanolab accessories, such as an IC evaluation unit, digital scan generator, transmitted electron detector, cathodoluminescence detector, backscattered electron detector, or gray level generator. For the optimum in advanced SEM operation, the Nanolab 2100, combined with a Bausch & Lomb OMNICON® 7500 image analyzer, provides a full laboratory system capable of automating data collection and analysis from both the SEM image and accessory X-ray spectrometers.

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## BAUSCH & LOMB/CANADA

### Head Office

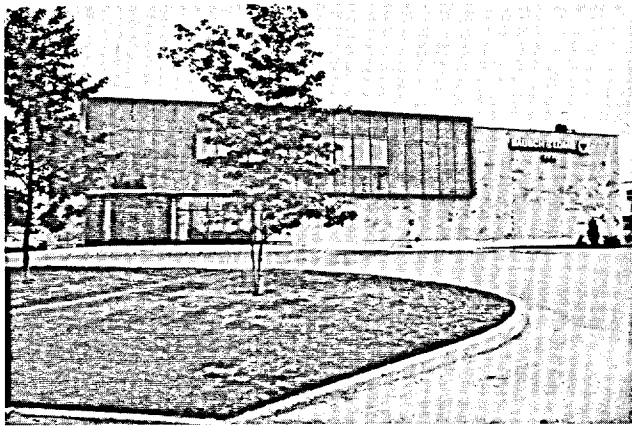
2930 Baseline Road  
Nepean, Ontario K2H 8T5  
Telephone: (613) 820-9437  
Telex: 053-3189

### Manager, Manufacturing Facility:

William Todd

### Manager, Sales and Marketing:

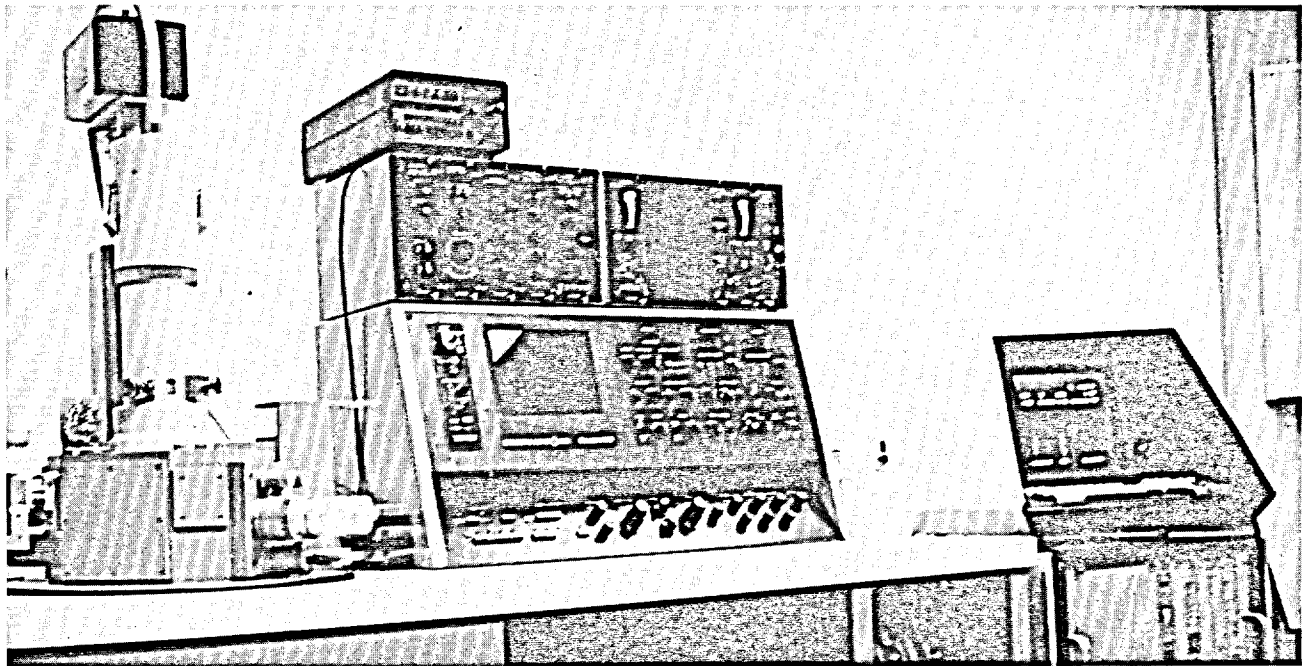
C.W. Eichten



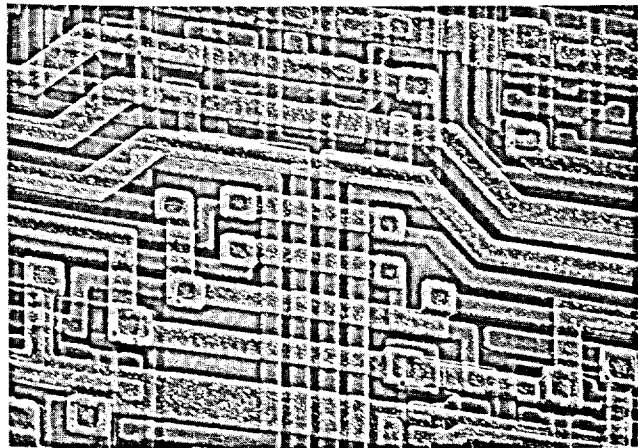
*Bausch & Lomb/Canada's new headquarters.*



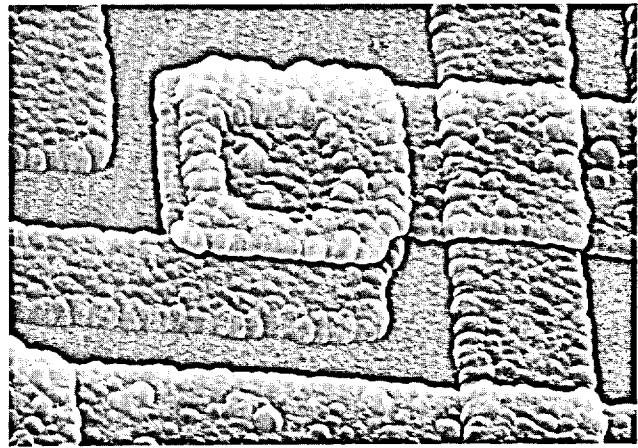
*Manufacturing area at the new facility is more than twice the size of the previous plant.*



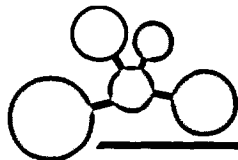
*Nanolab 2100 SEM in the Applications Laboratory at Bausch & Lomb/Canada's Ottawa facility.*



*Integrated circuit at X350 magnification (sample courtesy of Siltronics, Ottawa).*



*The same sample at X8000 magnification shows details of the contact window.*



# BOMEM Incorporated

Fourier Transform Spectrophotometers are the highest performance infrared spectrophotometers commercially available today. BOMEM, incorporated in 1973, has gained the happy reputation of producing the highest performance FTIR Systems. Since introduction of our laboratory models in 1980, the companies annual sales have quadrupled. The company uses extensive local subcontracting in production of basic parts and employs a staff of 35, fourteen of which are actively involved in engineering development of improved versions of our spectrophotometers and in contracted R&D projects. Marketing world-wide with the help of representatives in all European countries, Japan and Australia our export sales account for 75% of production.

The BOMEM DA3 Series represents a new class of high performance FTIR spectrophotometers - a complete modular system which reflects the latest advances in spectroscopy and data processing technology. An innovative approach to alignment of the interferometer, termed Dynamic Alignment, forms the basis from which many system advantages are derived:

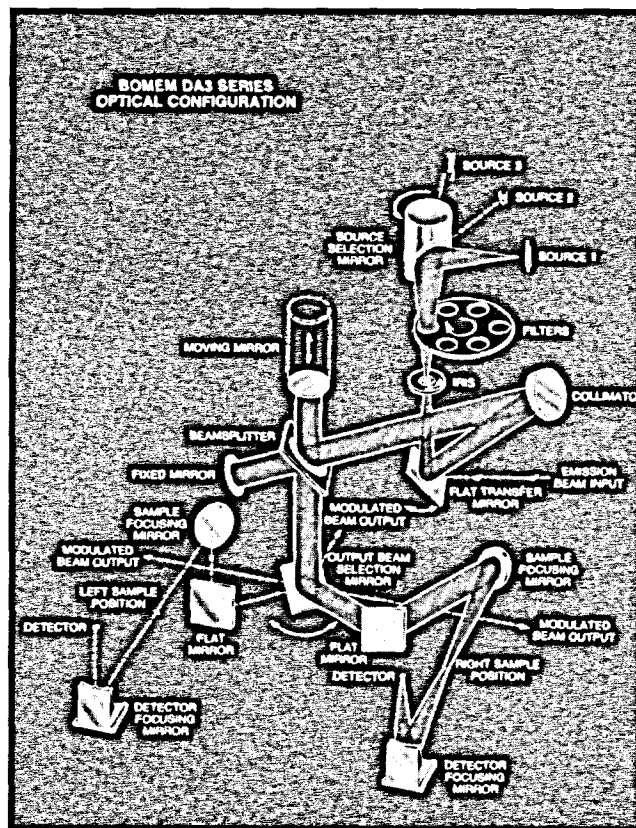
- accurate band and line shapes and high sensitivity
- wide spectral bandwidth, covering the region of  $10\text{ cm}^{-1}$  thru  $45000\text{ cm}^{-1}$  ( $1000\mu\text{m}$  to  $.22\mu\text{m}$ )
- accurate longterm reproducibility of spectra
- high resolution, up to  $0.0024\text{ cm}^{-1}$  or resolving power of  $1 \times 10^6$
- immunity to temperature and vibration
- rapid system deployment.

Data processing, storage and communication functions are performed by a High Speed Vector Processor (HSVPS) and a Host Computer system. We designed the HSVPS to take full advantage of the performance features of the dynamically aligned interferometer. It performs data acquisition, numerical signal processing and fourier transformation. The system is particularly designed for FTIR applications, providing FORMAN phase correction, numerical filtering and both FFT and

DFT fourier transforms. It can perform coaddition of up to 240,000 interferogram points. We usually supply the DA3 series systems with a Digital Equipment Corp. PDP11/23 computer. It provides a reliable general purpose laboratory computer which links to our system by the standard IEEE-488 General Purpose Interface Bus. The host computer is used for data storage (20Mbytes) and for data analysis routines including all standard stored-ratio methods and also provides for spectral search, peakfind, spectral subtract, baseline correction, and spectral integration.

Results are displayed on a 12" graphics terminal and camera-ready copy may be generated on the high speed digital plotter supplied.

As mentioned previously, we maintain a competent staff of engineers, programmers and optical design draughtsmen which can respond to special customer requirements. Please call us to discuss your specific application.



## BOMEM INCORPORATED

### Head Office

910 Place Dufour  
Vanier, Quebec G1M 3B1  
Telephone (418) 683-1707  
Telex 051-3438

### President

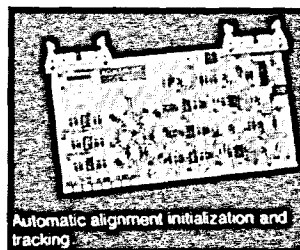
Dr. Henry L. Buijs

### General Manager

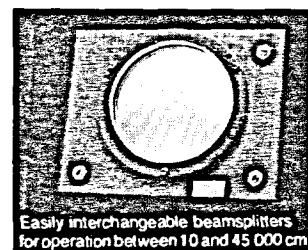
Garry Vail

### Engineering Manager

Jean Noel Bérubé

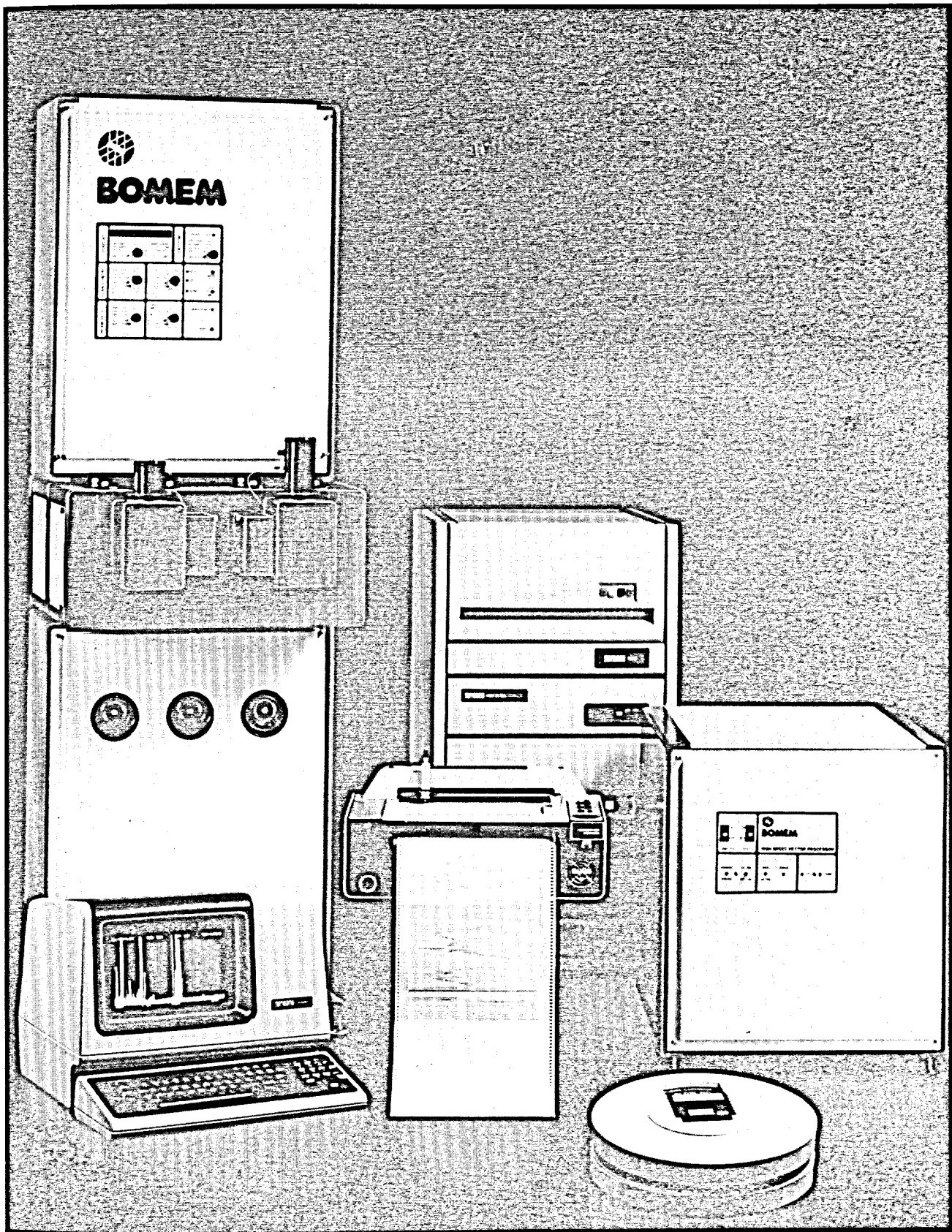


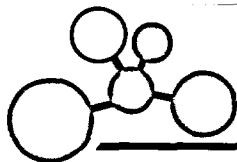
Automatic alignment initialization and tracking



Easily interchangeable beamsplitters for operation between 10 and 45 000 cm







# Caledon Laboratories Ltd.

Caledon Laboratories Ltd. is a Canadian owned and operated company which is located in Georgetown, Ontario, about 20 miles northwest of Toronto International Airport. The Company produces high purity, organic solvents and reagent inorganic chemicals for laboratory and industrial use.

Caledon was founded in 1971 and currently owns and occupies a 10,000 square foot manufacturing plant on 3 acres. A 5000 square foot addition is being constructed during the fall of 1982. Approximately 30% of the company's production is exported to the United States and the balance is sold across Canada.

The President and founder is Douglas J. Brock, B. Sc., a graduate of Queen's University and the Chief Chemist is Dr. Bert Nalliah, Ph. D. (University of Waterloo). The Business Manager is Mrs. Carol Taylor and the Sales Manager is David W. Butler. Caledon Laboratories presently employs over 20 people, more than half of whom have degrees from Canadian Universities.

## MANUFACTURING CAPABILITIES

The Company uses a variety of batch and semi-continuous distillation units constructed of glass and glass-lined steel for the purification of approximately 50 different solvents. Azeotropic distillation, along with a number of unique physical and chemical purification techniques are employed to produce ultra high purity solvents which are individually lot analysed in batches up to 2,000 litres in size.

In other operations, solutions such as Karl Fischer Reagent are being prepared and purification of reagent inorganic chemicals is being undertaken.

## ANALYTICAL CAPABILITY

... detailed analyses provide quality assurance.

Throughout the Company's history special attention has been placed on the establishment of good manufacturing procedures and the development of a strong analytical capability.

---

## CALEDON LABORATORIES LTD.

40 Armstrong Avenue,  
Georgetown, Ontario L7G 4R9

Telephone: 1-416-877-0101  
Toll Free: 1-800-268-7451  
(from Ontario, Quebec & Atlantic Canada)  
Metro Toronto Phone: 456-0226  
Telex Number: 06-97890

### President

Douglas J. Brock

### Sales Manager

David W. Butler

The laboratory, which is segregated into applied research and quality control areas, is equipped with gas chromatographs with packed and capillary columns and both flame and electron capture detectors. Other equipment includes a scanning UV spectrophotometer, and atomic absorption spectrophotometer, and a liquid chromatograph with variable wave length detector.

These instruments, along with classical chemical methods are used to support the development of new processes and the QC analysis of incoming raw materials, samples in process, and finished products.

A system of written analytical reports follows every production lot to provide maximum assurance that each meets or exceeds our detailed published specifications.

## PRODUCTS

Caledon produces reagent inorganic chemicals, acids and solvents as well as distilled in glass and HPLC grade solvents.

## CERTIFIED REAGENTS

Almost 200 of the most common inorganic chemicals, acids and solvents are available as CERTIFIED REAGENTS. For most, the American Chemical Society has published rigid limits of impurities and Caledon certifies, by its own analysis, that these specifications are conformed to. The specifications on the label are guaranteed values.

## DISTILLED IN GLASS

Over 50 solvents are distilled under high reflux ratio through efficient glass columns to remove residue. UV transparency and very low moisture content make these solvents ideal for a wide variety of instrumental analyses as well as other demanding applications.

Ultra low UV grades of some solvents and special nitrosoamine free dichloromethane are unique among commercial suppliers anywhere.

## HPLC GRADE

Specially treated and characterized for liquid chromatography. Actual lot analysis is stamped on the label.

Caledon HPLC solvents meet rigid standards for consistent purity. They give clean reproducible separations and long column life. The only HPLC solvents made in Canada.

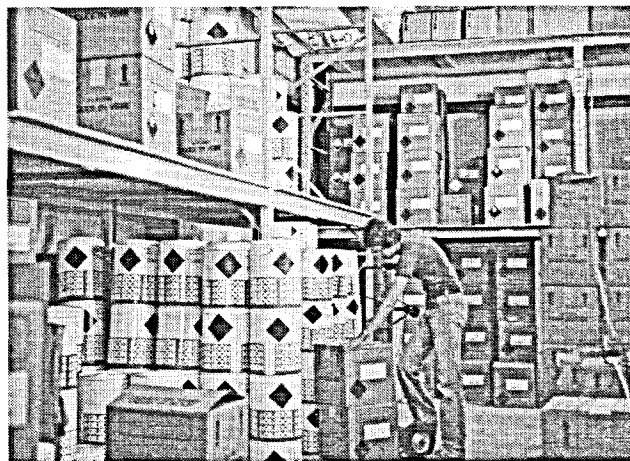
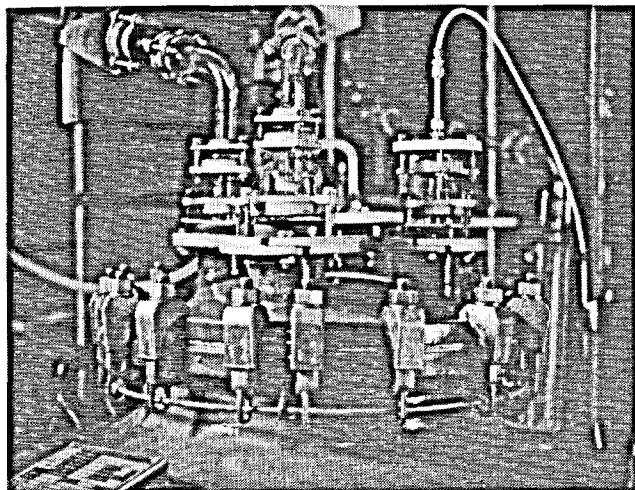
The complete Caledon product line, along with detailed technical specifications and current pricing is described in the new catalogue that is being published in September 1982. Please request your copy.

To complement its own products, Caledon also sells organic chemicals which are produced by Fluka Chemical Corp. of Switzerland and Columbia Organic Chemicals of South Carolina. Reagents for chromatography are marketed for Regis Chemical Company and

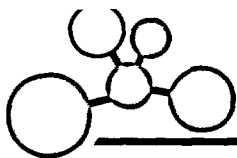
analytical standards produced by Chem Service Incorporated are also sold in Canada through Caledon.

In the United States and Western Canada, Caledon manufactured products are sold through distributors. In

Ontario, Quebec and Atlantic Canada Caledon sells directly to end users from the Head Office in Georgetown.







