

CoHemis...update

Overcoming through cooperation

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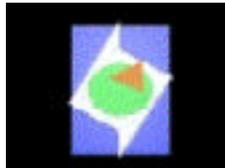
The current issue of the *International Journal of Environmentally Conscious Design and Manufacturing*, official journal of the Environmentally Conscious Design and Manufacturing International Conference and Society, is dedicated to the topic of Environmentally Conscious Design and Manufacturing in Latin America. Dr. Jorge I. Velez-Arocho, Associate Director of the CoHemis Center, served as its guest editor. CoHemis, upon the request

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UNIVERSIDAD DE PIURA



INSTITUTO GEOGRÁFICO AGUSTIN CODAZZI:



UNIQ
UNIVERSITE QUISQUEYA



Escola Politécnica da
Universidade de São Paulo

CoHemis Consortium's Growth Accelerates

Four universities and a remote sensing center join the consortium

The CoHemis Consortium has grown at an unprecedented rate during the last few months, powered by the continuous contacts established by the CoHemis Center's directors with the Latin American academic community. A remote sensing research and

education center and various universities have already joined, and a well-known hemispheric research center is on its way to becoming an additional member.

The *Escola Politécnica da Universidade de São Paulo*, one of the most well-financed and prestigious higher education facilities in Latin America, has just joined the Consortium through an agreement signed by UPRM's acting chancellor, Prof. Antonio

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Third Caterpillar/CoHemis Course Series a Success

As a result Bolivia's main landfills were evaluated

In April, July and August, 1997 Caterpillar Americas, the CoHemis Hemispheric Cooperation Center of the University of Puerto Rico and its Consortium, the UPR-Mayagüez Campus, BFI-International, five Caterpillar dealers in Latin America, three Latin American universities (UNIANDES, Universidade do Sao Paulo, and Universidad Nacional de Asunción), one professional engineering organization (Federación Mexicana de Ingeniería Sanitaria y Ambiental), and two national science and technology entities (CONCYTEC-Peru and CONACYT-Bolivia) partnered to present the Third Caterpillar-

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Manufacturing Engineering Education Patent Seminar
Applied Social Science Research Collaboration for Course in Mexico
Technology Assessment and Foresight
Global Change Research in Caribbean

CoHemis Center collaborates with environmental course in Mexico

Offered by Dr. José Centeno

Through the collaboration of the CoHemis Center, the Mexican Federation of Sanitary and Environmental Engineering (FEMISCA) and UNAM's Institute of Engineering presented the course "Toxic Trace Elements and Metals: Impacts on Environmental Quality and Health". It took place on December 3-5 at the Rosenblert Auditorium of the Institute at UNAM, the National Autonomous University of Mexico, a member of the CoHemis Consortium.

The course was taught by Dr. José A. Centeno, a distinguished Puerto Rican researcher from AFIP, the Armed Forces Institute of Pathology, and Dr. Robert Finkelman, from the U.S. Geological Survey, complemented by Dr. Mario E. Cebrian and Dr. Luz María del Razo-Jiménez, both from the Environmental Toxicology Section of the Research and Advanced Studies Center of the National Polytechnic Institute (IPN), and by Dr. Patricia Ostrosky-Wegman, from UNAM's Biomedical Research Institute.

The following main topics were discussed: trace elements and toxic metals in the environment and health; workplace and environmental exposure to trace elements and toxic metals; environmental and clinical aspects of metal toxicology; and methods and analytical techniques for the study of trace elements and toxic metals in environmental and biological samples. These topics and their relevance to Mexican reality captured the interest of the attending public, composed by physicians, surgeons, chemists, biologists, and other health professionals and academics.

The course was organized after the CoHemis Center, acting upon the request of UNAM's Dr. Adalberto Noyola, president of FEMISCA, contacted Dr. Centeno, who in turn made possible the participation of Dr. Finkelman. Dr. Noyola had learned about Dr. Centeno in a previous issue of *CoHemis... update*.

Third Caterpillar series...

CoHemis Seminar Series on Landfill Waste Disposal Technology. This series was coordinated by Dr. Luis Pumarada-O'Neill, Director of the CoHemis Center, and Eng. Carlos Caetano from Caterpillar Americas.

The first seminar of 1997 took place in Sao Paulo in April. It was delivered in Portuguese-oriented Spanish by Dr. Emir Macari and Eng. Javier Ruiz. The course's transparencies were translated into Portuguese by Dr. Roberto Azevedo, from *Universidade Federal do Viçosa*. A part of them was published in November, 1997 as an article in the Brazilian journal *Saneamento Ambiental*.

