

OTD's Tech Transfer News

Volume 3, Issue 1 Fall 2007

First Quarter Activity



UMBC has several more issued patents to add to its portfolio. Congratulations to **M. An-**

janappa, MENG, for *High Speed Metal Drill Bit*, patent #7,237,986, and *Long-term Liquid Storage and Dispensing System*, #7,252,212; and **B. Cullum**, Chem./Biochem., for *Multilayered Surface-enhanced Raman Scattering Substrates*, patent #7,242,470, and *Surface Enhanced Raman Spectroscopy Nano-imaging Probe and Uses Therefor* #7,256,886.

OTD received 9 invention disclosures this quarter. Thank you to: **Y. Chen**, and **A. Guo**, CSEE, for *Cluster Node Design for a Degree of N Node in a Reconfigurable WDM Optical Network*; **M. Bustos**, **L. Host**, and **M. Jagdeo**, Biology, for *Trait Modulation Technology by Transcription Factor Ubiquity-*

lation; **M. Summers**, and **J. Saad**, Chem./Biochem., for *Structural Basis for Targeting HIV-1 Gag Proteins to the Plasma Membrane for Virus Assembly*; **R. Badugu**, **L. Tolosa**, and **G. Rao**, CAST, for *Polymer-based Fluorescence Sensors for Metal Ions*; **J. Bacmeister**, GEST, for *GEOS-5 GCM Modeling Software*; **N. McDonald**, Visual Arts, for *Greenhouse Software Game Engine*; **B. Arnold**, **L. Kelly**, and **A. Schill**, Chem./Biochem., for *BASE as a Method to Remotely Detect Vapors*; *Two-photon, Two-color Laser Induced Fluorescence*; **A. Joshi** and **M. Arora**, IFSM, for *Patient Education and Motivation Tool*; and **U. Tasch**, MENG, for *An Instrument that Measures 2D & 3D Ground Reaction Forces of 4 Legged Animals*.

Featured Technology

This quarter's featured technology is an issued patent, #6,055,078, by UMBC inventor **Yung Jui (Ray) Chen** of the CSEE Department.

This invention, *Real Time Wave-length Monitoring Circuit*, is a multi-channel wavelength monitoring circuit for monitoring Wave Division Multiplexing (WDM) communications networks.

The monitoring circuit monitors the full wavelength of an input signal by providing center offset inputs into a Phased Array Waveguide Grating (PAWG). By providing center offset inputs to a PAWG, the passband cross-over point can be changed optimizing a different dynamic range and wavelength resolution.

A PAWG has a first center wavelength offset input which permits the wavelength spacing between the passband peaks to be controlled, and

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Interview with a UMBC Inventor **Ramachandra Hosmane** is a Professor in the Chem/Biochem Dept.

Prof. Hosmane, tell us a little about yourself and your background.

I joined UMBC in 1982 as an Assistant Professor, was promoted to Associate Pro-

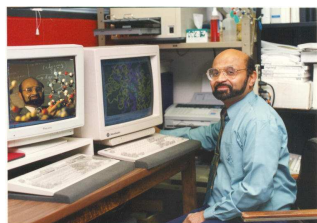


Photo by Tim Ford

fessor with tenure in 1986, and became a full Professor in 1994. Prior to joining UMBC, I did my postdoc work at U Illinois, and graduate work at U South Florida, where I earned my M.S., and Ph.D. degrees. My area of expertise lies in

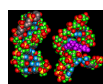
Synthetic Organic and Medicinal Chemistry.

When did you start your career in scientific research and in what area?

I started my research career in 1968, so I have nearly 40 years of research experience. I started doing research in heterocyclic chemistry. Most natural products including alkaloids and nucleic acid bases, dyes and drugs are heterocycles. So, the pharmaceutical industry is highly interested in our work.

Many people know of your work on the artificial blood project, but isn't your major area of research ring-expanded

nucleosides and nucleotides?



Yes, it is. These novel ring-expanded nucleoside/nucleotide analogues, designed in our lab, have been found to be potent, broad-spectrum anti-cancer and antiviral agents with little, if any, toxicity to the host. Our current focus is on prostate, lung, and breast cancers, as well as on West Nile, Hepatitis B, and Hepatitis C viruses.