# Canadian Cabinets Company Limited

Canadian Cabinets Company Limited is a Canadian owned company with its manufacturing plant and engineering/design offices located in Nepean, Ontario. The company was incorporated in 1968 and manufactures a wide range of environmental air control equipment for many fields of science and technology. The products are marketed across Canada through a network of representatives and distributors. Currently, the company employs approximately 35 people at its office and plant location. Over the years the company has developed many high quality products for use in such diverse fields as the life sciences, low level chemical analysis, bio-engineering, animal care, radioisotope handling, micro-electronics, pharmaceutical production and packaging, computer assembly, agricultural laboratories, aerospace, small parts assembly, electronics and testing/research/clinical hospital & public health laboratories. Our unique expertise is reflected in our family of well engineered products which include:

- Laminar Flow Clean Air Work Stations
- Biological Containment Hoods  
CLASS I  
CLASS II (Types A & B)  
CLASS III
- Fume Hoods
- Glove Boxes
- Polypropylene Wet Stations
- HEPA Filter Ceiling Modules
- Animal Care Equipment for Diseased and Sterile Animals
- Modular Clean Rooms

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## CANADIAN CABINETS COMPANY LIMITED

Head Office and Plant Address  
25F Northside Road,  
P.O. Box 11336, Station "H",  
Nepean, Ontario, Canada.  
K2H 7V1

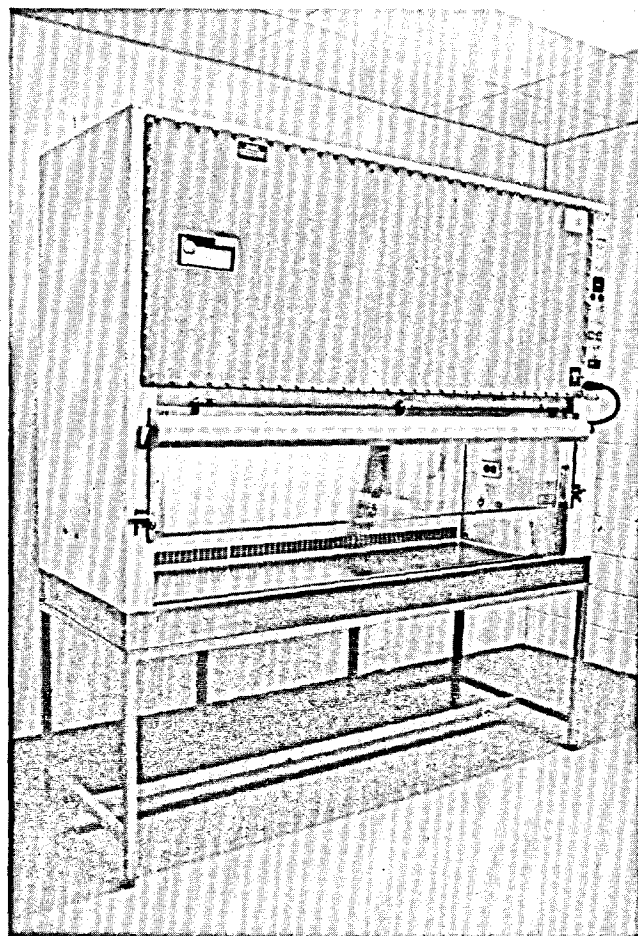
Telephone: (613) 829-1433  
Telex: 053-3590 (DME OTT)

President  
R.A. Elder

Marketing/Sales  
David C. Puddy

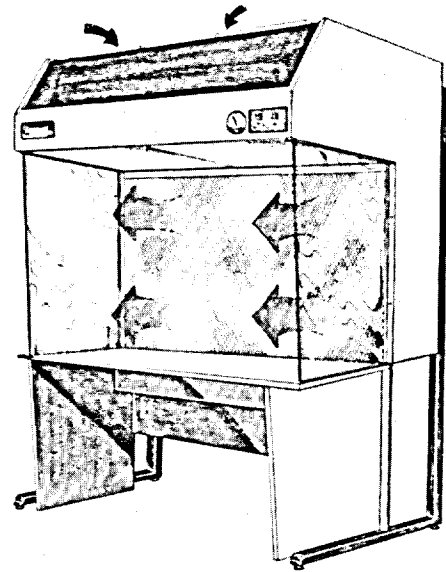
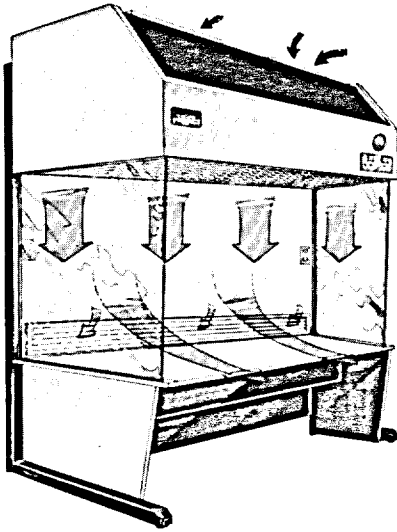
Export Interest: Actively interested in any export opportunity

We also design, manufacture and install turn-key clean rooms, pathogen containment facilities and toxic chemical laboratories. When you consider all the advantages of our products you will quickly appreciate our concern for modular designs, user comfort and ease of maintenance. Our personnel pay the utmost attention to details from the design & engineering phase through to the manufacturing operation and our quality control department ensures that only the highest quality products leave the factory. In addition, we have factory trained technicians to handle any necessary on-site installations and carry out routine maintenance. However, sometimes you may require some very specialized equipment and our energetic Design & Engineering Group is available to guide you through every phase of your product. Our innovative, patented designs are evidence of our dedication to research and product development and this integrated effort ensures that our units meet or exceed current standards or specifications. Our team will respond to your needs, and you will readily understand why so many other companies, institutions, hospitals and government agencies rely on our products and services.

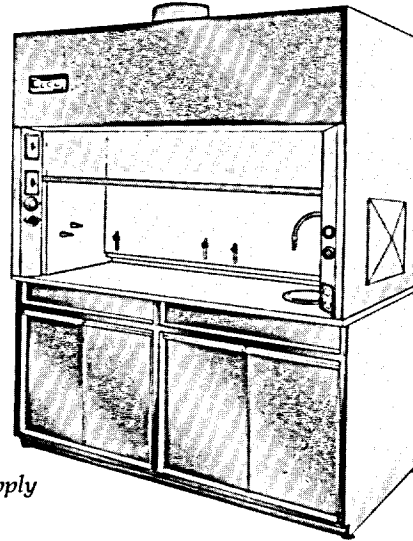


Biological Containment Hood - CLASS II, Type A

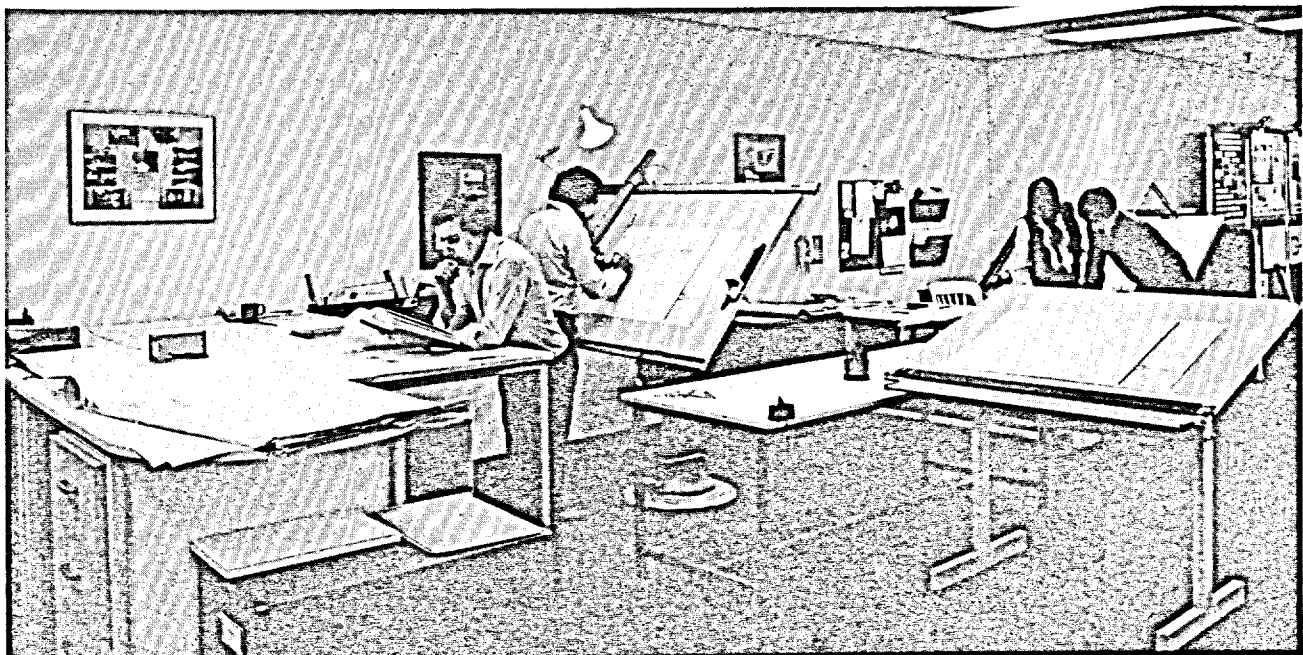
*Vertical Laminar Flow Work Station - all modular construction with partial recirculation option*



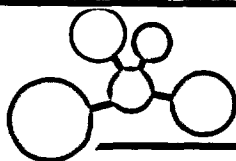
*Horizontal Laminar Flow Work Station - available with many accessories*



*Fume Hood - Standard Type (we also supply Balanced Air and Air Injection models, together with many optional accessories)*



*Our Design and Engineering Group can co-ordinate your custom requirements in an economical, professional and efficient manner.*



# Corporation Scientifique Claisse Inc.

This company was formed as a happy ending of a long story which started in 1956. After a few years of research in the X-Ray fluorescence field, Fernand Claisse developed the now well-known "Borate Fusion Disk Technique", a sample preparation technique that overcomes all the uncontrollable factors that limit the accuracy in X-Ray fluorescence analysis, up to the point that the latter now competes with best quality chemical analysis. In 1972, Claisse designed a fusion apparatus, the Claisse Fluxer, to apply the borate fusion technique to routine industrial analysis. Ever since the Fluxer is being continuously improved in quality and capability. It now transforms solid samples into borate glass disks for use in X-Ray fluorescence analysis and into solutions for use in atomic absorption analysis, plasma spectroscopy analysis and classical wet chemical analysis. It can also be adapted to the preparation of NaF pellets for analysis of uranium by optical fluorescence.

The Corporation Scientifique Claisse Inc. was formed in 1976 to design, manufacture, sell and export the various models of Claisse Fluxers all over the world and eventually other kinds of laboratory and scientific equipment. Fabrication is done by subcontracts to associated companies that work for Corporation Scientifique Claisse only. One of the objectives of the Corporation Scientifique Claisse is excellence so that its main interest lies in instruments that are unique or that do jobs better than other instruments. As a consequence, they wish to receive proposals from innovators with new ideas and from manufacturers offering good products who do not want to be involved themselves with exportations.

The Corporation Scientifique Claisse participates in seminars, summer schools workshops and scientific exhibitions in America and in Europe and is ready to extend that participation to other countries when opportunities occur.

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## CORPORATION SCIENTIFIQUE CLAISSE INC.

### Office

7, Jardins de Mérici, suite 1104  
Québec (Québec) G1S 4N8

Téléphone: (418) 688-8524  
Télex: 051-3567

### President

Mr. Fernand Claisse

### Director of marketing and sales

Mrs. Lucie S. Nasra

Exportation interest: about 95% of production is exported in more than 35 countries

## THE CLAISSE FLUXER

The Claisse Fluxer is an apparatus that transforms inorganic samples into glass disks or solutions. It applies the "Borate Fusion Technique" which consists in a) mixing the sample with a flux such as Li or Na tetraborate or metaborate, b) heating the mixture in a Platinum alloy crucible over a gas flame at about 1100°C, c) casting the hot molten material into a Platinum alloy mould to make glass disks or into an acid to prepare solutions, and d) cooling the disks or agitating the acid to end up with solid transparent disks or clear cool solutions.

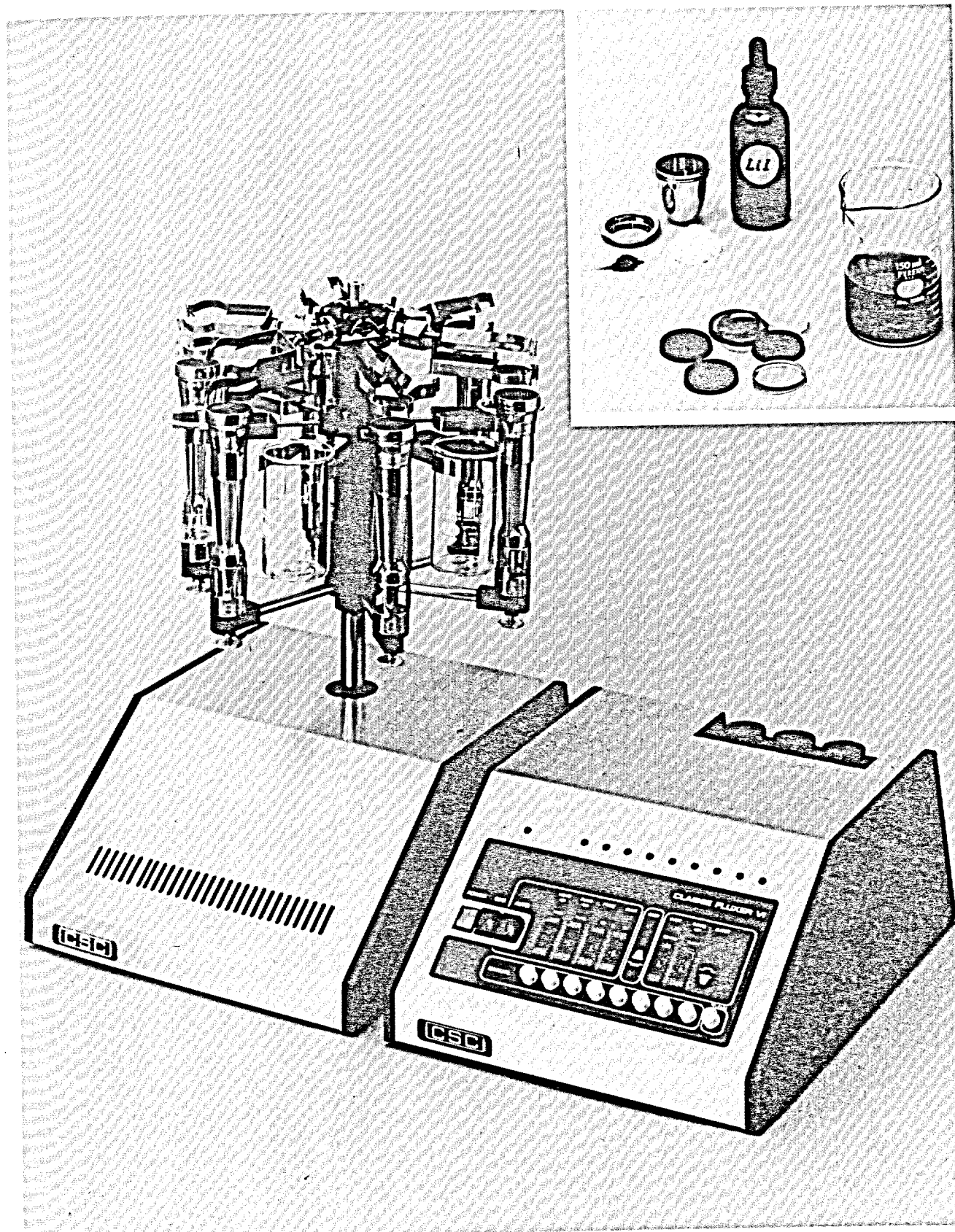
One to six samples can be prepared simultaneously and the whole process takes only 10 to 15 minutes. This technique of sample preparation has been successfully applied to the analysis of nearly all elements in numerous materials such as rocks, ores, cements, sediments, ashes, bauxites, slags, ceramics, refractories, rare earths, etc. The only materials that need preoxidation before fusion are organic materials, alloys, carbides nitrides and sulfides.

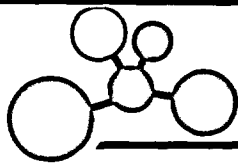
The Claisse Fluxer offers many advantages over other sample preparation techniques:

- a) **speed:** six samples are processed in less than 15 minutes
- b) **simplicity:** the process is fully automatic
- c) **reproducibility:** errors associated with the fusion procedure are almost undetectable
- d) **accuracy:** total elimination of particule size effects in X-Ray fluorescence analysis results in accuracy similar to best chemical analysis
- e) **economy:** lesser handling of platinum ware increases the life of the latter and decreases the cost per analysis
- f) **servicing:** the design of the Fluxer is so simple that no qualified personnel is required for servicing

## SERVICE TO CUSTOMERS

Another aspect of the excellence aimed by the Corporation Scientifique Claisse is the service offered to customers and extended to potential customers as well. The company informs potential customers of existing cheaper alternative techniques when it is in the interest of the customers. It also offers free consultation service in the general field of analysis including applications to various materials, technical advice and scientific information. The president of the company is personally involved in research in the X-Ray fluorescence field and is one of the authors of the recent book "Principle of Quantitative X-Ray Fluorescence Analysis" (Heydon & Son, 1982). The company also publishes monographs in the field of application of his instruments.





# dy-4 Systems Inc.

dy-4 Systems Inc. is a Canadian manufacturer of advanced high technology microprocessor systems and Intelligent Graphics Terminals. Incorporated in 1979, dy-4 currently markets its products through a world wide network of sales representatives and distributors and is currently experiencing a growth rate of 200%.

With manufacturing facilities located in Ottawa, the Company is now occupying 12,000 sq. ft. of space, and expects to employ 50 people by the end of its third year. With representatives and distributors in the U.S., Europe and throughout Canada, dy-4 has the capacity and expertise to provide high performance products and systems engineering to meet your needs.

While the manufacture and continual development of Graphics Terminals remain the thrust of the company, the cost effective application of microprocessors in the lab and small business environment is gaining more attention and ever increasing development going into local area networking and efficient high speed mass storage devices using high density RAM technology (RAM-DISK).

## VGT-100, VGT-100H GRAPHICS TERMINALS

"PLOT 10", relegated in the past to the areas of Engineering and educational environments, is gaining a broader acceptance and the VGT-100H family of Graphics Terminals from dy-4 offers a low cost entry into this expanding market. This terminal product line also offers compatibility with the very popular VT-100 Alphanumerics terminals from DEC.

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## DY-4 SYSTEMS INC.

888 Lady Ellen Place  
Ottawa, Ontario K1Z 5M1

Telephone: (613) 728-3711  
Telex: 610 562-8967

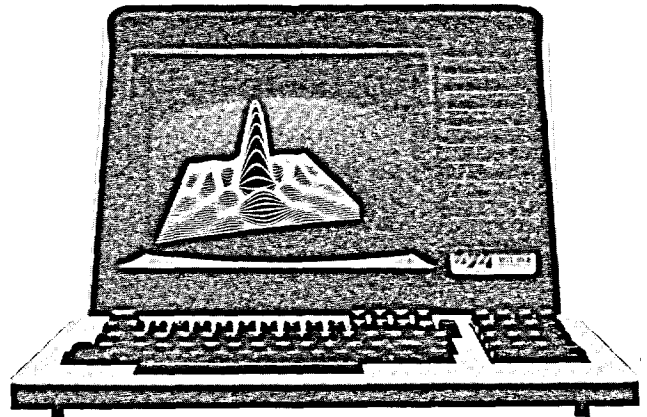
President  
Gary Dool

Vice-President  
Hardware Design  
Kim Clohessy

Vice-President  
Software Design  
Stephen Richards

Vice-President  
Marketing and Sales  
Terry Black

In alphanumeric mode, the VGT-100 terminals produce 24 lines of 80 characters or 18 lines of 132 characters, and have smooth scrolling, blinking, underline, reverse underline, dual-intensity, split screens and fixed and selectable tabs. A user friendly set-up mode is also incorporated.

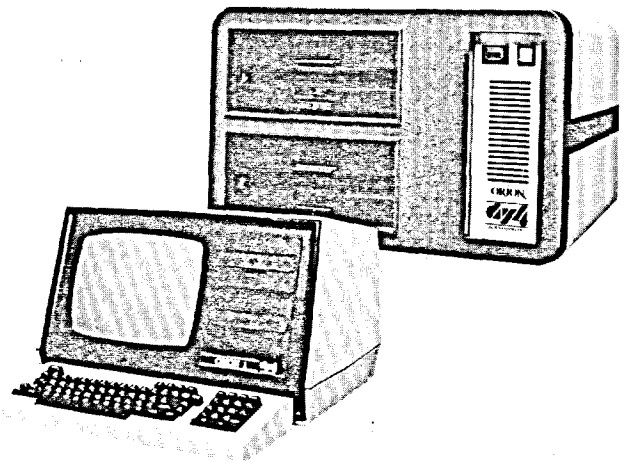


VGT-100, VGT-100H Graphics Terminals

In graphics mode, plotting resolution is 640x240 points or 640x480 points in a recently introduced higher resolution version, and terminals provide crosshairs for graphic input, RS-232-C hardcopy output port, selective erase, and 60-Hz non-interlaced refresh.

In both modes, asynchronous communications speeds extend to 19.2 kbaud. Terminals come with 15 inch green phosphor screens and detachable keyboard.

The continual development will result in a Colour version later this year with a full graphics stand-alone system planned for 1983.