Dr. Roque Román, an experienced environmental engineering consultant and a professor from the UPR-Mayagüez Department of Civil Engineering, presented the topics landfill design, monitoring, construction and closure in Mexico City, Lima and Bogotá. Prior to these seminars, Dr. Roque Román, sponsored by Caterpillar, visited three Peruvian landfill operations, which proved very useful for his subsequent presentations. Dr. Emir Macari, a geotechnical engineering professor and researcher from Georgia Tech, a CoHemis Consortium member, presented the same topics in Asunción and La Paz.

BFI International contributed by sending Eng. Mark Lowrey, its Vice President for Business Development, as an instructor to Mexico City, Bogotá and Lima. To Asunción and La Paz the firm sent its consultant Mr. Joseph W. Johnston. The above instructors, who delivered their presentations in Spanish, were complemented by a team of Caterpillar experts who presented equipment selection criteria. The six seminars were attended by a total of approximately 400 participants.

Dr. Luis Pumarada took advantage of this opportunity to make contacts with the academic and scientific communities and US embassy agencies in the countries visited. Such contacts strengthen the position of CoHemis/UPR in the hemisphere and its capacity to be a more effective organizer of short courses abroad.

As a result of the La Paz seminar,



Caterpillar Inc. and Caterpillar Americas demonstrate their concern for health, safety, and environment in our hemisphere.

Bolivia's Association of City Sanitation Entities, which is funded by Germany's technical aid agency (GTZ), invited BFI's John W. Johnston to go back to the country with all expenses paid on October 14-29. As a result, he delivered a one-day seminar at the city of Santa Cruz and visited and evaluated waste disposal sites at the countries' nine largest cities. Dr. Luis Pumarada was present in the seminar and also met with the president of the Bolivian Senate's committee in charge of environment. His trip was sponsored by the US State Department's USIS - Bolivian office. In the meeting above, he emphasized UPRM/CoHemis capabilities to deliver training and education in environmental matters.

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UPRM's Satellite Information Lab Enhanced

The Space Information Laboratory (SIL) of the NASA-funded UPRM Tropical Center for Earth and Space Studies, aims to provide images and raw data from several orbiting satellites to the scientific community. The facility currently houses a TeraScan HRPT reception system which schedules, acquires and processes data from NOAA-12, NOAA-14, and Orbview-2 satellites. More than 2000 passes have been received and stored in a year of operation.

The antenna system consists of a 1.2m diameter parabolic antenna enclosed in a radome, and a 4-foot high steel pedestal. It is located on the highest roof of the UPRM campus, which makes possible the acquisition of data at very low angles in all directions. The antenna receives in the L-Band and down-converts it to 137MHz after an amplification stage.

Several upgrades have been made to the original system. A CD-writer enables raw or processed AVHRR data to be distributed in CD-ROMs. After registering the station as an official Orbview-2 receiving station, new software was installed to schedule, track and process data from this satellite.

Data collected by SIL has been used by different departments and universities. AVHRR data was used to study the volcanic cloud produced by the volcanic eruption in Monserrat Island. UPRM researchers are studying phytoplankton using Orbview-2 images. The SIL has supplied AVHRR data for research on compression algorithms and for TOVS (Tiros Operational Vertical Sounder) processing.

SIL aims at becoming the most important and technically advanced satellite receiving station in the Caribbean. A Synthetic Aperture Radar station is planned for next June. SAR is especially useful for cartography, surface deformation detection, glacier monitoring, crop production forecasting, forest cover mapping, ocean wave spectra, urban planning, coastal surveillance (erosion), and monitoring disasters such as forest fires, floods, and oil spills.

On the other hand, UPRM's SIL will serve as the primary station for John Hopkins University's FUSE project. A \$2,000,000 system will connect the FUSE satellite and JHU's Satellite Control Station. FUSE, a PI-class NASA mission, will explore the Universe through high-resolution spectroscopy at far ultraviolet wavelength to gather data related to the origin of the Universe. An optic fiber connection from the SIL to the Campus T1 is planned. This will give the SIL the capability to handle worldwide requests for Caribbean data. The TeraScan, SAR and FUSE stations will provide UPRM students the opportunity of hands-on experience in managing satellite ground stations.

CoHemis organizes a Seminar on Patents and Trademarks



The Patent Seminar presenters and sponsors, from left to right: Robert Gavin, Luz Leyda Vega, John Ryznic, Mariluz Frontera, Manuel Gómez, Benita Rohm, Raphael Monsanto, Franklyn Irizarry, and Víctor Rivera.

