



WASHERS - 8 Styles - 2000 Sizes
www.microplastics.com

Info Card 30

Our Best IDEAS Are Full Of Holes

Got a design? We can perforate it.

Nobody's better at turning your design into perforated perfection than H&K. Round holes, square holes, or decorative patterns with or without blank areas? Yeah, we do that. Stainless steel, alloys, plastics? Done! Original dies to meet your exact specifications? No problem. In 120 years, we've made millions of holes... each and every one right where it belongs.



Harrington & King PERFORATING COMPANY

www.hkperf.com
Midwest/West 800/621-3869 • South 800/251-6026
East 800/638-1801 • Canada 877/626-1400

Info Card 31

Medical Engineering

Sounds good at Ryerson University

By Mark Sunderland

If there is one word in our medical word bank that evokes terror, it is probably "cancer." Everyone knows it and many people are personally acquainted with it. It can strike the rich, the poor, the young and the old – and even those who claim to be a picture of health can suddenly discover that the malicious little crab has been secretly clawing at their body parts.

Canada's leading cancer research is exemplified by Dr. Michael Kolios (right), Associate Professor of Physics at Ryerson University in Toronto (ryerson.ca), and his research relating to the medical applications of ultrasound technology.

Ultrasound produces high frequency sound waves that are bounced off internal tissues or organs to create echoes that can reveal their substance. Patterns of the echoes are transmitted to the monitor of an ultrasound machine to form images (sonograms) of the matter that create the echoes.

Ultrasound is already known as a medical tool and because there is no ionizing radiation generated by ultrasound it is the preferred image modality for diagnosis and monitoring of pregnant women and their unborn.

The research now is in the development of new applications and how the collected data can be analyzed to enhance the spectrum of diagnosis.

To support this research, Dr. Kolios has received three grants totaling more than \$500,000 from Canada's major funding agencies for health and science research in the past year. Cross-appointed with the University of Toronto's Medical Biophysics Department, Dr. Kolios has already made an impressive contribution to



medical physics. He has published more than sixty abstracts and papers relating to ultrasound.

Collaboration for the new of research will include co-applicants for the funding and Ryerson Professors of physics Drs. Bill Whelan and Carl Kumaradas, and Dr. Gregory Czarnota, a radiation oncologist at the Sunnybrook Health Sciences Centre.

The thrust of the research will be to determine how ultrasound imaging can enhance the effectiveness of cancer treatments. To understand and correct the behavior of a cancerous tumor, an oncologist needs to know, in plain terms, how big it is, how hard it is and how fast it is developing. If this information can be collected quickly, accurately and non-invasively from a patient whose stamina for examination is already under par, the probability of effective therapy will be greatly enhanced.

A process to be explored involves the use of laser beams to produce a

more detailed ultrasound image of a tumor. Known as photo-acoustic imaging, laser beams can differentiate between types of soft tissue in the human body whereas conventional ultrasound images have only limited contrast. So the ability to sharpen the contrast by a non-invasive means as it relates to the characteristics of a cancerous tumor will have a significant impact on treatment.

Dr. Kolios is currently working with researchers at Princess Margaret Hospital and Sunnybrook Hospital to develop this method of monitoring apoptosis (cell death) in cancer patients. If it is developed successfully, it will be the first non-invasive tool to enable doctors to use ultrasound for checking the progress of cancer treatment without having to remove and analyze the cells.

Mark Sunderland is president, Biomedical Industry Group, Ottawa (mark@biomedgroup.com).

Ultrasound set to detect and fight cancer

If you found Medical Engineering interesting, please fill in Info Card 342.

It's the little things it counts...

The ParCon detects objects as small as .5mm



Pills. Seeds. Pins. Screws. Washers. You name it. The ParCon can count it. Quickly, too. A response time of 0.25mSec means even a tiny free falling object can be detected time after time.

Please call us for more information and a demonstration of the ParCon.

Baumer electric manufactures a wide range of precision sensing solutions.



4046 Mainway Drive, Burlington, Ontario, L7M 4B9
Phone: (905) 335 8444 Fax: (905) 335 8320
http://www.baumerelectric.ca


Info Card 32

Innovation

HANDYSCAN 3D

A new generation of laser scanner

Reverse engineering and inspection



Digitizing - Design - Prototyping
3d inspection - Multimedia
3d publishing - Museum - Orthosis

No expensive measurement arm, CMM or tracking device.
The completely portable, free standing, hand held scanner.

Agile Manufacturing, Inc. Handyscan 3D
www.agile-manufacturing.com www.handyscan3d.com
info@agile-manufacturing.com info@handyscan3d.com
Tel: (905) 852-0794 Tel: (418) 833-4446


Info Card 33

ROTEX®-GS & RADEX®-NC

Precision Zero-Backlash Couplings For Every Application

ROTEX®-GS is an economical, high-performance, zero-backlash coupling that can be "tuned" to your system requirements with a simple spider change.

RADEX®-NC is an ideal zero backlash servo disk coupling for heavy shock loads and high temperature applications.



<p>ROTEX®-GS</p> <p>ROTEX®-GS 6.0 Coupling</p> <ul style="list-style-type: none"> • LOW COST • 14 sizes ranging from 0.2Nm to 3,840Nm • Imperial and Metric Bores in stock • Vibration dampening / Up to 31,800 RPM • Great for Spindle & Servo Positioning drives 	<p>RADEX®-NC</p> <p>RADEX®-NC DK Coupling</p> <ul style="list-style-type: none"> • HIGH-STIFFNESS • Perfect for Servo Positioning drives • Maintenance free • Low-Inertia / Up to 20,000 RPM • Operates to 280°C
---	---

Custom designs and machining available. See our website to view the selection criteria for each coupling.

www.odg.com/ctr

ODG Ontario Drive & Gear Limited
3551 Bleams Road, New Hamburg
Ontario, Canada N3A 2J1
Phone: (519) 662-2840 ext. 217
Fax: (519) 662-2127
E-mail: info@odg.com

For advanced drive technology **KTR**

TECHNOLOGY · EXPERIENCE · RELIABILITY

Info Card 34