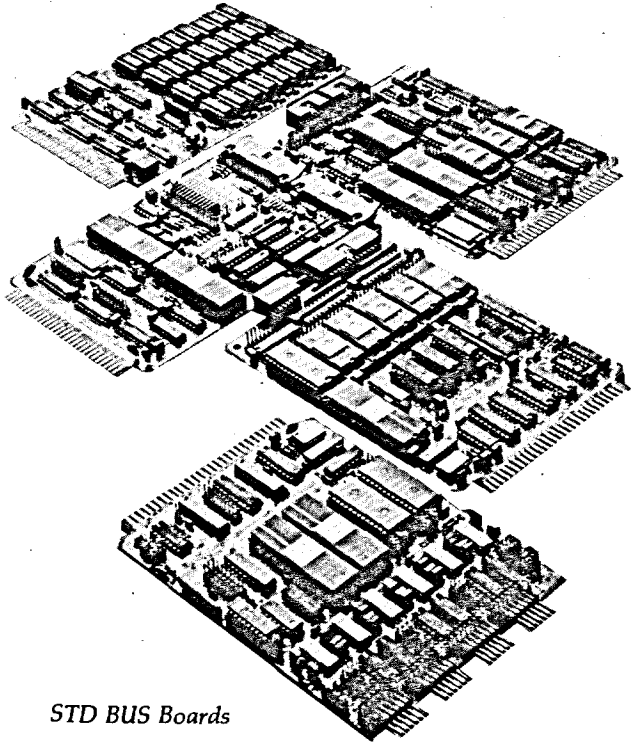


ORION Family Microcomputers



### MICROPROCESSOR BOARDS/SYSTEMS

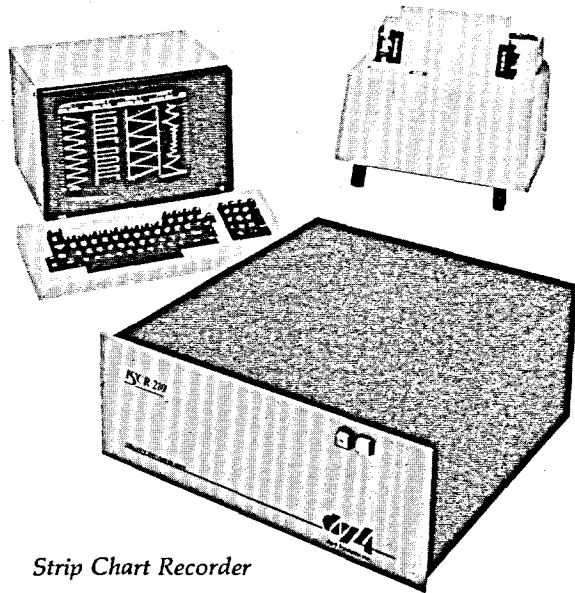
Instead of re-inventing the wheel, dy-4 has chosen to standardize on the STD-BUS architecture which has proven to be the most cost effective board level product in the industry. Utilizing the local resources of Ottawa's CAD/CAM companies and by incorporating computer generated PCB design, the company offers performance in STD-BUS modules not available from other sources. It is this broad base of STD manufacturers which brings the strength to the dy-4 line of STD-BUS compatible ORION family of microcomputers products. The ORION family's real strength lies in its system expansion capabilities through the use of these board modules with a great variety of lab and field requirements being accommodated by simply plugging in a special I/O requirement, etc.



STD BUS Boards

First model available was the ORION V STD-BUS development system, complete with Z80A microprocessor, four 8-bit parallel ports, two RS-232-C ports, 64 kbyte RAM, dual 8-inch floppy disks, CP/M operating system, system monitor, and macro assembler and linking loader. To capture a slice of the market for lower cost CP/M compatible desk top computers, dy-4 has developed the ORION I computer which includes in one desk-top enclosure, a 12-inch CRT monitor, two 5-1/4-inch floppy drives and a detachable keyboard. Standard with this unit is the Z80A processor, 64 kbyte of RAM, serial I/O channel, and CP/M. Options include higher capacity disks, 256K RAM Disk and expanded I/O.

To round out the line, there is the ORION VI computer with a 10-megabyte winchester disk, 500 kbyte floppy disk, 64 kbyte of RAM, two serial I/O channels, Z80A processor and CP/M operating system. A version of this machine has a 1-Megabyte floppy disk and expansion winchester disk subsystems can be incorporated if needed. The dy-4 System local area network (dy-NET), an SDLC high speed serial link handling up to 32 stations is also available for the ORION family.

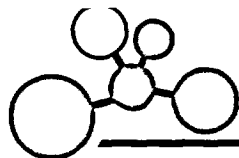


Strip Chart Recorder

### INTELLIGENT STRIP CHART RECORDER - ISCR-210

The combining of graphics technology with microprocessor flexibility/adaptability has allowed the introduction of the Intelligent Strip Chart Recorder - ISCR-210. Displaying up to 8 channels on a RS-170 video monitor, the ISCR-210 provides 16 input channel capability with menu driven selection for display rates and ranges, base line removal and programmable alarm settings. The full 16 channels are displayable on 2 video monitors with a host of options being offered including data storage and filtering etc.

dy-4 Systems is a Canadian innovator for the application of graphics and microprocessor technologies. Write or call us today for more information on any of these five products.



# Diagnostic Chemicals Ltd.

Diagnostic Chemicals Ltd., located in West Royalty Industrial Park, Charlottetown, P.E.I., Canada, is a Canadian company which manufactures diagnostic reagents, enzymes, and specialty chemicals. The company was founded in 1970 and currently occupies 15,000 square feet in two buildings in the industrial park. The President of the company is J. Regis Duffy, Ph.D., formerly Professor of Chemistry and Dean of the Faculty of Science at the University of Prince Edward Island. The Vice-President for research and development is D.J. Hennessey, Ph.D., Professor Emeritus of chemistry, Fordham University, New York. The plant manager in charge of chemical manufacturing is Gary Reid, Ph.D., a graduate of the University of New Brunswick. Julien Gaudin, Ph.D. (Waterloo), is director of diagnostic manufacturing, and Praful Patel, Ph.D. (University of Saskatchewan) is head of the enzyme division. The company employs twenty-two people.

## CHEMICAL MANUFACTURING

The chemical manufacturing facility is equipped with glass lined Pfaudler reactors with a temperature range of -20°C to 150°C, distillation systems, vacuum drying ovens, vacuum pumps, filtering equipment, and cold rooms. Quality control equipment available includes gas chromatographs and UV-Visible spectrophotometers. We also have access to infrared and nuclear magnetic resonance spectrophotometers. Fine chemicals currently being produced include p-nitrophenyl-phosphate salts,  $\gamma$ -glutamyl-p-nitroanilide, PDT disulfonate (Ferozine), dithiothreitol (DTT), dithioerythritol (DTE), phosphoenolpyruvate, monocyclohexylamine salt, Ferene<sup>®</sup> a superior novel iron reagent,

(3-(2-pridyl) -5, 6-bis(2-(5-furyl sulfonic acid))-1,2,4, triazine, disodium salt), Fast Red PDC salt; Azo Methine H, and Methoxy PMS.

## DIAGNOSTIC REAGENTS FOR CLINICAL CHEMISTRY

The company manufactures chemical diagnostic reagent systems suitable for use on manual or automated systems such as centrifugal analyzers. Equipment available for diagnostic production and quality control include; freeze dryers, automatic dispensers, and several spectrophotometers. The company currently manufactures analytical systems for the determination of acetaminophen, acid phosphatase, albumin, alkaline phosphatase, ALT, AST, bilirubin, BUN/urea, calcium, chloride, cholesterol, creatine kinase, creatinine, ethyl alcohol,  $\gamma$ -GT, glucose, HDL, iron & TIBC, LDH, magnesium, 5'Nucleotidase, phosphorus, salicylate, total protein, triglycerides, uric acid and vanilmandelic acid (VMA) systems.

Analytical standards in S.I. units are available for calcium, chloride, cholesterol, creatinine, glucose, phosphorus, triglycerides, urea/BUN and uric acid. Reagents are also available for Beckman Analyzers such as BUN and glucose for systems 1 and 2, and for Astra 4 and 8 analyzers. A number of reagents for Technicon systems are also manufactured including LDH/NADH, MDH/NADH, and MDH/LDH/NADH. Substrates are also available for the determination of CK and LDH Isoenzymes.

## ENZYMES

Several enzymes are currently isolated including glutamate dehydrogenase (GLDH), Urease, Cholesterol Esterase, Glycerol phosphate dehydrogenase and peroxidase. The isolation of several other enzymes is currently under investigation. Pilot plant facilities available include freeze dryers, fraction collectors, chromatographic equipment, centrifuges, plate coolers, filter presses and jacketed tank facilities to 400 liters. The Company also offers for sale a number of additional enzymes including cholesterol oxidase, diaphorase, glucose oxidase, G-6 PDH (L.M.) G-6 PDH (yeast), glycerol kinase, hexokinase, lipase, and malate dehydrogenase.

## BIOCHEMICAL REAGENTS

We currently bulk break, quality control, and package a number of fine biochemicals in various sizes, such as NAD, NADH, NADP, ATP, AMP, Tris buffer, albumin, AMP buffer, creatine phosphate, and Ammonium pyrrolidine dithiocarbamate, among others.

## CONTRACT RESEARCH

We are interested in contract work in the area of clinical diagnostics, fine chemicals or enzymes, and invite your inquiries.

## DIAGNOSTIC CHEMICALS LIMITED

4 Newland Crescent Telephone: (902) 894-3477  
Charlottetown, P.E.I. Telex: 014-44173  
Canada C1A 4H5

### Plant Address

16 First Street  
West Royalty Industrial Park  
Charlottetown, P.E.I.  
Canada C1E 1B0

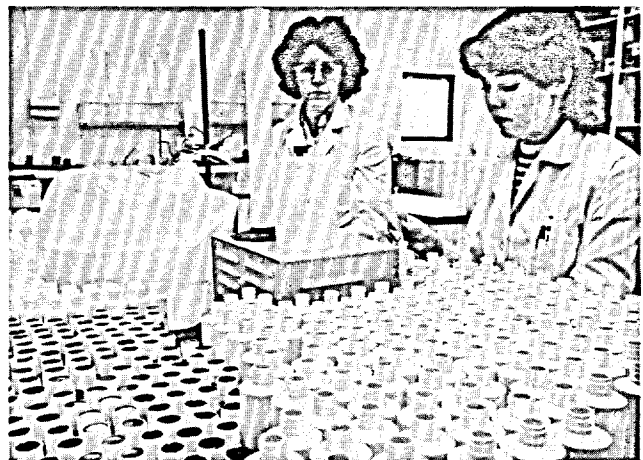
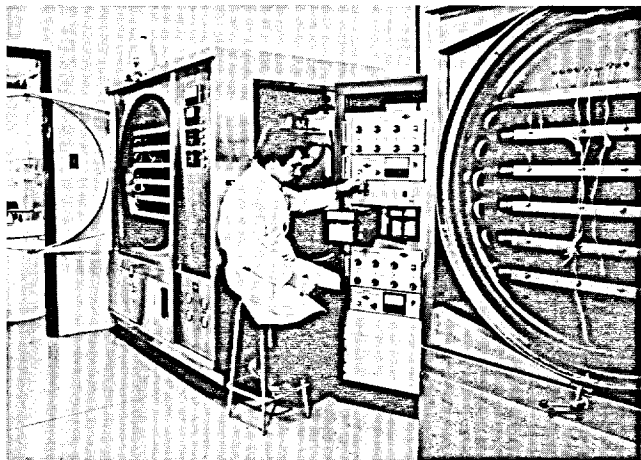
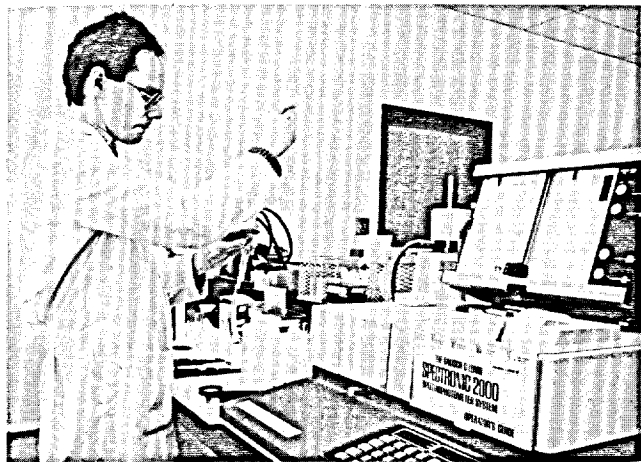
### President

Dr. J. Regis Duffy

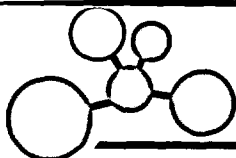
### National Sales Manager

Mr. Greg Wong Telephone: (416) 699-1384  
1 Normandy Blvd.  
Toronto, Ontario  
Canada M4L 3K1

Actively interested in export sales







# Dipix Systems Limited

DIPIX Systems Limited is a Canadian owned company incorporated in 1978. The company is located in Ottawa with representation in major areas of the world. DIPIX manufactures the ARIES range of Digital Image Analysis Systems which are now installed in countries ranging through Australia, Thailand, Indonesia, England, Holland, Italy, S. America, USA and of course Canada.

Although primarily used for processing images from remote sensing satellite and aircraft, ARIES is also being successfully used in applications such as medical image processing.

## ARIES IMAGE ANALYSIS SYSTEM

The architecture of ARIES is designed for the analysis, display and processing of many types of images. Because image processing frequently demands increasing computational capability, ARIES is available as a family of Digital Image Analysis systems which are upward compatible from a basic stand alone system to a multi workstation configuration with array processors and a powerful host central processor.

All configurations operate the same ARIES Application Software Package. This ensures that upward growth does not require retraining of any operational staff. Application programs provide a comprehensive set of software for the image processing analyst including:

- Spatial filtering.
- Image enhancement.
- Geometric registration.
- Image classification.
- Interactive contrast stretch, density slice and colour mapping.
- Image input from magnetic tape or video digitizers.
- Network operation using packet switching communications.
- Utility software such as batch processing and file management functions.

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## DIPIX SYSTEMS LIMITED

### Office Address

1785 Woodward Drive  
Ottawa, Ontario  
K2C 0P9

Telephone: (613) 224-5175  
Telex: 0533946

### President

Paul R. Pearl, Ph.D.

### Director of Marketing

Lou Robert

ARIES software is specifically designed to provide the analyst with the flexibility needed to investigate widely different problems without requiring the acquisition of computer systems skills. ARIES provides the analyst with the correct choice of parameters needed to optimise an analytic solution, yet uses the computer to make intelligent default decisions.

## ARIES WORK STATION

The basic module in the ARIES systems is a work station containing an image display subsystem, a large capacity disc and a local processor. Optional peripherals provide additional input, output and control functions for the remote sensing analyst. All available peripherals are fully supported with DIPIX software which is integrated into the ARIES operating system and application programs.

The image display subsystem provides for the display of multiple images on a high resolution monitor. The monitor screen can be set up by the analyst to one of several topologies, each providing a mix of independent image display areas on the screen. Available features include split screen, quartered screen and flying window.

When set up in a multiple display area mode each area on the monitor can be freely assigned to any image in video memory. A touch and position sensitive control pad is used by the operator for all such display related interactive control functions. Independent control is provided for each area over display functions such as: zoom; roam; colour mapping; thematic overlays; contrast stretch; colour or black and white density slicing; and logical combinations of images such as sum difference and ratio.

A maximum of eight independent images can be concurrently stored in video memory. The memory has a random access architecture which is dynamically and automatically partitioned by ARIES to suit the particular mix of images loaded for display. The system takes into account the size (number of pixels) and data storage needs of the image, the available video memory and provides an option of automatic decimation (spatial subsampling) or operator selected subareas to fit the image into available video memory up to its maximum configuration of 16 Mbits.

The work station disc provides storage for both images and computer files. Because of the large volumes of data typically associated with remote sensing images, it is available in a 96 MB or 200 MB capacity. The disc is dual ported, with one port available for high speed external system connections, such as a host processor, whilst the other port provides disc access to the work station processor.

## DISC TO DISC PROCESSING

As well as the interactive display features, the system provides the comprehensive ARIES Application Software Package which operates (for the basic work

station) in the work station local processor. This processor uses as its source data files (typically images) maintained on the work station disc. Processed results are then returned to the disc as processed files.

The use of disc to disc processing by the applications software is a key feature in the ARIES system. It allows the processing of large images, at full available dynamic range, without the restrictions of video memory capacity or even more important without requiring the acquisition of very high resolution displays. The processing results can be viewed on the display by a combination of roam and zoom at any convenient resolution. Alternatively, the use of any of the optional ARIES high resolution image recorders allows the production of hard copy outputs at the full spatial and dynamic resolution of the system, independent of the display configuration.

#### ARIES GROWTH CAPABILITY

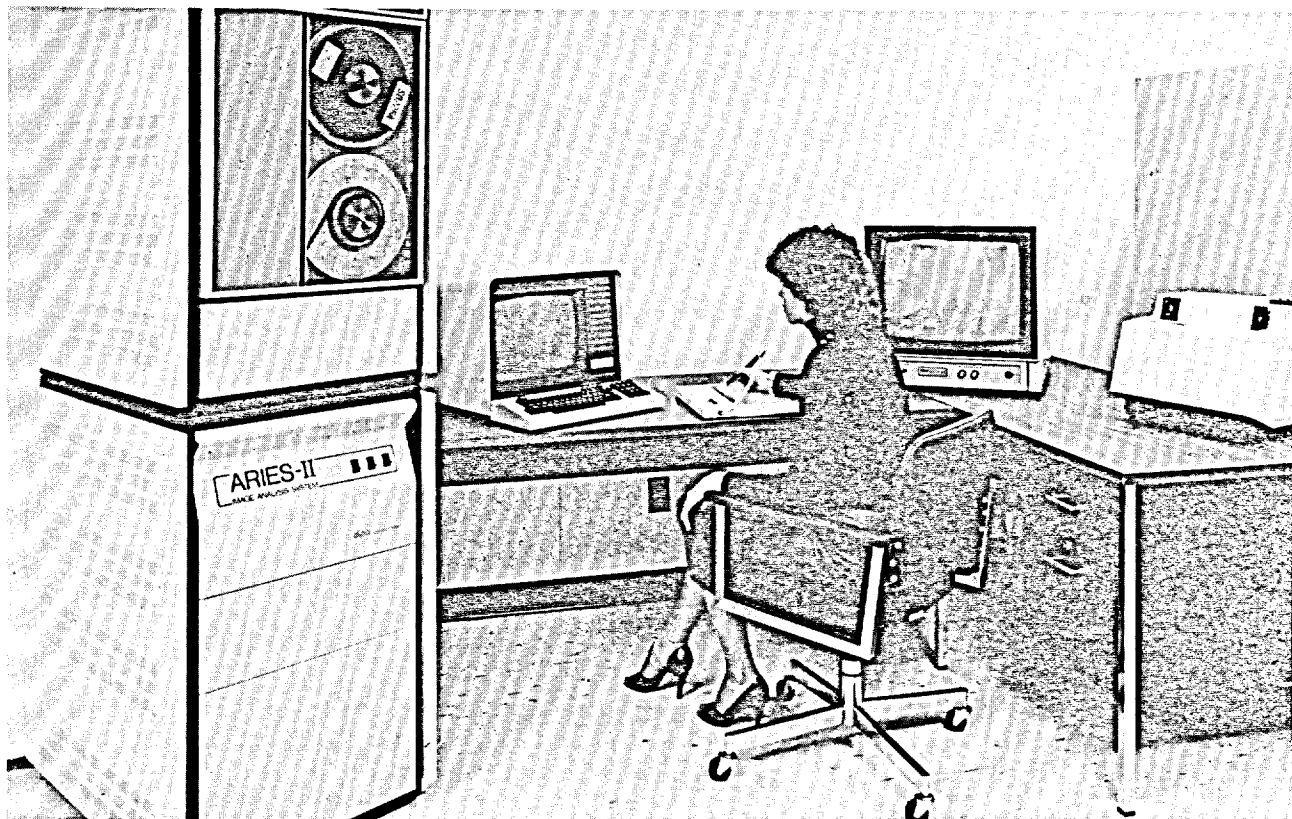
The ARIES system is designed to be upward compatible. The basic work station is equipped with a microcomputer, which provides adequate computing power for most modest applications. However, some processes when combined with large images can become compute time limited. At this point, several optional growth strategies are available as a result of the flexible ARIES architecture. It should be emphasized that all options are transparent to the user (i.e. make no change in operating procedures).

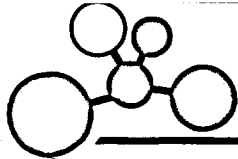
Selection of an approach depends very much on the most frequent loading factor encountered. A cost effective solution for many situations is the addition of an Image Processing Accelerator (IPA). This is a low cost special purpose arithmetic unit which is especially effective in operations such as geometric correction.

An alternative strategy is the addition of a full high speed array processor. The array processor is well suited to more complex computational problems than the IPA, but is not as fast as the IPA on geometric corrections. It is provided with a full suite of software integrated into the ARIES system.

A third alternative is to replace the baseline processor with a more powerful mainframe. In this case, additional capabilities associated with the larger, more sophisticated mainframe are also available, for example a wider range of standard computer peripherals can be fitted. This approach is particularly well suited to general, multiuser batch processing.

Finally, multiple work stations, each containing a local processor, can be configured with a host computer providing background processing of batch tasks, plus co-ordinated control of a single set of centralized peripherals such as image recorders or high density magnetic tapes. In this configuration, a single array processor controlled by the host would often be cost effective, with one or more IPA on each work station providing the maximum speed and flexibility.





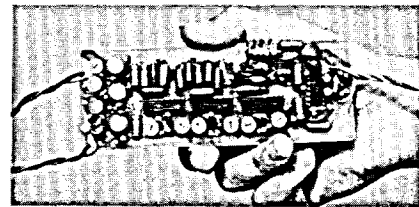
# EKEG Electronics Co. Ltd.