The CoHemis Center and the Patent and Trademark Library (PTDL) of the University of Puerto Rico at Mayagüez hosted a Seminar on Patent Law from November 20 to 21, 1997. More than fifty researchers, inventors, entrepreneurs, and idea developers were in attendance for the occasion.

The seminar was sponsored by Rohm & Monsanto, Michigan Transtech, the Office of the President of the University of Puerto Rico, the Office of the Chancellor of UPRM, and the UPRM College of Business Administration. It was opened and addressed by Dr. Manuel Gómez, UPR's Vice President for Research and Academic Affairs. In his address, he stressed the importance of activities such as this one, particularly at a time when the University is in the process of implementing its strategic plan in the areas of research and development.

Puerto Rican patent attorney Raphael A. Monsanto led the seminar. He is a partner in a Detroit law firm, Rohm & Monsanto. Mr. Monsanto's practice has focused on federal litigation, patents, trademarks, copyrights and trade secret matters. He has been a counselor for corporate clients in the valuation of intellectual property assets.

Other presenters were Benita J. Rohm, Esq., a specialist in chemical and pharmaceutical inventions, and Robert E. Gavin, Esq., President of the Michigan

Transtech Corporation. Mr. John Ryznic, former patent examiner with the US Patent and Trademark Office (PTO) and now Coordinator of the Patent Program of the University of Puerto Rico, discussed the university's policies.

Among the topics covered were: what is a patent, what is the patent system, different types of inventions, what is a copyright, and how to market new inventions. As part of the seminar, Prof. Franklyn Irizarry, PTDL librarian, conducted a patent workshop in the UPRM's Patent and Trademark Library. This workshop provided the participants the opportunity to practice patent-search strategies and techniques and to become familiar with the facilities and resources at Mayagüez.

The quality and caliber of the presentations were superb in every respect and enjoyed by all. The support provided by the PTO's Patent and Trademark Depository Library Program (PTDLP) was very important in the organization of this activity. Ms. Mary Gómez, Manager and Program Analyst, served as the PTDLP liaison to this project. For more information about the UPRM Patent and Trademark Library, the only such facility in a Latin environment, you may visit its home page:

<http://mayaweb.upr.clu.edu/rum/campres/patlibra/ingl.htm>. •

Engineering Education Conference slated for Rio de Janeiro, Brazil

The upcoming International Conference on Engineering Education (ICEE '98) will be a forum for strengthening international collaboration in engineering education during the onset of global markets, increasingly open borders for commerce, and global interdependence. The conference will be held in Rio de Janeiro, Brazil, August 17-20, 1998. The general chair of ICEE '98 is Dr. Luis Scavarda do Carmo, Dean of the Center of Science and Technology of *Pontificia Universidade Católica do Rio de Janeiro*, a member of the CoHemis Consortium.

Dr. Jorge Iván Vélez-Arocho (CoHemis Co-Director), Dr. José L. Zayas, Associate Dean of Engineering, and Prof. Lueny Morell, of the UPRM Chemical Engineering Department, were invited to an early planning meeting for ICEE '98 which was organized during the recent "Frontiers in Education" Conference held in Pittsburgh. On that occasion, their proposal of holding a workshop on the implementation of the Learning Factory Model in engineering schools was accepted. This model was developed under the sponsorship of the US National Science Foundation by Penn State University, University of Washington (Seattle), University of Puerto Rico-Mayagüez, and

CoHemis Consortium:

Enhancing Manufacturing Engineering Education in Mexico's University of Guadalajara

CoHemis is collaborating in the organization of a joint project between the University of Guadalajara (UDG) and the University of Puerto Rico at Mayagüez under the sponsorship of Mexico's CONACYT, the US National Science Foundation, and the Vice-President of the University of Puerto Rico, Dr. Manuel Gómez.

Dr. Juan Villalvazo-Naranjo, head of the UDG Engineering Projects Department, has submitted a proposal to CONACYT to hold a workshop at UDG on the Manufacturing Engineering Education Partnership (MEEP) Experience. Faculty from the University of Puerto Rico at Mayagüez (UPRM): Prof. Lueny Morell, Dr. Miguel A. Torres, Dr. José L. Zayas-Castro, Dr. Jorge Iván Vélez-Arocho, Co-Director of CoHemis, and Dr. Jens Jorgensen from the University of Washington will conduct the workshop. One of the objectives of this workshop is to propitiate a network in

Sandia National Laboratories as part of the Manufacturing Engineering Education Partnership (See article in this same page). This workshop will be presented on August 15-16, prior to ICEE '98.