Three of your inventions are licensed to two different companies. What has been your experience working with these companies?

My experience working with

these companies is great! Nabi Biopharmaceuticals licensed two of my patents on Ring-expanded Nucleosides and Nucleotides, and has been providing me with unrestricted research grants since 1997, and annual royalties. The company Novadaq, licensed the technology on our synthesis of an analytically pure green dye for use in eye surgery, giving me seed money to perform research on the project, as well as some stock options.

What is the Hosmane Group? What is your role?
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My group normally consists of 10-14 members. I cur-



rently have six Ph.D. students, one postdoc (with another joining this fall), plus two undergraduate students. I have been supporting all of my students out of my grants for nearly 20 years. So far, 20 students (13 Ph.D.'s and 7 M.S.'s) have graduated from my lab. More than 100 undergraduate students and 18 postdocs, visiting professors, or scientists have worked in my group.

What types of projects do students work on in your lab?

Currently my two main projects, with several sub-projects in each, include the synthesis of antiviral/ anticancer compounds based on REN skeleton, and artificial blood based on human hemoglobins.

Where do your graduate students find jobs after graduate school?

My graduate students and postdocs mostly go to pharmaceutical industries, and a few pursue jobs in academia.

Do you have any suggestions regarding the best ways to support scientific research?

I believe every graduate student, after the first mandatory two semesters of serving as a Teaching Assistant, should be supported as Re-

search Assistants on faculty grants, once the student chooses the advisor.

What makes you feel most proud as a professor and scientist?

Most graduate students, when they enter my lab, are experimentally very naïve and inexperienced in spite of the fact they have had ample coursework. My pleasure comes from turning them into proficient synthetic and medicinal chemists, as good as any, when they leave my lab.

Do you have any words of wisdom for student researchers?

Yes, many! Work hard, it pays. No matter how smart you are you cannot

succeed in research without dedication and hard work.

Do not get discouraged. Failure is the pillar of success.

Make the best use of the experience of your mentor. If you have a problem, make an appointment with your advisor.

Critically analyze everything. Do your own independent and critical analysis.

Do not make any excuses. Just do the work without expecting any returns so that when something good happens you have every reason to celebrate.

Never try to taste, smell or inhale anything in the lab, and always wear your gloves and goggles!

Featured Technology cont'd

provides an easier control of the crossover point. This circuit is capable of fully using a passband width above a broadband background noise such that a controllable wavelength range is increased. With this circuit it is possible to adjust the wavelength measurement resolution

according to particular system requirements.

You can view this entire patent at uspto.gov.

Prof. Ray Chen
CSEE Dept.



The Seven Innovation Rules*

1. Exert strong leadership on innovation direction and decisions
2. Integrate innovation into the business mentality
3. Match innovation to company strategy
4. Manage natural tension between creativity and value
5. Neutralize organization antibodies
6. Cultivate an innovation network beyond the organization
7. Create the right metrics and rewards for innovation

*Davilla, Epstein and Shelton, "Making Innovation Work" (Pearson Education, Inc. 2006)

Wacky Patent

United States Patent

Branko Kordic

Pizza Pie with Concentric Rings of Crust

Patent Number: 5,508,049

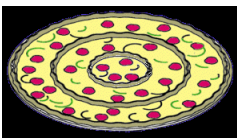
Date of Patent: April 16, 1996

Abstract

A pizza mold for forming pizza dough includes a frame having a peripheral configuration which

matches the desired peripheral configuration of the dough, e.g., round, rectangular or square. One surface

of the frame includes a plurality of concentric cavities formed at predetermined radial distances from the geometric axis of the frame, with one concentric cavity being formed adjacent the pe-



ripheral edge of the frame. The frame is designed to be brought into contact with the dough and the dough is rolled across the surface of the frame with the dough being formed in the concentric cavities. When the pizza mold is removed the cavities produce raised edges of the dough on the surface of the dough.

Contact Information:

Office of Technology Development

5523 Research Park Dr.
Baltimore, MD 21228

Stephen Auvil, Director
410.455.3481

Wendy Martin, Manager
410.455.3658

Jeanne Stockwell, Coordinator, Editor
410.455.1414

Fax 410.455.8750