## TELEMETRY SYSTEMS

EKEG Electronics, which was incorporated in 1969, is Canada's leading manufacturer of research telemetry systems and has a world wide reputation for quality and reliability. Models range from single channel units starting at \$350 to multichannel implantable systems for animal research selling for over \$8,000.

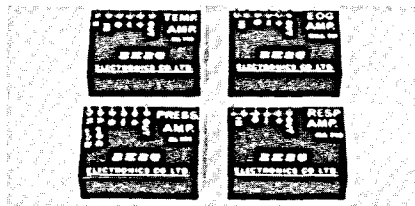


SINGLE CHANNEL TELEMETRY UNITS

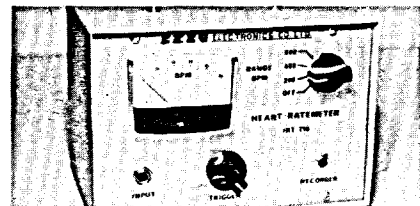


3 CHANNEL IMPLANTABLE TELEMETRY

EKEG Electronics also manufactures a complete line of peripheral equipment associated with its telemetry systems — including biological amplifiers starting at \$250 and analysis and display units such as heart rate meters, respiration and temperature monitors from \$650.



BIOLOGICAL AMPLIFIERS



INTEGRATING HEARTRATE METER

## APPLICATIONS ARE IN RESEARCH AND TEACHING IN:

PHYSIOLOGY  
ZOOLOGY  
PHYSICAL EDUCATION  
AGRICULTURAL RESEARCH

PSYCHOLOGY  
BIOLOGY  
VETERINARY RESEARCH  
AND MANY OTHERS.

We have considerable experience both with implantable and regular telemetry systems which have been used in many diverse applications. Our implantable units have been to the North Pole in polar bears and Arctic wolves, and the South Pole in penguins and have been used in pigs for evaluation of the Porcine Stress Syndrome during transportation to market in Saskatchewan. Our regular units have been used on seals in an aquatic environment, for teaching in Zoology, Psychology, Physical Education and Physiology and in industrial monitoring. Our multichannel regular systems have been used to evaluate heat losses in postal workers at the Sydney Post Office in Australia and for monitoring sky divers.

We feel sure we can solve your requirements and we will quote with no obligation on custom systems tailored to your particular needs.

FREE CATALOGUE AND BROCHURES are available for all our products; please write or phone for more information.

EKEG ELECTRONICS CO. LTD.

P.O. Box 46199, Station 'G', Vancouver, B.C., Canada V6R 4G5

Telephone: (604) 685-7817

## ANIMAL RESEARCH AND VETERINARY MEDICINE

EKEG Electronics has developed a line of monitoring equipment for veterinary surgery and animal research. Among these products is our Temperature Control Unit, selling for \$750. This is battery operated, uses continuous control with no switching transients and was designed for neurophysiological research. It will accurately maintain the temperature of an animal at the normal physiological or other chosen temperature during anaesthesia.



TEMPERATURE CONTROL UNIT



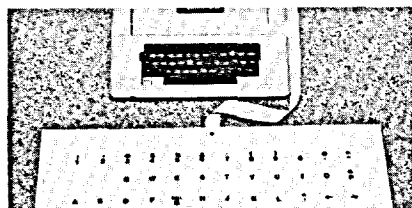
VETERINARY RESPIRATION MONITOR

A number of Respiration Monitors are available, the most popular being the veterinary model, which is small and very easy to operate. It gives an audible signal with each breath, enabling the surgeon to concentrate on his work while having a continuous monitor of the animal's depth of anaesthesia. This model comes with a choice of sensor for \$325.

## SPECIALIZED EQUIPMENT FOR DISABLED USERS

EKEG Electronics has recently diversified into the production of specialized equipment for the disabled user. At present we have produced expanded keyboards with the "keys" on 5 cm spacing for the Apple II Plus\* and for the Sinclair ZX81\*\* computers.

The cost of the expanded keyboard for the Apple, with latching switches on Shift, Control and Repeat for single hand or stylus use is \$675. The cost of the ZX81 with computer and expanded keyboard is \$475.



EXPANDED KEYBOARD



REMOTE KEYBOARD

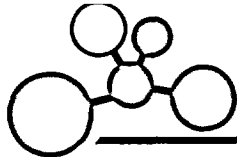
For mouthstick or headstick operation we have produced a Remote keyboard for the Apple II Plus computer with latching switches on Shift, Control and Repeat. This keyboard can be mounted in any position to suit the user.

Both expanded and remote keyboards for the Apple computer can be installed in a few moments, require no external power and do not affect the use of the computer by non-disabled users.

Many disabled persons will be able to produce useful work using these keyboards. Expanded and remote keyboards are planned for other computers, calculators and instruments. Call us for information on new developments.

\*Apple is a trademark of Apple Computer Inc.

\*\*Sinclair is a trademark of Sinclair Research Ltd.



# Engelhard Industries of Canada Ltd.

For more than 40 years, Engelhard Industries of Canada Ltd. has specialized in the refining of precious metals and the manufacture of precious metal products including laboratory ware, thermocouples, catalyst products and products for the fine jewellery and electronics industries.

Engelhard's Aurora, Ontario facility has been designed so that Engelhard can meet customers' exacting requirements for quality control and prompt delivery.

The company's expertise in precious metals technology allows it to provide assistance in selecting the alloy which will best suit the application of the product.

Platinum and palladium are foremost among the materials alloyed, worked, and fabricated in Canada for industrial and scientific applications. Principal manufacturing operations include wire drawing, precision rolling of sheet and foil, tube drawing, weaving of gauze, platinum cladding and sheathing, and the fabrication of noble metals to customers' drawings and specifications. Engelhard's consulting staff stands ready to assist with special and unusual applications.

These manufacturing skills, coupled with long experience in the precious metal field, enable Engelhard to offer an exceptionally wide range of products for industrial and scientific purposes - many custom fabricated.

## PLATINUM LABORATORY WARE

Because of such physical properties as high melting point and resistance to corrosion, Platinum group metals are important to the chemical industries for laboratory vessels and implements.

---

## ENGELHARD INDUSTRIES OF CANADA LTD.

100 Engelhard Drive  
P.O. Box 340  
Aurora, Ontario  
L4G 3N1

Telephone: (416) 727-3191

### President

K.A. Laidman

### Vice President, Chemical & Refining Group

Cel Reilly

### Vice President, Metallurgical Group

J.P. Pawlowski

### Sales Manager, Metallurgical Group

Keith G. Teft

### Sales Manager, Chemical and Refining Group

T.M. Halahel

Engelhard produces laboratory equipment from Platinum of high purity.

For uses where Platinum alone may be too soft, its hardness may be increased by alloying with another metal of the Platinum group. Iridium is commonly used for this purpose. However, the application of the labware in question will often determine the alloy used.

Engelhard will help you select the correct material of manufacture for your labware application.

Typical Platinum group labware available from Engelhard Industries includes evaporating dishes, crucibles, combustion boats, beakers, tongs, spatulas, stirring rods, spoons, inoculating loops, filter cones and wire triangles.

## PLATINUM ANODES AND ELECTRODES

In addition to laboratory vessels and implements, Engelhard supplies a full range of Platinum wire form anodes and Platinum mesh gauze electrodes, sheet form electrodes, perforated sheet form electrodes and special electrodes.

## PLATINUM MICROWARE

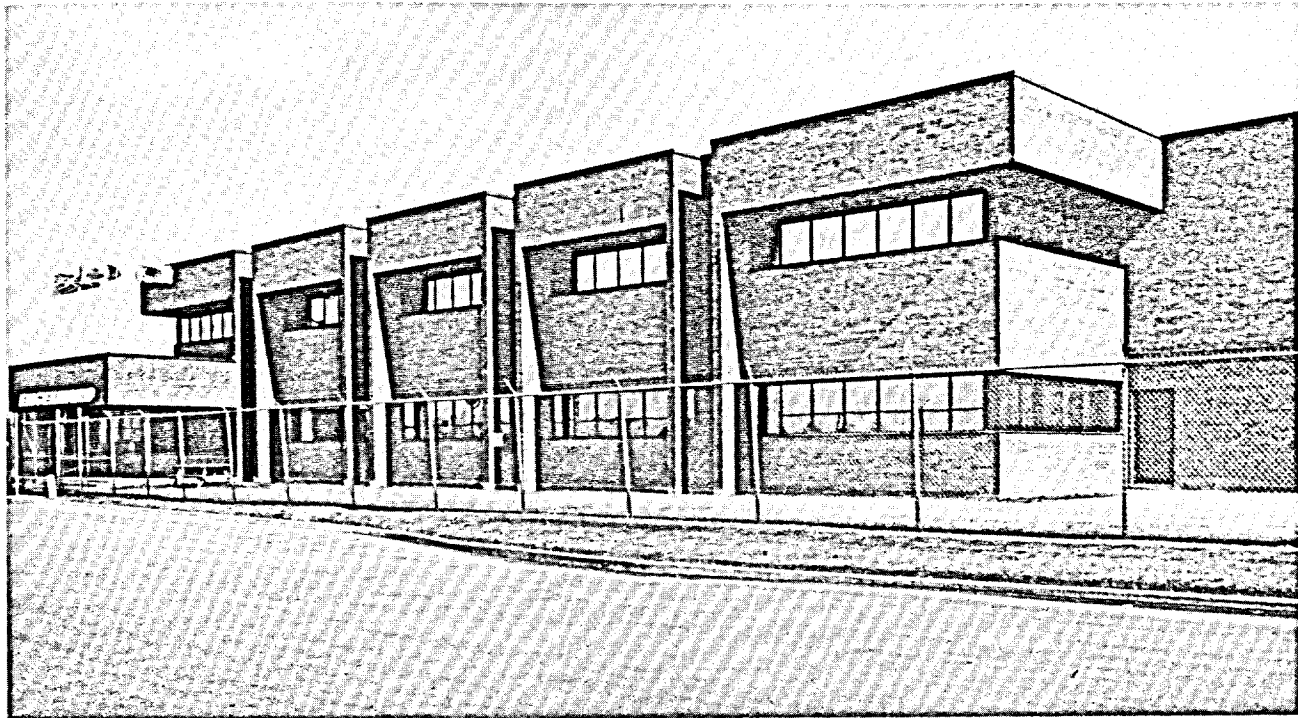
For microchemistry applications, where traditional labware is unsuitable because of its size, Engelhard will supply the expertise of its craftsmen to develop and provide the microwares and apparatus needed for this critical type of work.

## GAUZE AND PERFORATED SHEET

Platinum gauze in three mesh sizes and perforated Platinum sheet in a variety of perforation sizes and spacings are available for laboratory use.

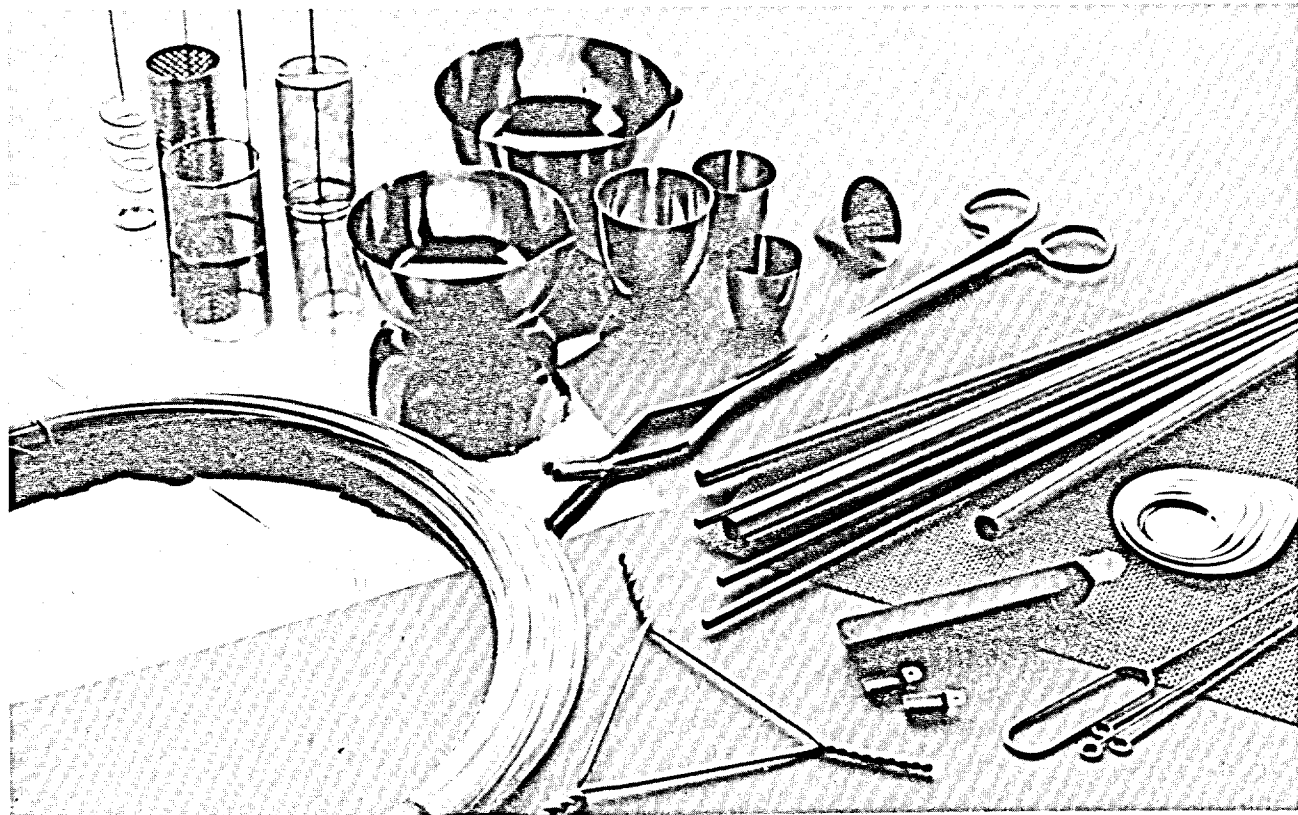
## OTHER PRECIOUS METALS FOR THE LAB

Other precious metals are sometimes used for laboratory ware under certain specific conditions. Alloys of gold with various percentages of Palladium are resistant to many chemicals, but are not suitable at extremely high temperatures. Pure gold and silver are preferable to Platinum for caustic alkali fusions. And vessels made of pure Iridium or Rhodium are sometimes required for extremely high temperature applications.

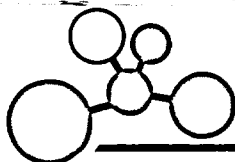


*Engelhard's Aurora, Ontario facility includes precious metal refining and production capabilities. The company's precious metals expertise allows Engelhard to recommend the alloy which will best suit the specific labware application.*

*Engelhard produces labware in Platinum of high purity for the chemical industries. For certain applications the hardness of the platinum may be increased by alloying with another metal of the Platinum group or labware may be made from other precious metals.*







# Helix Biotech Ltd.

Helix Biotech Ltd. is a young, innovative, all-Canadian manufacturer and supplier of biological products. Operating on both a product retail and contract service basis, Helix Biotech Ltd. has developed the technology to supply researchers with a variety of protein biochemistry and immunological research products and services. Over the past two years, the company has embarked on an extensive research and development program which has brought some exciting new products to the Canadian biotechnology scene.

## PURIFIED PROTEINS AND ANTIBODIES

Located in Richmond B.C., just south of Vancouver, Helix Biotech Ltd. has been a Canadian leader in the development of enzyme immunoassay products and systems. Drawing upon their expertise in protein chemistry, the company also offers a selection of highly purified human proteins. These include C-reactive protein, epidermal keratin, prostatic acid phosphatase, thyroid binding globulin and liver ferritin. Some of these have not previously been commercially available in North America. Antibodies against these proteins have been developed for use in the detection of inflammatory diseases, cancer detection and monitoring of liver and thyroid function.

## ENZYME-ANTIBODY CONJUGATES

At the heart of the company's success has been their continuing commitment to research, and their policy of providing state-of-the-art biological products on a commercial scale. An example of this is the company's line of enzyme-antibody conjugates. All of the conjugates are prepared with advanced bifunctional reagents that prevent antibodies or enzymes from forming homopolymers e.g. antibody-antibody conjugates. This technology allows them to prepare "2nd generation" conjugates at low prices due to the higher retention of activity and decreased use of expensive, highly purified proteins. Further, all antibodies are affinity purified i.e. adsorbed to immobilized antigen and then eluted to yield highly purified, active preparations. For example, the company has prepared Mouse IgG F(ab')<sub>2</sub> fragments that have been used as antigens to produce second antibodies that will recognize all subclasses of Mouse IgG

equally. When these second antibodies are conjugated to enzymes in the popular GAMF-AP product (Alkaline Phosphatase conjugated to Goat-Anti-Mouse-F(ab')<sub>2</sub>) they provide an indispensable system for the screening of monoclonal antibodies.

## RESEARCH AND DEVELOPMENT

Projects in progress include reagents and techniques for steroid immunoassay. These assays have proven remarkably difficult to produce in the past due to the fact that most steroids are too small to elicit an immune response. They must be coupled to a carrier molecule prior to immunization. Secondly, non-specific antibodies (which recognize the chemical linkage but not the steroid itself) often need to be removed by affinity purification. Finally, there is generally a serious cross reaction of the antibody with closely related steroids. Work is underway to counter this cross-reaction by a recently developed pre-injection technique that blocks the production of non-specific antibodies. These problems are under control and various steroid antibodies should be available later this year.

Helix Biotech Ltd.'s reputation of quality service and a serious commitment to research has allowed them to enter into research contracts with the U.S. Fish and Wildlife Service, Fisheries and Oceans Canada, Agriculture Canada, the British Columbia Science Council, major North American biochemical distributors and a variety of other public and private organizations. Some of these important projects are: development of diagnostic kits for two major salmon bacterial diseases, an on-farm early pregnancy test for cattle and an immunoassay system for the early sexing of salmonid fish.

## SERVICES

Apart from major contracts and retail sales, Helix Biotech Ltd. offers a variety of services to the biochemist or biologist. Drawing from their resource of research facilities and experience, they have the ability to help the researcher or laboratory in areas such as preparation of affinity medium, enzyme-immunoassay development, protein purification and characterization, electrophoretic screening for population genetics and preparation of custom antibodies, antisera or enzyme-antibody conjugates.

Helix Biotech Ltd. is located at No. 217-7080 River Road, Richmond, B.C. V6X 1X5. Telephone (604) 270-7468. Telex: 04-507672 (Answer back TASCO-VCR) Cable: HEBIOTECH. As a manufacturer of biological products, Helix Biotech Ltd. is keen to learn about your needs. Please call the president, Terrance G. Owen, Ph.D., at any time to discuss your requirements.

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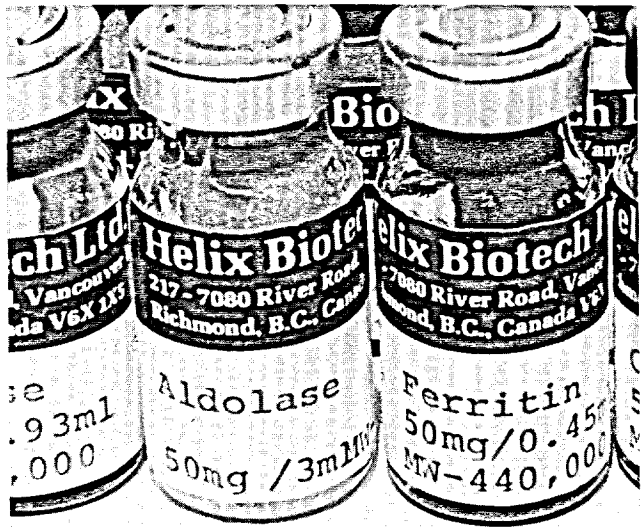
## HELIX BIOTECH LTD.

217-7080 River Road,  
Vancouver Industrial Park,  
Richmond, B.C., Canada V6X 1X5

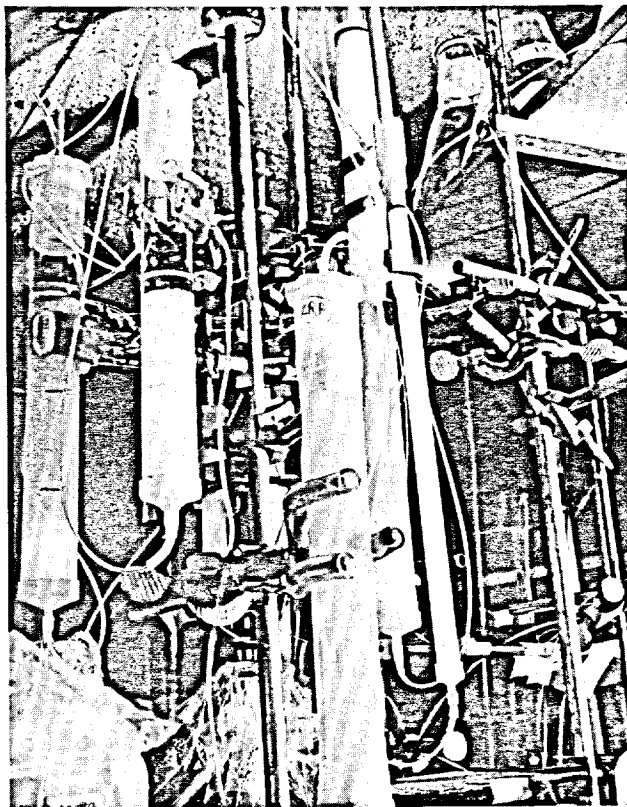
Telephone: (604) 270-7468  
Telex: 04-507672 (Answer back TASCO-VCR)  
Cable: HEBIOTECH

## President

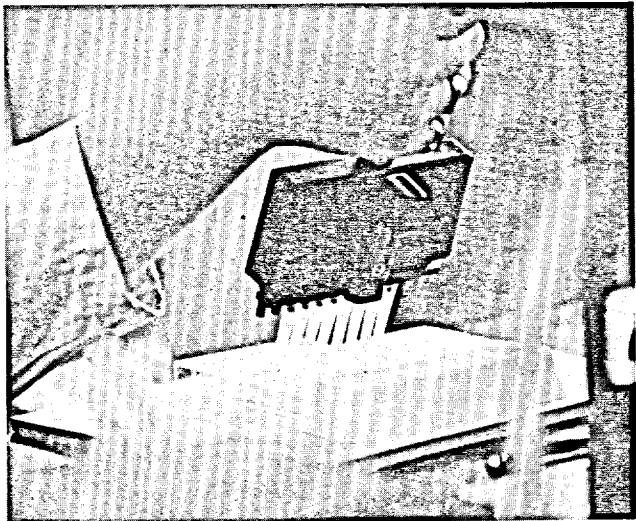
Terrance G. Owen, Ph.D.



Column Chromatography Products



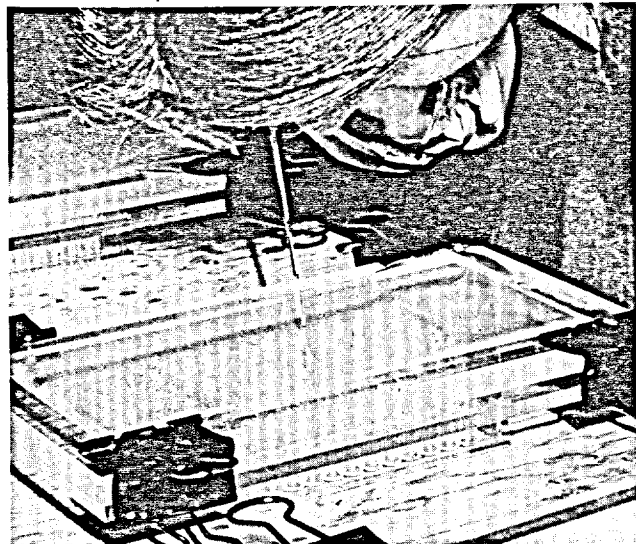
Protein Purification



ELISA Development

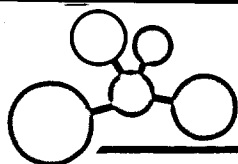


Antibody Production



Electrophoretic Screening





# Lumonics Inc.

Founded in 1971, Lumonics Inc. is the world's leading producer of pulsed gas lasers for the Scientific and Industrial markets and is by far the largest Canadian laser manufacturer. Out of a total staff of approximately 150 persons, some 40 engineers and scientists are actively involved in continuous development of new or special lasers. Approximately 90 percent of the company's sales are to the export market, two thirds of which is represented by the United States.

Lumonics has two principal product lines. The first is a range of general purpose laser products for scientific use in government, university and corporate research

laboratories. Products developed for this rapidly growing market have great potential for future commercial and industrial applications. The second is a line of industrial marking lasers, bearing the trademark LaserMark®, which are sold internationally to a variety of companies in the food, beverage, electrical, electronics, automotive, optical, pharmaceutical, cosmetics and other industries. In addition, the company designs and builds special laser systems and carries out contract research and development in laser technology.

Within its range of scientific lasers, Lumonics' includes the following products:

A. INFRARED LASERS						
Series	Gas	Wavelength (nm)	Pulse Energy (max) (J)	Pulse Rate (max) (pps)	Avg. Power (max) (W)	Comments
TE-820	CO <sub>2</sub>	9-11	3 1	20 50	50 50	High average power. Various optical accessories available.
TE-820HP	CO <sub>2</sub>	9-11	15	10	Depends on Model	High peak and average power. Various models available.
TEA-100	CO <sub>2</sub>	9-11	15	0.5	—	3 models and kit versions available.
TEA-200	CO <sub>2</sub> HF/DF CO	9-11 2.8-4.1 5.1-5.6	3.0 0.6 0.05	3 3 3	— — —	2 models and kit versions available.
TEA-600	CO <sub>2</sub>	9-11	150	0.1	—	Two models available.
TEA-620	CO <sub>2</sub>	9-11	2000	0.05	—	Large aperture oscillator or amplifier.
K-920	CO <sub>2</sub>	9-11	12	3	—	Low cost "bread-board" oscillator or amplifier.
TE-270	HF/DF	2.8-4.1	1.0	0.5	—	Compact HF/DF Laser.

## LUMONICS INC.

105 Schneider Road  
Kanata (Ottawa), Ontario  
Canada K2K 1Y3

Telephone: (613) 592-1460 Telex: 053-4503

Chairman and Chief Executive Officer

Mr. A.R. Buchanan

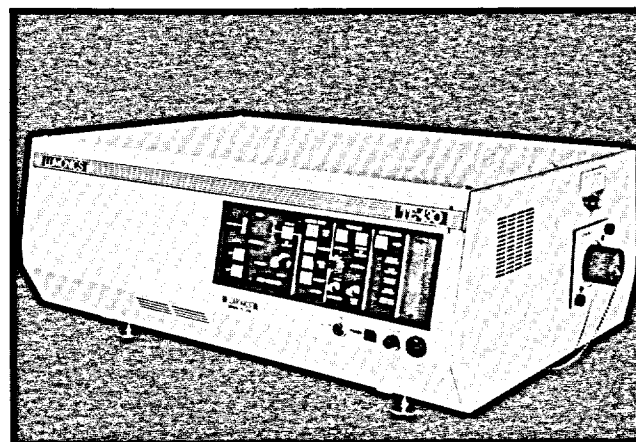
President and Chief Operating Officer

Mr. R.J. Atkinson

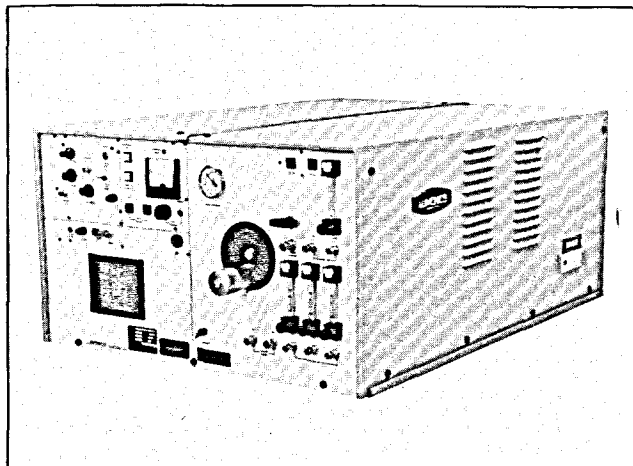
Vice-President Marketing

Mr. G.A. Mauchel

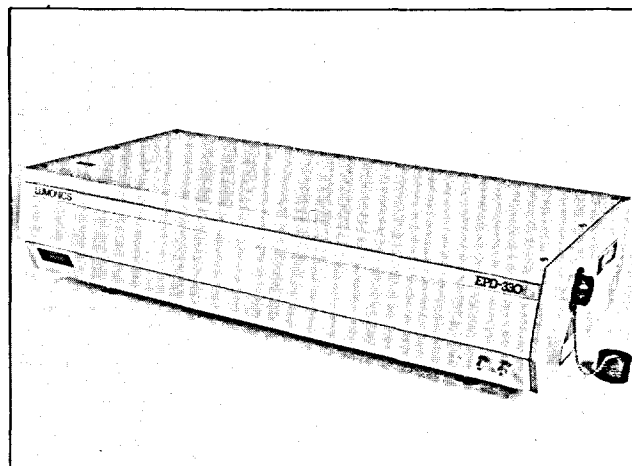
For further information concerning Lumonics or any of the company's products, please contact Mr. Roger Sandwell, Sales Manager.



TE.430 excimer laser



TEA.820 high average power CO<sub>2</sub> laser



EPD.330 excimer pumped pulsed dye laser

### B. EXCIMER LASERS

Series	Gas	Wavelength (nm)	Pulse Energy (max) (mJ)	Pulse Rate (max) (pps)	Avg. Power (max) (W)	Comments
TE-860-3	F <sub>2</sub>	157	12	100	1.0	Various models and configurations available
	ArF	193	200	100	11	
	KrF	249	250	120	20	
	XeCl	308	160	500	12	
	N <sub>2</sub>	337	7	100	0.4	
	XeF	350	90	120	8	
TE-430	ArF	193	15	100	1.2	Low cost, nitrogen laser replacement. Various models available.
	KrF	249	40	100	5.5	
	XeCl	308	20	130	2.5	
	N <sub>2</sub>	337	1.5	100	0.125	
	XeF	350	10	100	1.0	
TE-290	KrF	249	1.5	1	—	High energy, large area beam. Uniform energy distribution
	XeCl	308	1.5	1	—	
	XeF	350	0.35	1	—	
TE-260-2	ArF	193	375	5	—	Two models available.
	KrF	249	325	5	—	
	XeCl	308	150	5	—	
	XeF	350	150	5	—	

### C. EXCIMER PUMPED PULSED DYE LASERS

Series	Pump Wavelength (nm)	Tuning Range (nm)	Conversion Efficiency (%)	Pulse Rate (max) (pps)	Special Purity (%)	Comments
EPD-330	308 or 249	320-950 (fundamental) 217-330 (freq. doubled)	Up to 14%	Up to 500	99% (typical)	Wide range of options available.



# MSD Isotopes

MERCK, SHARP & DOHME/ISOTOPES is the leading supplier of stable isotope-labelled compounds to the international scientific community. All products are made in Canada. Operating from laboratories and offices in Montreal, the division has responded to changing research needs for almost thirty years; it now makes available several thousand compounds that have been synthesized and offers the most experienced custom synthesis service available anywhere.

The primary stable (non-radioactive) isotopes utilized are deuterium, carbon-13 and nitrogen-15; others of lesser importance are carbon-12, and oxygen-17 & 18. Wherever available, Canadian isotope raw materials are utilized.

Deuterated NMR solvents from MSD Isotopes are the acknowledged world standard in quality. They are intended for use with the most demanding high-field instrumentation available. The solvents are subject to rigorous quality control procedures including proton FT NMR throughout manufacturing and packaging. All products are available in glass ampoules for added protection of product integrity.

Other available products cover the widest range of compound types of all stable isotope applications. Compound types include carbohydrates, fatty acids, amino acids, inorganic gases, liquid crystals, pollutants, organometallics, biogenic amines, alcohols and phenols. Many have been prepared with a variety of isotope labels.

Stable-labelled compounds are used primarily for studies involving NMR or mass spectroscopy as analytical methods but other techniques including ESR, IR, microwave and UV-VIS spectroscopies can also be used. As examples, NMR studies have been carried out on deuterated liquid crystals, carbon-13 labelled proteins synthesized from specific carbon-13 labelled amino

acids, nitrogen-15 labelled nucleic acids and oxygen-17 labelled aldehydes and ketones. Studies range from small scale biosyntheses using simple labelled substrates to whole-body NMR and TMR imaging using significant quantities of carbon-13 labelled sugars. Some examples of MS studies include the use of stable labelled compounds as internal standards in the quantification of organic pollutants in water and hazardous wastes and in the quantification of biogenic amines and pharmaceuticals in biological fluids and tissues. Carbon-13 and nitrogen-15 labelled amino acids have been fed to children and pregnant women with MS methodology being used to determine their utilization and turnover times. Similarly, fat malabsorption in children has been clinically determined using carbon-13 labelled triglycerides. Bioavailability studies using concurrent administration of unlabelled and stable-labelled drugs have been shown to decrease significantly the errors in such determination relative to studies using radioisotopes. A second stable labelled form of the drug is used as the internal standard for the quantification of the two administered forms.

## STABLE ISOTOPE-LABELLED COMPOUNDS

Deuterium  
Carbon-13  
Nitrogen-15  
and other

Custom Synthesis

NMR Solvents

Alcohols and Phenols	Hydrocarbons —
Algal Products	Alicyclic
Aldehydes	Hydrocarbons —
Amides	Aliphatic
Amines	Hydrocarbons —
Amino Acids	Aromatic
Biogenic Amines: Field of Interest	Inorganic Compounds
Carbohydrates	Ketones
Carboxylic Acids,	Liquid Crystals
Anhydrides and Salts	Nitriles
Deuterides	Nitro and Nitroso Compounds
Diazo and Azoxy Compounds	Nucleic Acid Bases and Nucleosides
Drugs (Therapeutic)	Organometallic Compounds
Esters	Priority Pollutants
Ethers and Oxides	Prostaglandins
Fatty Acids	Spin Labels
Halides — Acyl and Aroyl	Steroids
Halides — Alkyl and Aryl	Sulphur-containing Compounds
Heterocycles	

### MSD ISOTOPES

Division of Merck Frosst Canada Inc./Une division de Merck Frosst Canada Inc., Montréal, Canada

#### Address/Adresse

P.O. Box/C.P. 899  
Pointe Claire - Dorval  
Québec, Canada  
H9R 4P7

Téléphone: (514) 697-2823 (Sales Service/Service des ventes)

Télex: 05-821-533

#### Division Director/Directeur de division

I. Lesk

#### Sales Service Manager/Chef du service des ventes

M. Kalloo

La division des Isotopes stables de Merck Sharp & Dohme constitue la plus importante source d'approvisionnement en composés marqués aux isotopes stables au sein des milieux scientifiques internationaux. Tous ses produits sont fabriqués au Canada, dans ses laboratoires et ses bureaux situés à Montréal. Depuis bientôt trente ans, cette division répond aux besoins sans cesse en évolution de la recherche scientifique. Actuellement, elle dispose de plusieurs milliers de composés synthétisés et elle offre le service de synthèse d'isotopes le plus fiable que l'on puisse trouver.

Les isotopes stables (non radioactifs) les plus importants sont le deutérium, le carbone-13 et l'azote-15, mais on utilise aussi d'autres isotopes de moindre importance, soit le carbone-12, l'oxygène-17 et l'oxygène-18. Pour la préparation des produits marqués aux isotopes, on utilise des matières premières d'origine canadienne dans la mesure où elles sont disponibles.

Les solvants deutériés pour RMN de la division des Isotopes stables MSD sont reconnus universellement comme le plus haut standard de qualité. Ils sont destinés à être utilisés dans les appareils à champ magnétique élevé les plus délicats qui existent. Au cours de leur fabrication et de leur conditionnement, ces solvants font l'objet de rigoureux contrôles de qualité, y compris le RMN-<sup>1</sup>H à transformés de Fourier. De plus, tous les produits sont offerts dans des ampoules de verre afin d'assurer une meilleure protection de leur intégrité.

Les autres produits fabriqués par la division des Isotopes stables de MSD regroupent la plus vaste gamme de composés de différents types, destinés à toutes les applications des isotopes stables. Elle offre notamment des composés comme des hydrates de carbone, des acides gras, des acides aminés, des gaz inorganiques, des cristaux liquides, des polluants, des organométalliques, des amines biogéniques, des alcools et des phénols. Plusieurs d'entre eux sont préparés à partir de différents isotopes.

Les composés marqués aux isotopes stables servent surtout lors des études pour lesquelles on utilise la RMN ou la spectroscopie de masse comme méthode d'analyse, mais ils s'appliquent aussi à d'autres techniques dont les spectroscopies de RPE, d'infra-rouge, de micro-ondes, ainsi que de l'ultra-violet et du visible. Par exemple, on a procédé à des études par RMN sur des cristaux liquides deutériés, sur des protéines marquées au carbone-13 synthétisées à partir d'acides aminés marqués au carbone-13, sur des acides nucléiques marqués à l'azote-15, de même que sur des cétones et des aldéhydes marqués à l'oxygène-17. Les études en question vont de la biosynthèse à petite échelle, pour laquelle on utilise des substrats marqués avec un seul isotope, à la radioscopie du corps par RMN et RMT qui requiert l'usage d'une quantité importante de sucre marqué au carbone-13. Parmi les exemples d'études par spectroscopie de masse, on retrouve l'usage de produits marqués aux isotopes stables comme étalon interne pour la détermination quantitative des polluants organiques dans l'eau et dans

les résidus dangereux, ainsi que pour la détermination quantitative des amines biogéniques et des produits pharmaceutiques dans les fluides et les tissus biologiques. Dans d'autres cas, après avoir fait ingérer des acides aminés marqués au carbone-13 et à l'azote-15 à des femmes enceintes et à des enfants, on utilise la spectroscopie de masse pour déterminer leur temps d'utilisation et de renouvellement. De même, à l'aide de triglycérides marqués au carbone-13, on arrive à déceler les cas de malabsorption du gras chez les enfants. D'autre part, il a été prouvé que, pour les études de biodisponibilité, si l'on compare l'usage d'un produit pharmaceutique marqué aux isotopes à celui du même médicament non marqué aux isotopes, le pourcentage d'erreur se trouve réduit de façon significative dans le cas du produit marqué aux isotopes. On utilise alors une autre forme posologique, marquée aux isotopes, comme étalon interne pour la détermination quantitative des deux formes administrées.

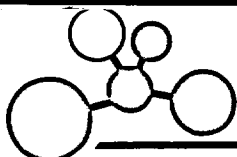
## PRODUITS MARQUÉS AUX ISOTOPES STABLES

Azote-15  
Carbone-13  
Deutérium  
et autre

Solvants RMN

Synthèse sur demande

Acides Aminés	Esters
Acides carboxyliques, anhydrides et sels	Ethers et Oxydes
Acides gras	Extraits d'algues
Alcools et phénols	Halogénures — d'Acyle et d'Aroyle
Aldéhydes	Halogénures d'Alkyle et d'Aryle
Amides	Hétérocycles
Amines	Hydrates de carbone
Amines Biogéniques: champ d'intérêt	Hydrocarbones — Alicycliques
Bases d'acides nucléiques et nucléosides	Hydrocarbones — Aliphatiques
Cétones	Hydrocarbones — Aromatiques
Composés contenant du soufre	Marqueur radicalaire
Composés Diazo et Azoxy	Nitriles
Composés nitro et nitroso	Polluants prioritaires
Composés organo-métalliques	Produits inorganiques
Cristaux liquides	Prostaglandines
Deutériures	Stéroïdes
Drogues (thérapeutiques)	



# Moniteq Ltd.

MONITEQ Ltd., founded in 1976, is rapidly becoming a leader in the development of electro-optical instrumentation for the detection of trace molecular and atomic gases. The current staff of 45 consists of creative and highly qualified scientists and engineers encompassing the disciplines of optical physics, analytical chemistry, electronics and data processing.

MONITEQ's developments include instruments to measure ground level atmospheric pollutants, sensors to remotely measure pollutants and hazardous gas leaks and various electro-optical systems for the detection of specific gases in the atmosphere or from analytical separation processes such as gas chromatography. Many of these developments are now being manufactured and distributed from our 8,000 square foot facility in Concord (Toronto) Ontario.

Included in MONITEQ's manufacturing capability is a line of electrodeless discharge lamps. Developed to provide a source of high resolution, high stability UV radiation in a compact lightweight enclosure, these lamps are finding many applications in atmospheric research, analytical instrumentation and industrial measurement where a high degree of spectral specificity and intensity is required.

## ELECTRODELESS DISCHARGE LAMPS

MONITEQ's electrodeless discharge lamps are compact, self-contained sources of vacuum ultra-violet and ultra-violet radiation. In most cases, the lamp emission is in the form of a line spectrum, the specific emission lines being characteristic of a molecular or atomic gas contained within the lamp. The lamp assembly consists of a plasma discharge cavity excited by a 200 MHz source. The discharge cavity, RF source and all associated intensity control electronics are contained within a compact, rugged enclosure.

Two types of lamps are presently available: Rare Gas Lamps including He, Kr, Xe, Ar, Ne. The

lamp discharge cavity is filled and permanently sealed with the appropriate gas.

**Atomic Resonance Lamps** including H, D, N, O, Cl. The gas concentration in the cell is controlled by temperature regulation of a source/getter located on a side arm of the lamp cavity. The getter also removes contaminants which may cause spurious spectral output.

Developments under consideration include molecular discharge lamps with emissions in the UV to IR. Continuous sources covering selected wavelength regions and multiple gas lamps are also under development.

## FEATURES

- Rugged : Aerospace qualified
- Light Weight : Less than 1.0 kg
- Compact : 14.0 cm x 8.9 cm dia.
- Power Consumption : Typically less than 40 watts at 28v.
- Continuous or Pulsed Operation : DC to 5 KHz
- Long Life : More than 1000 hours for rare gas lamps  
More than 500 hours for atomic resonance lamps
- High Stability :  $\pm 1\%$  per hour for rare gas lamps  
 $\pm 2\%$  per hour for atomic resonance lamps
- Complete Factory Calibration : Absolute intensity, UV spectral scan, emission line intensity ratios

## OPTIONS AND ACCESSORIES

- Mounting bracket for monochrometers
- Photoionization chambers for absolute intensity calibration
- Collimation assembly
- Feedback intensity control
- 28 VDC power supply
- Compact lamp housing (7.6 cm x 7.6 cm dia.) with external power supply

## OUTPUT SPECIFICATIONS

Lamp Type	Principal Wavelengths Emitted (nm)	Typical Intensity (photons/sec/str)
Kr	123.6	$10^{15}$
Xe	147.0	$10^{15}$
Cl	118.9/120.1	$5 \times 10^{12}$
N	119.9/120.0/120.1	$5 \times 10^{12}$
O	130.2/130.5/130.6	$10^{14}$
D	121.5	$10^{14}$
H	121.6	$10^{14}$
He	Multiple	Depends on Application
Ne	Multiple	Depends on Application
Ar	Multiple	Depends on Application

## MONITEQ LTD.

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### President

David A. Whiteman

### Vice President

Dr. T. Victor Ward

### Marketing Manager

Mark R. Williamson, P.Eng.

## APPLICATIONS

Wavelength and intensity standards

Determination of throughput and instrumental profile of UV monochrometers

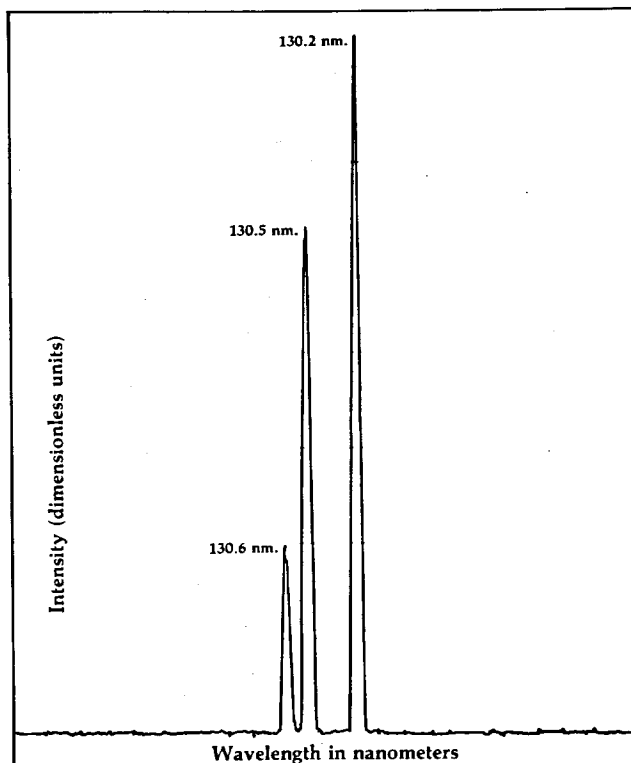
Photoionization and photochemical sources

Sources for fluorescence and absorption measurements, analytical and process measurement applications

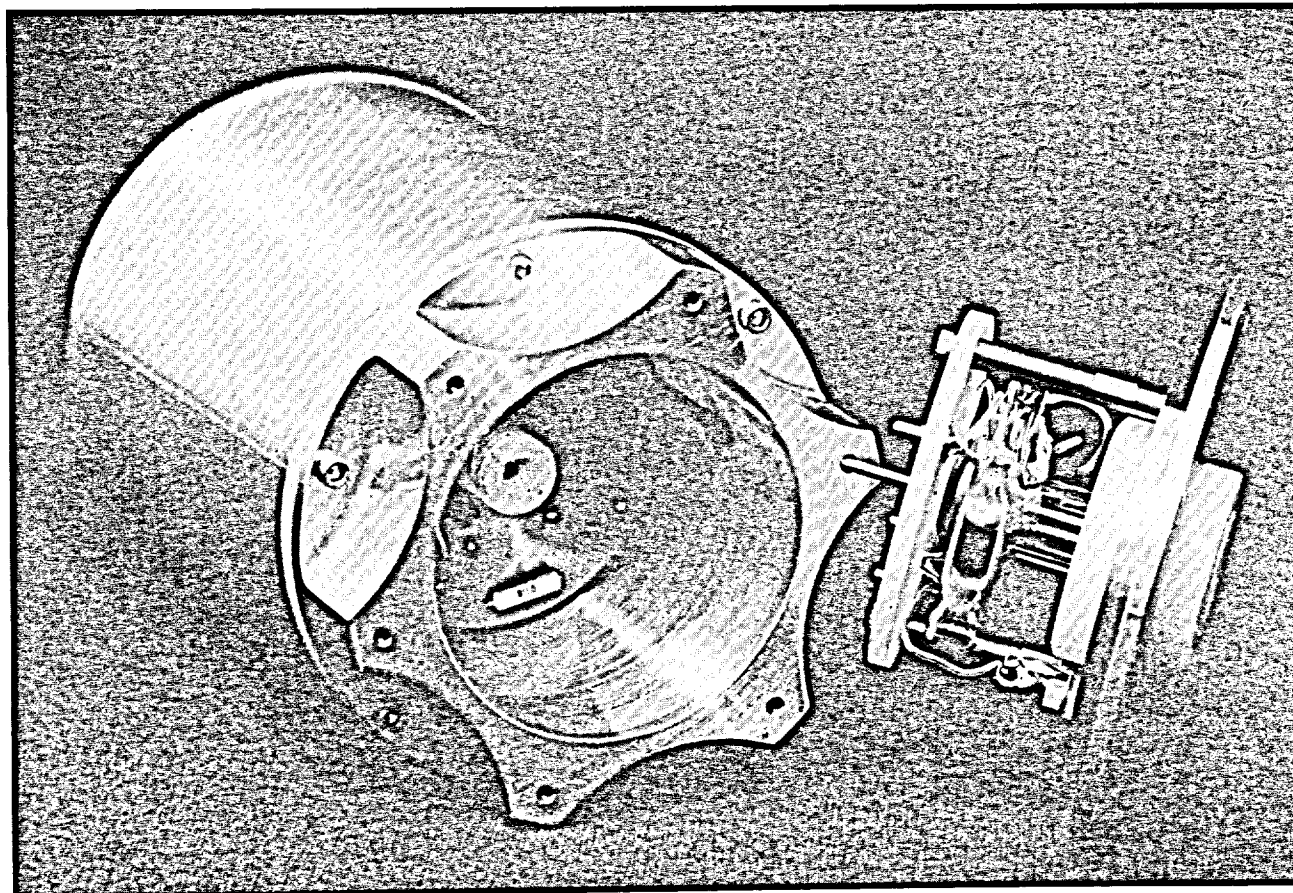
Measurement of specific ground level and stratospheric compounds

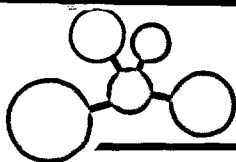
Bio-fluorescent measurements

Electrodeless discharge lamps are a flexible and application-oriented product. MONITEQ invites enquiries for the development of specific source and detection systems for any atomic or molecular gas.



*Typical Oxygen Lamp Spectrum Scan*





# Mono Research Laboratories Ltd.

MONO RESEARCH is a wholly Canadian-owned private company specializing in the research, development and marketing of a variety of high technology products. Since its formation in 1976, MONO RESEARCH has demonstrated its capability of bringing innovative designs from the idea stage successfully through design, development, manufacturing and to a successful commercial product. Their well equipped electronics laboratory is particularly suitable for development work and specialized applications which includes the repair, maintenance and calibration of sophisticated instrumentation. The calibration facilities standards are traceable to National Standards. Adequate space is available for electronic assembly and manufacturing, while the machine shop is geared to low volume precision machining and development activities. A dedicated laboratory is maintained for sample preparation and particle size analysis. The latest state-of-the-art automated instrumentation is utilized for this work.

## PRODUCTS AND SERVICES

In addition to its range of manufactured products, MONO RESEARCH also markets and services complementary products in order to provide a wider range of capabilities to meet most customer requirements.

**PARTICLE COUNTING AND SIZING:** The company is involved in the development and sale of particle counters to count and size particulate matter in air and liquids. Systems are available which can detect, count, and size airborne particles as small as 1/10 of a micrometer. These systems are widely used in monitoring the cleanliness of clean rooms commonly used in the manufacture and assembly of many high technology products where the presence of even small amounts of

airborne particulate matter can cause serious contamination problems.

MONO RESEARCH also supplies systems suitable for monitoring particulate matter in liquids. The applications include monitoring cleanliness levels, by measuring particulate matter contamination in any fluid. Particles ranging from 0.5 micrometers to 9 millimeters in diameter may be analyzed. As an example of the specialized applications which MONO RESEARCH undertakes, we have developed a detection system to count fish eggs in sea water.

Analyzing powders to determine the particle size distribution is also widely used. In pharmaceutical applications, the size of the powder particles and their size distribution may affect the drug uptake-rate in the body, or it may affect the ability to produce tablets from the powder. In food manufacturing, both the taste and cohesive properties of pastes also may be markedly affected by the particulate size and their size distribution.

**ADVISORY SERVICES:** Engineering and consulting services are available to assist customers in their system design and operational problems, to ensure the most effective use of their instrumentation.

**MEDICAL EQUIPMENT:** Much of MONO RESEARCH's expertise lies in the field of medical instrumentation. The most recent product to evolve from their laboratory and in conjunction with researchers at the University of Toronto, is a cryogenic device which is used to assist in removing a human eye that has a malignant tumor. This device will be marketed world-wide commencing late 1982.

**AIDS FOR THE HANDICAPPED:** Recently high technology has been introduced into the field of sophisticated aids for the handicapped. MONO RESEARCH have kept pace with these developments and have produced a number of devices. One of these, an Automated Eating Aid is shown in the accompanying photograph.

**IN-HOUSE ANALYSIS LABORATORY:** Since particle size analysis plays a major role in the company's over-all strategic thrust, MONO RESEARCH maintains a very active analysis service for its customers located throughout Canada. A sample for contamination testing, or particle size profile determination, is usually processed and the information returned to the customer within 48 hours.

## COMPANY STRATEGY

MONO RESEARCH maintains a small, highly qualified technical staff dedicated to innovative research development in the market segments in which it is actively engaged. The company's in-house capabilities are further extended by undertaking projects in collaboration with leading researchers at Canadian universities and hospitals and in collaboration with both the Federal and Provincial governments.

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## MONO RESEARCH LABORATORIES LTD.

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Telex: 06-97796

### President

Dr. Nigel H.K. Armstrong

### Vice President, Research and Development

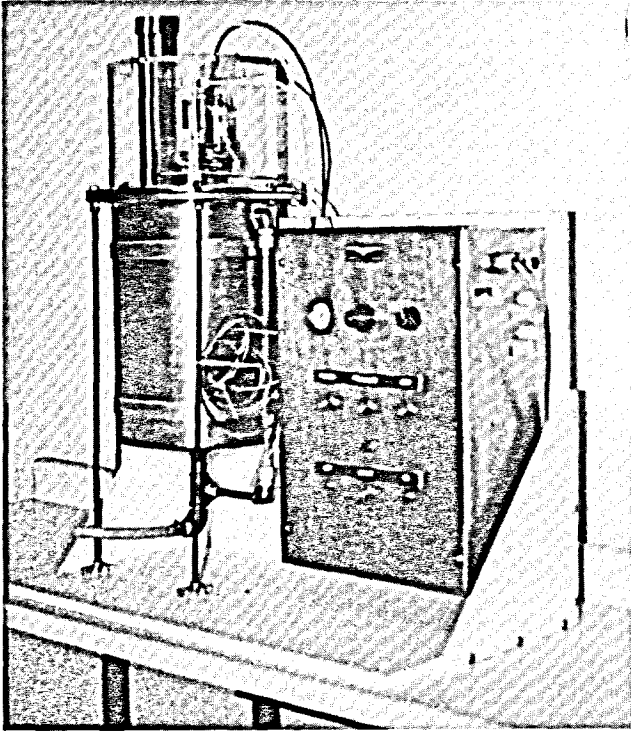
Dr. Robert H. Rempel

We are actively interested in manufacturing under license products for distribution throughout North America.

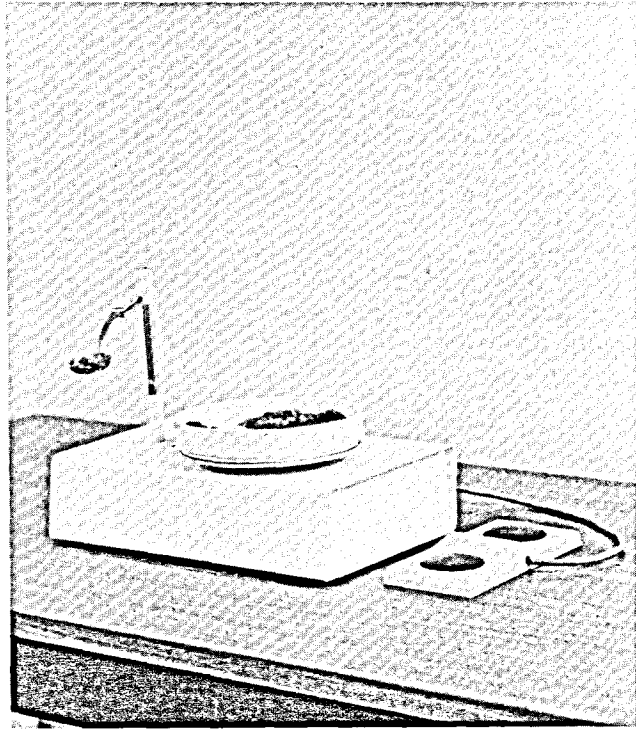


The company's future plans are to continue its current high technology strategy but with stronger emphasis in the areas of particle sizing, counting and identification. The company expects to make its entire range of manufactured products available for sales world-wide.

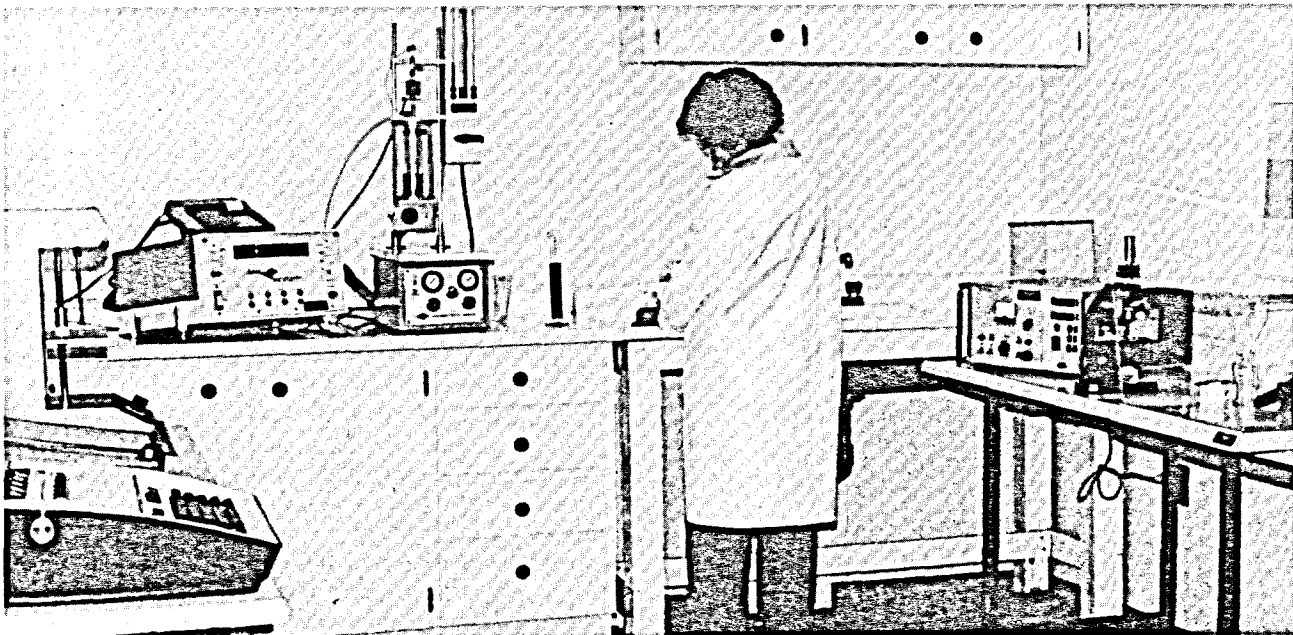
MONO RESEARCH has also entered into negotiations to manufacture under license products abroad which will be manufactured in Canada for sales throughout North America. It is expected that the company's skills and experience will enable this segment of its activities to show particularly strong growth.



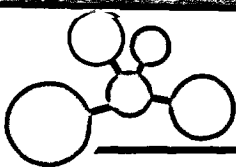
*A particle detection system manufactured in the Development Laboratory for a customer's unique application.*



*An Automated Eating Aid. One of a number of products developed, manufactured and marketed for the handicapped.*



*The Service Laboratory, dedicated to sample preparation, particle sizing and counting.*



# Orcatech Inc.

## INTRODUCTION

Orcatech Inc. is a Canadian designer and manufacturer of high performance graphics systems hardware for the engineering and computer aided design marketplace. The systems are marketed across Canada, the United States and Europe.

Sales of the hardware have grown steadily and include a number of major manufacturers such as Northern Telecom Canada and Control Data Corporation.

Sales are expected to top \$2 million by 1982 and \$8 million the following year. Current staff levels of 28 are expected to expand tenfold by 1985 at which time sales should top the \$32 million mark.

The Orcatech terminals are significantly less costly than the present equipment on the market today, yet they provide outstanding resolution and easy programming capabilities. Basic system configurations depending on options range in price from \$20,000 to \$65,000 CDN.

The design workstations allow engineers, electronic designers, architects, planners and small businesses to utilize microcomputer technology in their everyday design and manufacturing operations. The graphic computers can also be used to perform a variety of business applications, process control, animation, aircraft simulation and cartography.

The units comprise a colour or monochrome display screen, an alphanumeric keyboard with joystick, a multi-processor computer, and various disc drives and associated memory units. Other peripheral hardware, such as printers, graphic digitizer pads and

monitors can be added to suit particular customer requirements. The terminal components are packaged into a contemporary workstation format.

## SYSTEM OVERVIEW

The Orcatech Graphic Computer System combines three fundamental building blocks present in all computer aided manufacturing (CAD/CAM) equipment: high resolution, fast graphics; computer processing power for the application; and graphics and system software to support the application development and execution.

The design philosophy of the basic architecture is one engineer, one workstation. With 100 percent dedicated resources in a stand-alone workstation, the design engineer is no longer forced to perform all large scale application work on a mainframe computer that is in many cases shared by others. Consequently, there is no degradation in response time.

Although initially developed as a stand-alone graphics computer for the design environment, the Orcatech graphic computer is designed to function in three modes:

1. As a stand-alone graphics computer with its own discs, printer, plotter and other peripherals.
2. As a front-end intelligent graphics terminal to a larger mainframe computer, using the central computer mainly for data storage and major number-crunching.
3. As an element of a cluster with other Orcatech systems. This could be a star-type network with one system acting as the hub controller, onto which central peripherals such as plotters and printers are attached and shared.

Viewed as a graphics display system, the Orcatech product is at the high quality, high technology end of the market; viewed as an application development vehicle it is in the mini to medium computer range. As an integrated graphics computer system, it has very broad and unique capabilities.

## GRAPHICS SYSTEM

The Orcatech high-speed graphics processor is based on a 16-bit bi-polar bit-slice microprocessor architecture, controlling the generation of images into screen memory. This bit-slice microprocessor has been specifically designed to support not only high-speed graphics functions, but also specialized application functions. It has a 200 nanosecond instruction time, and is able to write pixels to the CRT display at a nominal rate of 40 million pixels per second.

The graphics screen itself has a 1000 x 1000 physical resolution, giving one million pixels per display. With a minimum of 128 Kbytes of screen memory, monochrome only is supported. With three 128 Kbyte memory planes, eight colours can be simultaneously displayed, from a palette of thousands of shades. Up to eight planes can be supported, giving 256 simultaneous colours.

## ORCATECH INC.

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90405

Telephone: (213) 452-2283

### President

David J. Pearson

### Director of Marketing

John Lugsdin



*The manufacturing and head office facilities of Orcatech Inc. are located at 2680 Queensview Drive in Ottawa; Canada's centre for high technology development.*

Under program control, each plane can be turned on or off, or its function reassigned within 400 nanoseconds.

The high-speed graphics processor, with firmware assistance, provides a very fast 15 levels of picture zoom with simultaneous pan.

#### APPLICATION SYSTEM

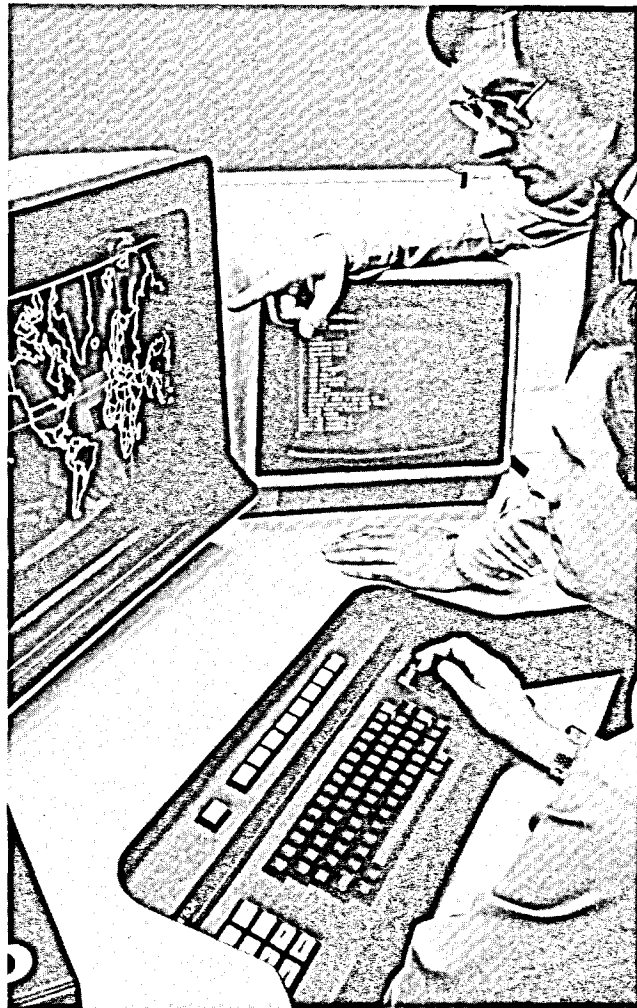
The application processing facilities work independently of and parallel to the graphics processing system. They communicate and synchronize via a separate block of common memory, attached to the 40 bit wide system bus. This bus supports 16 bit data and 24 bit addressing and is designed to handle highly parallel processing.

While the base system has one 16 bit application processor, up to three may be configured. Application processing is performed on a separate local bus. Each local bus has its own 16 bit microprocessor. The architecture allows for up to three of these application processors to work and communicate on the system bus in parallel.

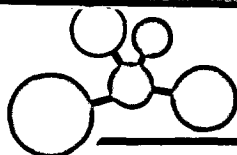
#### SOFTWARE SYSTEM

Perhaps what makes the Orcatech graphic computer product range truly unique is its full set of system software which is designed to facilitate both application program development and efficient run-time production operation. Both the development and system software operating environments are provided at a graphics terminal price without the cost of host mainframe computing.

The system software includes a real-time operating environment which is highly compact and yet supports multiprocessing and spooling as well as communication between the Orcatech system and other computer configurations. The system also includes file control software for secondary storage management, a command interpreter, full-screen text editor with HELP facility, Fortran IV compiler, an assembler, link editor and librarian. An alternative UNIX operating system is also available with Pascal and C compilers.



*Girvan Patterson (top) and Tony Withers (seated) examine the zoom simultaneous pan capabilities of the Orcatech Graphic Computer System; a new Canadian product now being marketed in Canada, the United States and Europe.*



# Photochemical Research Associates Inc.

Photochemical Research Associates Inc. (PRA) has recently celebrated its first decade of operations. PRA is rapidly becoming a recognized leader in electro-optical instrumentation; more specifically in light generation, detection, and analysis.

PRA operates research and development laboratories and manufacturing facilities in a new 20,000 sq. ft. plant located in London, Ontario. International sales are supported by two regional sales offices in the United States, and a rapidly expanding dealer network in Europe and the Far East.

PRA's present product lines consist of: Fluorescence Lifetime Instruments; Pulsed Light Sources with pulse widths from picoseconds to seconds - including the revolutionary Nitromite® nitrogen and dye lasers; CW Light Sources including a new line of long life Helium Neon lasers; and Photon Counting Systems for low light level detection.

## FLUORESCENCE LIFETIME INSTRUMENTS

PRA Fluorescence Lifetime Instruments are specifically designed for the measurement of fast fluorescence decay times in either liquid or solid samples. Such information is vital in areas of study like kinetic photochemistry, time resolved spectroscopy, photo-induced electron transfer, fluorescence quenching and rotational anisotropy.

PRA instruments use the method of 'Time Correlated Pulsed Single Photon Counting', which is internationally recognized as the most effective way to measure luminescence behaviour - superior to any alternative analog technique. Experimental determinations of decay times are simple, accurate, and fast - even in the case of multi-exponential behaviour.

PRA lifetime instruments are designed around a modular format and consist of three basic subsystems: optical, electronic, and data reduction.

The optical subsystem including flash source, sample chamber, sample holders, monochromators and detection photomultipliers affords maximum flexibility to the user. Because of the modular design a basic unit

can be upgraded to the most sophisticated configuration at any later date.

The electronic subsystem consists of timing electronics. All modules are carefully tested in a functioning system prior to delivery. As with the optical subsystem, levels of convenience and sophistication can be implemented when the user desires.

The main component of the data reduction subsystem is the PDP 11 mini computer - a widely used, valuable lab tool in its own right. Flexible, easy to use software for luminescence decay studies has been developed by PRA.

A customer purchasing a PRA Fluorescence Lifetime Instrument buys more than versatile hardware. PRA has a competent staff of scientists with years of experience in fluorescence studies. Buying a complete PRA system carries with it the promise of system installation and user training by a PRA engineer.

## NITROMITE® DYE LASER SYSTEMS

Unlike competitive nitrogen dye laser systems; the PRA Nitromite® system is low cost, simple to use and reliable. The operating specifications are also impressive: continuously variable repetition rates to 100 Hz; sub-nanosecond pulsewidths; 200 kW output power; and less than 2 nsec command jitter.

The complete system is very compact. The nitrogen laser, dye laser and accessories can be easily carried together by one person and set up in less than five minutes. No complicated adjustments, no cumbersome vacuum pumps, no inconvenient dye circulators are required.

The modular construction of the electronic and mechanical components permit quick and easy servicing in the field. Routine servicing consists of merely dismantling and cleaning of the laser head - a simple operation requiring only a screw driver and emery paper plus a few minutes of time.

The combination of high power, narrow pulse width and spectral tunability not only suit conventional applications such as laser induced fluorescence and time resolved spectroscopy but calibration of fast photo-detector units and arrays as well. The nitrogen laser itself is suitable for such diverse uses as particle simulation in spark and bubble chambers, as well as material etching. These are a few of the possibilities for a Nitromite® laser system. For the first time, a nitrogen dye laser system can be used as a general laboratory tool.

## CONTINUOUS LIGHT SOURCES

PRA Continuous Light Sources are stable, reliable and intense sources of broadband (ultraviolet to infrared) light useful in a variety of applications such as spectrophotometry, as monitoring sources in flash photolysis studies, in photo-preparation, and atomic absorption studies.

Accurate measurements are possible due to reduced

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## PHOTOCHEMICAL RESEARCH ASSOCIATES

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### President and C.E.O.

Mr. Charles G. Marianik

### Director of Marketing

Dr. Roderick C. Miller

optical ripple and improved optical design.

Low operating costs are ensured by the reliability of operation and ruggedness of construction. Further, the advanced optical design results in improved light gathering properties thereby permitting the use of lower wattage (less expensive) bulbs to obtain greater optical energy.

PRA power supplies can run a variety of sizes and types of arc lamps and unlike many competitive models have been specifically designed and built for this application.

### HELIUM-NEON LASERS

Helium-Neon lasers have the greatest usage of all laser types in applications ranging from student teaching, to precision alignment of heavy construction equipment.

PRA offers a complete line of helium-neon lasers including plasma tubes, tubes in precision aligned housings, power supplies, and packaged laboratory lasers.

PRA hard seal laser tubes are manufactured and tested according to exacting standards, in 1, 2 or 5 mW versions, random or polarized.

All lasers incorporate a complete package of safety

features including beam shutter, key lock switch, time delay, emission indicator light, and remote connector.

As with all PRA products, reliability is a central design point and PRA Helium-Neon lasers deliver years of trouble-free operation.

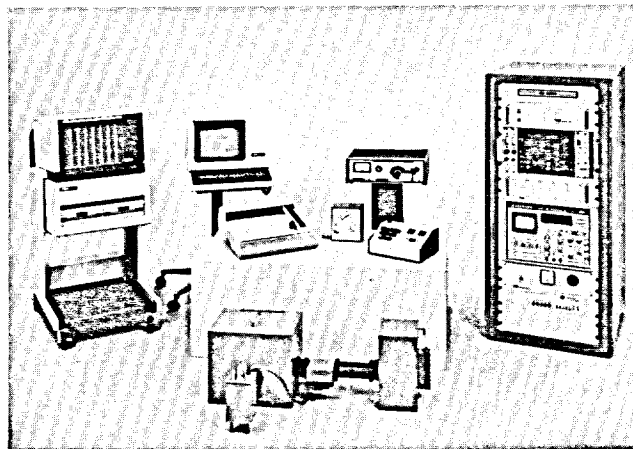
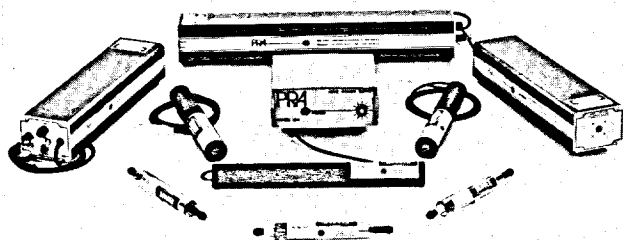
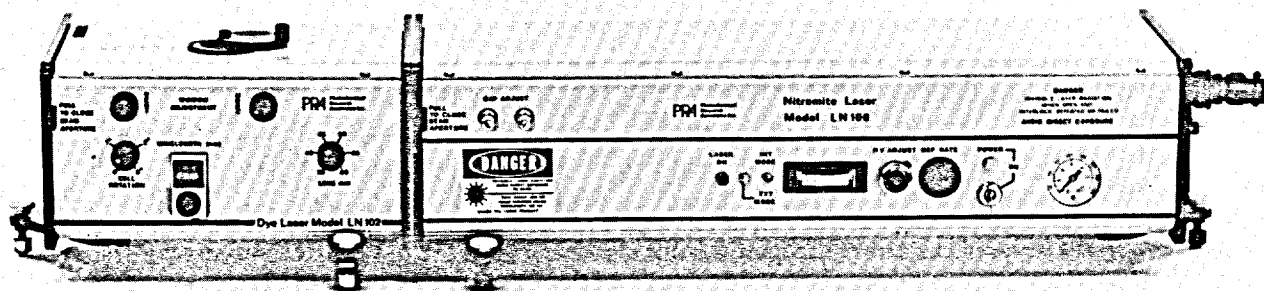
### PHOTON COUNTING ELECTRONICS

Photon Counting is a digital technique for measuring low light levels such as those encountered in low yield fluorescence experiments or astronomical measurements.

It is superior in sensitivity and stability to conventional direct current (analog) methods and ideally suited for computer data processing.

The PRA photon counting equipment is of the fast, high resolution, low noise modular NIM standard type. The PRA system has a wide selection of gain settings, digital to analog output conversion and computer compatibility - all at a very competitive price. PRA photon counting electronics were designed with the user in mind.

In many cases a single PRA unit offers features and capabilities that can be matched only by combining several competitive units.







SCIEX™ is a Canadian Company involved in the design, development, manufacture and marketing of mass spectrometers for trace chemical analysis. The Company currently employs over eighty people, including research and development staff as well as a full design and manufacturing group.

The corporate history spans well over a decade, originating from research carried out at the University of Toronto, Institute for Aerospace Studies. Incorporated in 1970, SCIEX™ has experienced continuous growth while refining and perfecting its mass spectrometric technology. Most recently, SCIEX™ became a division of MDS Health Group Limited, a Canadian Company.

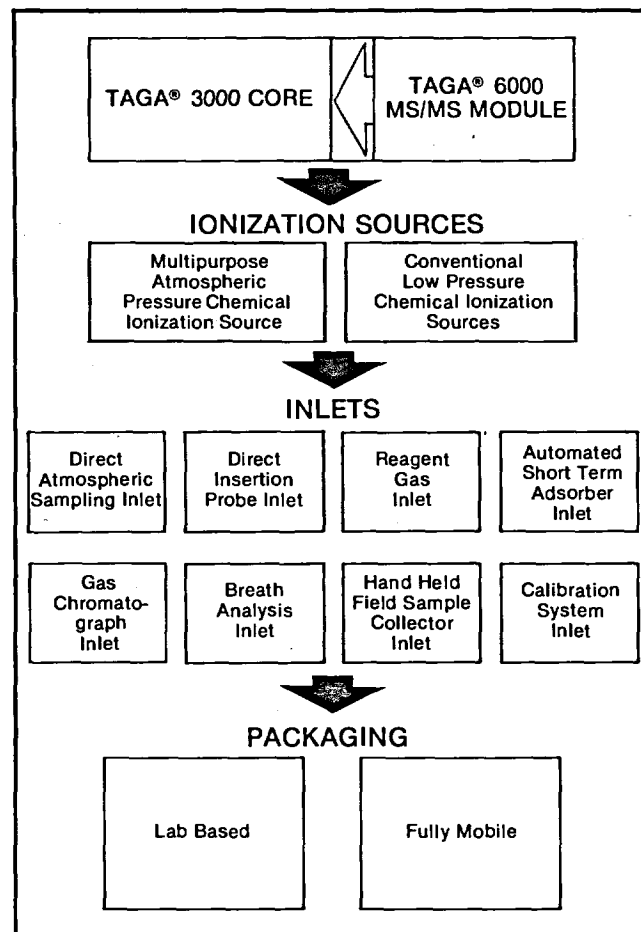
SCIEX™'s instrumentation, the TAGA® Systems, are based on the advances in Atmospheric Pressure Chemical Ionization Mass Spectrometry (APCI/MS) pioneered by SCIEX™. The TAGA® Systems are extremely sensitive, accurate mass spectrometers which operate under direct computer control. The Systems are available either as the TAGA® 3000 (single quadrupole mass spectrometer) or as the TAGA® 6000 (a tandem quadrupole mass spectrometer/mass spectrometer (MS/MS)). Designed to enhance analytical power and maximize operator-system interaction, both TAGA® Systems are capable of instantaneously detecting and identifying a broad range of chemical compounds at trace levels in gases, solids and liquids.

The features built into the TAGA® Systems ensure quality analytical performance (specific and ultra-sensitive) and cost effectiveness (rapid sample throughput, high speed of response, minimal memory effects). In many cases, there are minimal requirements for sample work-up.

SCIEX™ has maintained their design philosophy for results-oriented, applications-based modularity in their instrumentation. In practical terms, TAGA® Systems are extremely adaptable to user's specific

problems such as industrial process monitoring, chemical investigation of complex products, rapid residue screening and quality control of mass-produced materials.

A core system, either the TAGA® 6000 MS/MS or the TAGA® 3000 MS (which can be upgraded to the TAGA® 6000), combined with the appropriate configuration options provides a complete system capability for each customer's needs. For example, the Direct Insertion Probe is used to introduce solids and liquids of low volatility into the TAGA® Systems; the Hand Held Field Sample Collector permits the collection of samples from remote sites for subsequent analysis with the System. A Multipurpose Atmospheric Pressure Chemical Ionization Source and more Conventional Low Pressure Chemical Ionization Sources are available.



TAGA® Systems configuration options

The TAGA® 6000 MS/MS has extensive applications in direct mixture analysis, rapid screening of complex matrices, structure elucidation, and general MS/MS research applications and has been utilized in the analysis of common pollutants such as tetrachlorinated dibenzo-p-dioxins (TCDD), fragrances and flavors emanating from foods, polycyclic aromatic hydrocarbons in Athabasca tar sands and carcinogens in food and beverages.

## SCIEX

Division of MDS Health Group Limited

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Telex: 06-964722

### Vice President and General Manager

James A. Reynolds

### Vice President, Marketing

Dr. Neil M. Reid

We are interested in export opportunities.



*The TAGA® 6000 MS/MS System at the 1982 Pittsburgh Conference in Atlantic City, N.J.*

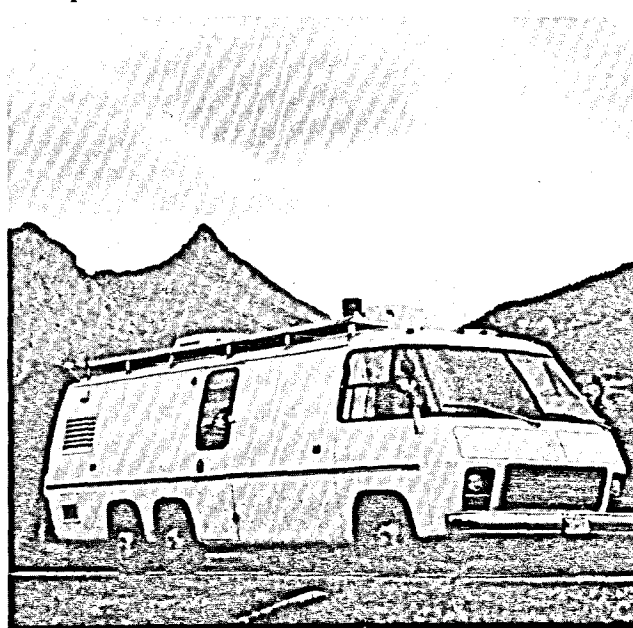
The TAGA® 6000 MS/MS System includes an extensive array of hardware features designed into the system to take full advantage of this powerful new instrument concept. Computer-aided design of ion transfer techniques, a well-defined CID gas target and high performance quadrupoles ensure optimum transmission of ions through the system. Two stages of collision-induced dissociation (CID) and up to 150 eV of collisional energy maximize the information obtainable. The open-geometry Atmospheric Pressure Chemical Ionization Source produces the molecular ions especially suited to MS/MS and is exceptional in that the only maintenance required is an infrequent 10 minute clean-up. An ultra-high capacity, ultra-clean cryopump and a totally automated and failsafe vacuum system form the heart of the TAGA® 6000 MS/MS. Positive and negative ion pulse counting with extremely low system noise enable detection of many compounds in the low picogram or ppt range.

System control, data acquisition and data manipulation are fully computerized with a PDP11/23 mini-computer having 21 megabytes of data storage capacity and a multi-tasking operating system. An interactive graphics terminal and keyboard provide ease of operator control and a thermal process hard copy unit produces clean dry records of experimental results.

A highly user-oriented software package is incorporated in the Data System of both the TAGA® 3000 MS and TAGA® 6000 MS/MS. All electrical and mass spectrometry functions can be altered by an operator through keyboard control. Data acquisition and manipulation software on the TAGA® 6000 MS/MS System has been designed specifically for the special needs of a tandem mass spectrometer. To aid the user in running a series of experiments, the TAGA® Command Language was developed. This language, which is similar in structure to BASIC, allows an operator to program several analytical experiments which the TAGA® 6000 system will then carry out

without operator intervention. Several auxiliary software programs are also incorporated into the Data System to aid the user in report preparation and specialized data analysis. The operating system used for the Data System, RSX-11M, is a multi-user and multi-tasking system and thus, data collection and data manipulation can take place concurrently by one or more users.

In addition to the laboratory-based TAGA® 3000 MS and TAGA® 6000 MS/MS, SCIEX™ markets a fully mobile version — a fully transportable laboratory facility. Direct air sampling by the computer-controlled TAGA® System provides on-site environmental analysis of complex chemical mixtures. A broad range of trace compounds present at any accessible site can be detected and identified and the concentrations measured. The extent of environmental contamination can be plotted throughout an area rapidly enough to determine the source locations. The highly sensitive and selective TAGA® can detect subtle changes in the flow pattern, composition and concentration levels of multiple traces.

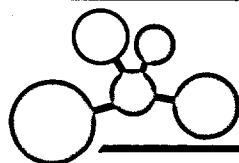


*On-site data collection and analyses with the fully mobile TAGA® System.*

Today, TAGA® installations are located in Canada, the United States and England.

SCIEX™ provides a complete customer support program. With their large Research and Development Applications Laboratory and Software Departments, the Company is able to provide special accessories for the TAGA® Systems as well as the appropriate software and chemical methodologies to meet or supplement user's requirements.

SCIEX™ is also engaged in contract research and development, as well as contract mobile and laboratory-based analytical services.



# Scintrex Limited

Scintrex Limited is a Canadian-owned public company which specializes in the research, design and manufacture of electronic and high-precision mechanical equipment that operates under harsh conditions, often in remote locations.

Mineral explorationists use Scintrex equipment for geophysical and geochemical surveys. Scintrex's portable analyzers allow chemists to measure trace levels of elements almost anywhere. Several CANDU nuclear reactor installations monitor radiation with Scintrex instrumentation.

The company resulted from the acquisition in 1967 of Seigel Associates Limited by the former Sharpe Instruments of Canada Limited, which was founded in 1949. The expanded company was then renamed "Scintrex Limited" and in 1968 was listed on the Toronto Stock Exchange.

Research and Development (R & D) is of paramount importance. In order to remain in the forefront of this high technology industry, the company budgets 10% of its annual sales for R & D. About 45 of its 200 employees are engaged full time in creating new products and developing new monitoring, analytical and exploration techniques.

## CONTRACT INSTRUMENTATION DIVISION

Scintrex began developing monitoring instrumentation in 1974, for CANDU nuclear power plants. Since then, the company has manufactured tritium monitors, reactivity control logic cabinets, shut-off rod logic modules, high radiation hand-held monitors and logic panels for safety shut-down systems. CANDU reactor

operators in Ontario, Quebec, New Brunswick, Korea and Argentina use this equipment.

In a two million dollar contract with the US Army, Scintrex is building seven prototype nuclear radiation monitoring systems. This equipment operates in extremes of temperature and dust.

## EXPLORATION AND ANALYTICAL EQUIPMENT DIVISION

This is the major part of Scintrex's business. It includes the design, development and manufacture of geophysical and geochemical instruments for the mining industry and analytical instruments for chemical laboratories.

Over the years geophysics has become the key exploration tool for discovering new mineral deposits. The steady depletion of surface ore bodies and consequent need to detect buried deposits have produced a growing dependence on geophysical methods.

Scintrex is a leader in the design, development and manufacture of mining exploration equipment. Its products, services and skills have contributed directly to numerous major mineral discoveries in different parts of the world.

Out of this experience, there is an expertise in developing portable analytical equipment for remote, on site chemical analyses.

## RANGE OF PRODUCTS

**Radiometrics:** Uranium deposits emit gamma radiation. Scintrex gamma-ray detecting instruments for uranium exploration range from scintillation counters and spectrometers used for ground prospecting to complex airborne radiometric systems which collect computer-compatible data.

**Chemistry:** The company has invested a large portion of its research funds to develop instrumentation for elemental analysis. A major success has been the unique UA-3 Uranium Analyzer, which measures as little as 0.05 parts per billion of uranium in natural waters or aqueous solutions derived from rocks, effluents, biological samples or other media.

The UA-3 has gained wide acceptance as a basic analytical tool for both field and laboratory in exploration, health physics and in process control at uranium mills.

A new instrument, the AAZ-2 Atomic Absorption Spectrophotometer, measures a wide range of metals at concentrations usually below a few parts per billion. Its accuracy is as good as other analysers which usually are many times larger than this typewriter-sized device. It is so portable and easy to hook up that it even measures samples in a tent or ship.

**Induced Polarization:** Induced Polarization (IP) equipment employed in base metal ground surveying is a major product group. The IP technique was developed by Dr. Seigel, the President of the company, in 1948 and it has played an important role in several major mineral

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## SCINTREX LIMITED

### Office and Plant address:

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Concord, Ontario L4K 1B5

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Telex: 06-964570

### President

Dr. H.O. Seigel

### V.P. Finance

Gerald Stork

### V.P. in charge of Sales and Marketing

Jon G. Baird

**Branch distribution and survey offices:** Subsidiary company in Australia and sales agents in more than 45 countries.

Scintrex actively exports worldwide, with 80% of its sales from shipments out of Canada. Expansion into the export market is a high priority at Scintrex.

discoveries. The company has recently developed a new IP receiver containing its own microprocessor, as well as new transmitters, as part of the ongoing process of improving the speed, accuracy and versatility of this equipment in the field.

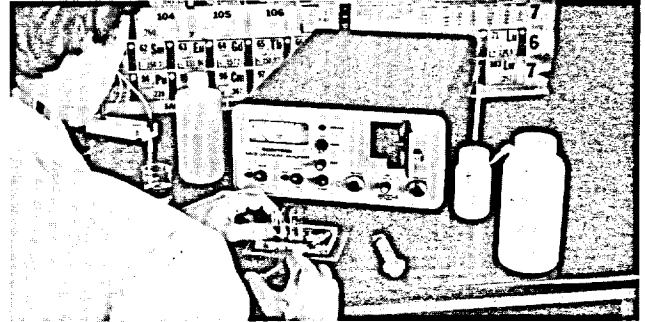
**Magnetics:** Scintrex has been producing magnetometers since the late 1940's, and pioneered in the development of the electronic magnetometer in 1961. These instruments are used, in ground and airborne applications, for mineral and petroleum exploration, geological mapping, and for geophysical research.



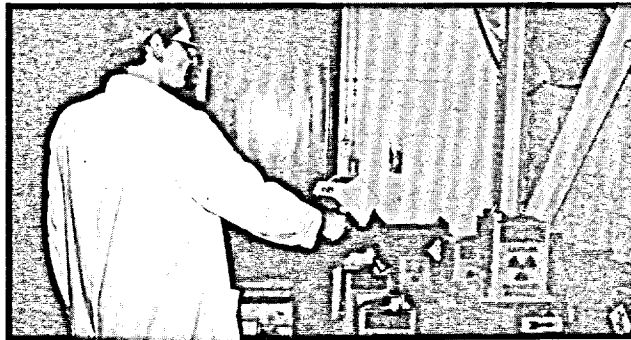
The portable Scintrex AAZ-2 Atomic Absorption Spectrophotometer analyzes trace amounts of metal in many materials.

**Electromagnetics:** The company manufactures electromagnetic equipment for base metal surveying from the air and on the ground. A successful example of the use of Scintrex's Tridem Airborne Electromagnetic System was its installation in a De Havilland Twin Otter for resource surveying in the People's Republic of China.

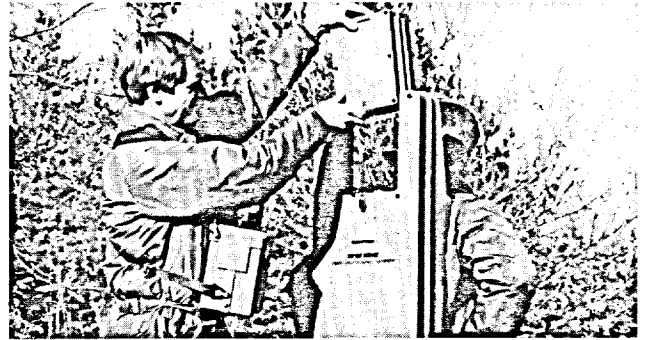
Scientists and engineers need rugged, reliable and in many applications, portable electronic equipment to measure in extreme conditions. Scintrex's specialty is developing instruments which meet these demands.



Another rugged, on-site system is the Scintrex UA-3 Uranium Analyzer.



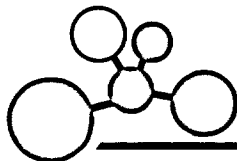
This hand-held dosimeter measures high levels of radiation in areas such as nuclear power plants.



Mineral explorationists need rugged, portable, yet sensitive instruments such as the SE-88 Electromagnetic System.



Installed in a De Havilland Twin Otter, Scintrex's Tridem Electromagnetic System is flown for multi resource mapping.



# Syndel Laboratories Ltd.

Syndel Laboratories Ltd. is one of the only manufacturers of research grade chemicals in Canada. The product line consists of a variety of organic chemicals and biochemicals, both extracted and synthesized. The company was established in 1977, and now enjoys an international market for its products, with regular sales in the United States, Europe and Asia, as well as in Canada.

To accommodate this wide market distribution, sister companies Syndel Biochemicals Ltd. and Syndel Biochemicals (U.K.) Ltd., have taken over the marketing of the Laboratories' products. Syndel Biochemicals Ltd. is responsible for marketing in North America and Asia, and Syndel Biochemicals (U.K.) Ltd. is responsible for the European market. Syndel Biochemicals (U.K.) Ltd. is located in Northampton, Great Britain, Telex number 312646 Parksy G. Syndel Biochemicals Ltd. is located at the same address as Syndel Laboratories Ltd.

Syndel Laboratories Ltd. produces many chemicals used mainly for diagnostic nuclear medicine, university research, human disease treatment and aquaculture. Syndel's areas of activity include synthetic chemicals, natural source products, aquaculture biochemicals, custom syntheses, as well as doing contract research and assays.

To support these areas of activity, the staff of Syndel Laboratories consists of experienced chemists, biochemists, biologists, and zoologists as well as marketing personnel with international background. In addition, Syndel has access to many other levels of expertise as required.

Syndel Laboratories has extensive experience and the facilities to perform a wide range of reactions and extractive techniques. The chemical manufacturing laboratory includes complete distillation, filtration and reaction facilities capable of handling up to several hundred litres at a time. All syntheses are conducted in glass or glass lined equipment, and reaction conditions from  $-70^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$ , and from 760 mmHg to 10 mmHg are available.

The company is also particularly well suited for the preparation of temperature sensitive biological compounds. The biochemical laboratory has a wide range of extraction, separation and purification capabilities. This

laboratory has an array of chromatographic columns, both refrigerated ( $4^{\circ}\text{C}$ ) and room temperature ( $20^{\circ}\text{C}$ ), a high pressure liquid chromatograph, lyophilizing facilities, and analytical equipment such as electrophoresis units, a UV-visible spectrophotometer, a liquid scintillation counter and other necessary laboratory equipment.

In keeping with Syndel Laboratories Ltd.'s commitment to a high technology manufacturing industry, data processing equipment has been incorporated into the company.

The wide experience of Syndel Laboratories Ltd. allows these facilities to be adapted to accommodate changing concepts and requirements as well as carry on research projects to continue to broaden its abilities.

A full line of scintillation fluors and other liquid scintillation counting products, such as PPO, POPOP, Dimethyl POPOP, Bis MSB, Hyamine hydroxide and liquid scintillation cocktails is presently being manufactured. Syndel Laboratories Ltd. is the only Canadian manufacturer of the liquid scintillation fluors and is one of four in North America.

A wide range of biochemically useful compounds such as hydroxyurea, Ellman's reagent, O-benzyl-hydroxylamine hydrochloride, and synthetic peptides are also produced. Syndel Laboratories also has available a number of products important in current genetic research. These include nucleosides, coupling agents, and protecting agents.

Most of the synthetic procedures used by Syndel Laboratories are multi-stepped sequences involving a wide variety of reactions. In addition to Syndel's regular product line, synthesis of custom compounds is done on a regular basis.

Syndel Laboratories Ltd. has the expertise to extract and purify a number of naturally occurring compounds from plant and animal matter. Some of these products are protamine sulfate, DNA, and emetine hydrochloride. Syndel is also a unique source of fresh frozen and lyophilized non-mammalian organs.

Many countries are turning to aquaculture as a method of increasing the amount of protein available as food. Syndel Laboratories produces an ever-widening group of biochemicals for this developing aquaculture market. These products fit into the two areas of major concern to aquaculturists:

1. Disease Control
2. Seed Development

Many of the popular disease control agents are available from Syndel. These include bactericides, fungicides and parasiticides such as Ovadine (a buffered solution of Povidone-iodine containing 1% active iodine), oxytetracycline hydrochloride, malachite green and several sulfa drugs. Syndel Laboratories also produces tricaine methanesulphonate, a popular anaesthetic for cold blooded animals, as well as other anaesthetics such as 2-phenoxyethanol and quinaldine.

Syndel Laboratories has available several hormone

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## SYNDEL LABORATORIES LTD.

8879 Selkirk Street  
Vancouver, B.C.  
V6P 4J6

Telephone: (604) 266-7131  
Telex: 04-507726 SYNDEL VCR

President  
J.M. (Monty) Little



preparations. These include purified and crude salmon pituitary hormones and a powerful leuteinizing hormone-releasing hormone analogue, both important aquaculture tools for inducing maturation and spawning in fish. Syndel is the only commercial producer of these salmon pituitary hormones. At present, Syndel Laboratories is also involved in commercializing fish sex control technology. Syndel considers that it is important to the field of aquaculture

for companies to remain open to current research and ideas in this field.

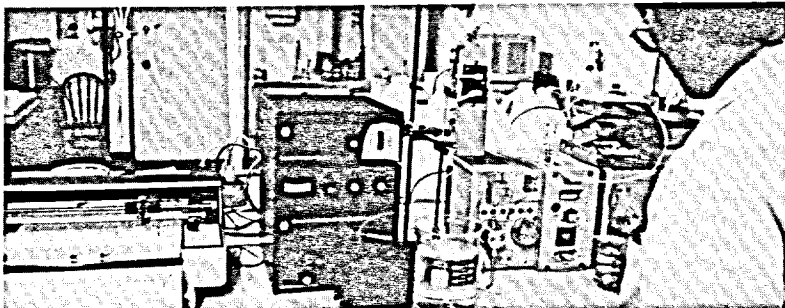
As well as maintaining its manufacturing profile, Syndel Laboratories Ltd. has taken part in a wide variety of research and development projects, many of which have resulted in new products to add to Syndel's company line. Many of these projects have been sponsored by various government departments, private companies, or individuals.

#### SYNDEL PRODUCTS:

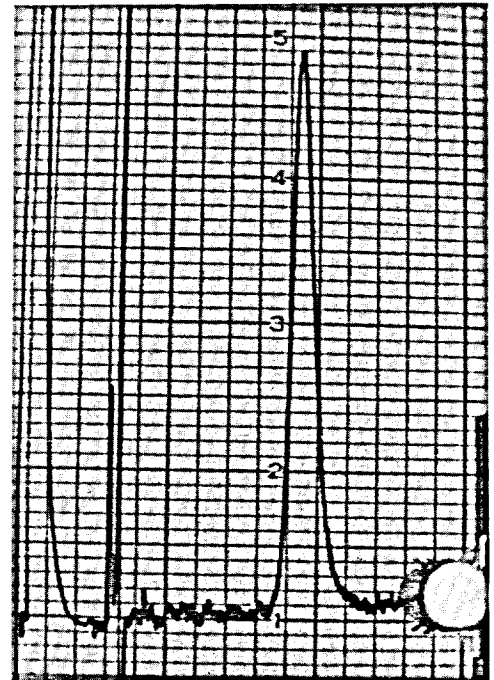
PRODUCT	USES	PRODUCT	USES
Scintillation Fluors PPO, Dimethyl POPOP, DPS, $\alpha$ NPO, TPB, BisMSB POPOP,	<ul style="list-style-type: none"> <li>• Liquid and plastic scintillation</li> <li>• Cosmic ray detection</li> </ul>	Acquaculture Products. Crude and purified salmon hormones, Leutinizing/ Releasing hormones, Anesthetics, Fungicides, Parasiticides, Bactericides, Steroids, Cryopreservation media.	<ul style="list-style-type: none"> <li>• Anesthesia</li> <li>• Disease control</li> <li>• Induced maturation</li> <li>• Induced spawning</li> <li>• Experimental research</li> <li>• Sex control</li> <li>• Sperm preservation</li> </ul>
Reagent Grade Analytical Compounds. Indicators	<ul style="list-style-type: none"> <li>• Qualitative and quantitative analyses.</li> </ul>	Nucleotide Reagents	<ul style="list-style-type: none"> <li>• Protected nucleosides</li> <li>• Deblocking agents</li> <li>• Coupling agents</li> <li>• Phosphorylating agents</li> </ul>
Therapeutic Compounds Nitrogen compounds, Phosphono compounds.	<ul style="list-style-type: none"> <li>• Anti-neoplastics</li> <li>• Vasodilators</li> <li>• Anti-virals</li> </ul>	Speciality Miscellaneous Compounds	<ul style="list-style-type: none"> <li>• Varied</li> </ul>
Peptides	<ul style="list-style-type: none"> <li>• Research</li> </ul>		



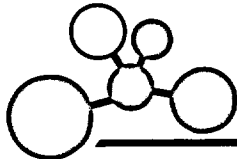
Head office building of Syndel Laboratories Ltd. on Selkirk Street in Vancouver.



Continual research guarantees the purity of our products.



This quality control analysis of an LHRH-analogue peptide by HPLC shows a single peak.



# Waters (Canada) Limited

Waters Scientific was formed in 1977 as the Canadian subsidiary of Waters Associates, the world leader in High Pressure Liquid Chromatography. Since then, Waters Scientific has not only been the largest supplier of HPLC equipment and supplies, but has endeavoured to establish itself as the Canadian experts in the field of HPLC. Success is founded in their ability to solve chemical analysis and purification problems. While most components are presently manufactured out of the country, full assembly and testing is carried out in Canada. Support does not stop there. They also provide the chromatographic chemicals, supplies, comprehensive application support, responsive service and educational training to solve your analytical & purification problems.

## HPLC INSTRUMENTATION

**Modular Instruments:** Basic research or changing needs often necessitate altering the configuration of the HPLC. All of Waters equipment is available in a modular design for stand-alone use. Injectors (both manual and automatic), Pumps (microflow, analytical & preparative), Detectors (UV, Fluorescence and Refractive Index), Data Systems and Controllers can be chosen matched to the customers needs.

**Dedicated Instruments:** Waters, as the innovative leader in HPLC has recently introduced various dedicated instruments. Among these are; the Sugar Analyzer I, an instrument optimized for rapid economical analyses of sugars and processing liquors; an Amino Acid Analyzer which permits automated operation in both ion exchange and reverse phase modes including exclusive automatic derivitization technology for low picomole sensitivity; the Hydrocarbon Group

## WATERS (CANADA) LIMITED

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Vancouver (604) 224-9577

Winnipeg (204) 895-2012

Calgary (403) 236-3046

Edmonton (403) 429-2359

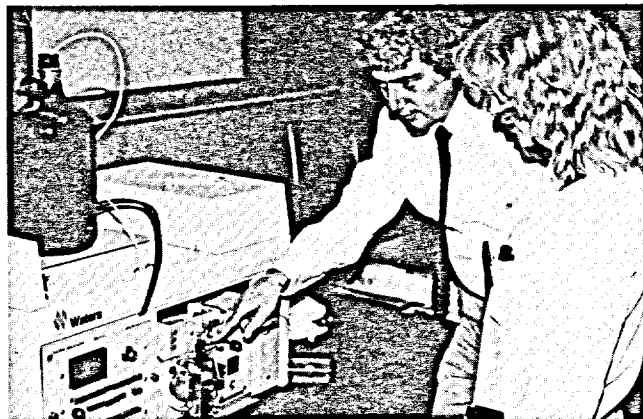
Telex: 06-968886

### President

James A. Prendergast

### Applications Laboratory Manager

Dr. Aaron Wolkoff



*Practical courses in HPLC applications and preventative maintenance*

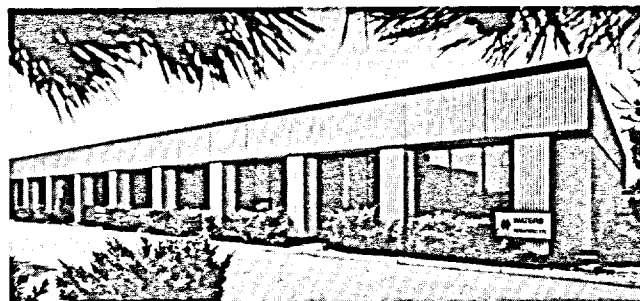
Analyzer for rapid class fractionation of hydrocarbon group in crude oils, the Prep 500A Liquid Chromatograph for purification of gram quantities and the 150C for the high temperature analysis of polymers.

## CHROMATOGRAPHIC CHEMICAL PRODUCTS & ACCESSORIES

Waters commitment to quality and reliability extends to a broad range of chemicals and supplies. They understand the importance of quality chemical products and supplies. For instance, to be successful not only does one need good instrumentation but quality columns (and columns of a consistent quality are necessary). To ensure that expensive instrumentation is not functioning due to lack of supplies, they maintain the largest stock of chromatography supplies & parts in Canada (see Pronto Service) eg. columns, paired-ion reagents, bulk packings, sample cleanup devices. In addition, some custom packing of columns is available.

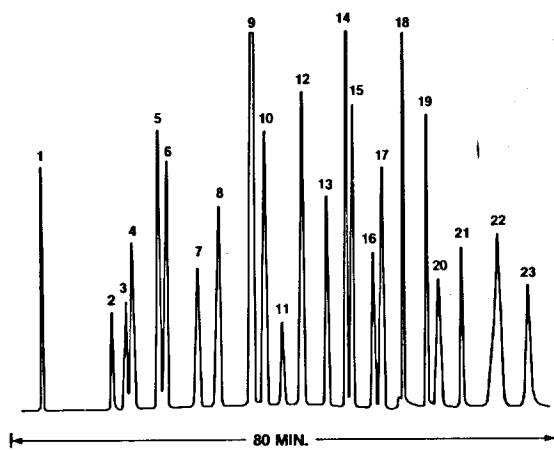
## PROBLEM SOLVING

Solving chemical analysis and purification problems takes a lot more than just quality instrumentation. It takes a knowledge of chemistry and the ability to apply it in the form of problem solving chromatographic



*Shown above is the Mississauga (Toronto) facility conveniently located close to Toronto International Airport. This location houses a fully equipped applications laboratory as well as servicing warehouse, ordering and shipping facilities.*

### Ion Exchange Separation of Hydrolyzate Amino Acids



The ion exchange analysis of hydrolyzate amino acids employs a pH gradient with post column fluorescent derivatization. Routine sensitivities of 100 picomoles can be readily achieved in typical laboratory situations.

- |                         |                    |
|-------------------------|--------------------|
| 1. Cysteic Acid         | 12. Valine         |
| 2. Methionine Sulfoxide | 13. Methionine     |
| 3. Hydroxy Proline      | 14. Isoleucine     |
| 4. Aspartic Acid        | 15. Leucine        |
| 5. Threonine            | 16. Tyrosine       |
| 6. Serine               | 17. Phenylalanine  |
| 7. Glutamic Acid        | 18. Histidine      |
| 8. Proline              | 19. Hydroxy Lysine |
| 9. Glycine              | 20. Tryptophan     |
| 10. Alanine             | 21. Lysine         |
| 11. Cystine             | 22. Ammonia        |
|                         | 23. Arginine       |

know-how. Waters has both in abundance.

Every Waters customer is supported by a team of chromatography experts, consisting of a technical representative, a field service engineer, and laboratory application specialists. Their combined expertise and experience in HPLC are at your fingertips to solve your special application problems.

*Waters maintains a fully operational applications laboratory at their Toronto offices.* The purpose of this lab is threefold: a) chromatographing customers samples to ensure the proper instrument and configuration is purchased b) Customer support in the form of running samples for current users of Waters instrumentation c) basic research in High Performance Liquid Chromatography.

### RESPONSIVE SERVICE

An integral part of Waters' customer support program is responsive, quality service from a team of experienced professionals. The field service specialists are specifically trained in the operation and maintenance of all

liquid chromatography instrumentation and are available to respond to your service needs quickly and effectively.

*Waters maintains the largest service support group dedicated solely to Liquid Chromatography in Canada.* Replacement, spares and parts are stocked not only in the main Toronto office, but at regional service centres across the country. Typically they can provide 24 hour service. Service options include in-lab demand service, service plans and contracts. Instruments can often be repaired in-house the same day & service loaners are available.

In addition, your service needs can be rapidly met with a call to in-house service experts. Telephone instructions from these experts can often get you up and running that same day.

### IN-DEPTH TRAINING AND EDUCATION

Liquid Chromatography is a powerful separations tool and may be used on a routine basis or for specific research applications, however the full capability of an LC may go unrealized unless an earnest effort is made to achieve a comprehensive understanding of exactly what LC is, how it works, and how it can be used.

Waters ongoing program of customer education provides an excellent opportunity to learn. Waters conducts, on a routine basis, comprehensive four-day customer training schools in Toronto or short-course schools in various cities throughout Canada. These schools provide users with the scope and depth of knowledge needed to solve both immediate and future LC separations problems.

Schools are conducted also on specialized micro-processor controlled equipment. In addition, Waters periodically holds in-house schools and seminars across Canada.

### PRONTO SERVICE

Why wait for 30-60 days to make a 10 minute separation. *Fast delivery is guaranteed or you get \$100 off your next column purchase.* Waters is Canada's largest supplier of HPLC equipment and supplies, stocking most parts right here in Canada. Therefore, they can now offer this unique service: If you specify PRONTO SERVICE when placing your column order, they guarantee to ship within 24 hours (or the next working day), or will give you \$100 credit toward your next column purchase. This service is available on most of the commonly used columns. Longer shipping time may be required for quantities totalling more than 5 of any individual item, or for columns that are specially packed.

Waters, the Canadian Liquid Chromatography people, is the only company that has HPLC as it's only business right in Canada. We invite your inquiries as to your interest in HPLC instrumentation, supplies and general application needs.

**RESEARCH AND LABORATORY PRODUCTS:**  
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