For additional information on ICEE '98 please contact:

www.ctc.puc-rio.br/icee-98/. •

Mexico to work on manufacturing engineering education. The Office of the Vice-President of UPR will be sponsoring travel costs for the UPRM professors and the University of Guadalajara. Currently there is a wide-reaching Memorandum of Understanding between CoHemis Consortium member UDG and the University of Puerto Rico which has facilitated exchanges of faculty and students between both institutions. •

CD-ROM aids Manufacturing Engineering Education

UPRM participates in its production

The Manufacturing Engineering Education Partnership (MEEP) has released a CD-ROM with materials for four courses: Product Dissection, Technology Based Entrepreneurship, Concurrent Engineering, and Process Quality Engineering. In addition, it includes a rapid prototyping module and a set of publications prepared by the faculty who participated in this project. These materials are also available via Internet at the following address: <http://lfserver.lf.psu.edu>. They were produced by the partnership participants.

MEEP was sponsored by the US National Science Foundation. Dr. Al Soyster, currently Dean of Engineering at Northeastern University and former chairperson of the Industrial Engineering Department at Penn State University, was its project director. Its participants included UPRM. Two outreach workshops on the Learning Factory Model developed by MEEP are being prepared for 1998, one at the University of Guadalajara in Mexico and another at the International Conference on Engineering Education (ICEE '98) which will be held in Rio de Janeiro (See articles in this page). •

UPRM fosters Ph.Ds. in Biology and Chemistry

The undergraduate students of the Chemistry and Biology departments of the University of Puerto Rico's Mayagüez Campus will have more opportunities for continuing their graduate studies. The Alfred P. Sloan Foundation recently assigned these departments \$135,000 to encourage undergraduate research and to prepare students for pursuing doctoral degrees.

These funds were obtained through a proposal presented by doctors Mildred Chaparro and Doris Ramírez, of the Biology and Chemistry departments respectively, with the purpose of increasing the number of college graduates that pursue graduate studies. In order to be admitted, students interested in the program must pass an interview

and possess a GPA of 3.0 or more (on a 4.0 scale). Besides, they must have finished their sophomore year of college and be fluent in English.

The Sloan program prepares students to study in the top universities of the United States and offers them the opportunity to travel during the Summer months to take research courses, attend conferences and seminars, and receive orientation about the GRE examination for graduate admissions. Among the doctoral specializations most sought after are biochemistry and molecular biology. Others are genetics, microbiology, immunology, industrial biotechnology, medical chemistry, and pharmacology. •

Workshop on the role of the Caribbean on Global Change Studies

In February 17-18, 1998 the Steering Committee for the Initiatives of the Caribbean Region of the Interamerican Institute on Global Change Research (IAI) met in the Dominican Republic. The event was sponsored by IAI-NSF, and was organized by the CoHemis Center and the Dominican member of its Consortium, the Technological Institute of Santo Domingo (INTEC), which also offered its facilities for the encounter. The meeting was a sequel to a workshop celebrated in 1997 at Mayagüez. The photo on the right portrays the meeting's attendees: Fernando Gilbes, UPRM researcher and project director; Jorge Vélez-Arocho, co-director of CoHemis; Daniel Comarazamy, INTEC; Ariel Azael, *Université Quisqueya*-Haiti; Gurmohan Kochlar, University of West Indies, Trinidad; Joseph Peterson and Ashfor James, both from St. Maarten. Zoila Gonzalez, from ONAPLAN, Dominican Republic, also attended but does not appear in the photo.



Center for Applied Social Science Research and its projects Several studies are related to Engineering projects

UPRM's Center for Applied Social Research (CISA) was created in 1991 to stimulate and facilitate applied social research, to provide research experiences and training to students of the Social Sciences and related Departments, and to promote interdisciplinary research. CISA is headed by Dr. Havidán Rodríguez, a demographer.

The Center also collaborates with researchers from the Faculty of Engineering, the Sea Grant Program, the American Psychology Association; the University of Puerto Rico's Rio Piedras Campus, the Cuban Health Ministry, and the Autonomous University of the Dominican Republic.

One of the Center's major ongoing projects is headed by researchers Felipe Luyanda from the UPRM Civil Engineering Department, and Jaime Gutiérrez, from the Social Sciences Department. They are conducting a "Detailed Study of the Qualitative and Quantitative Aspects Related to Light Urban Transportation Systems". The purpose of this study is to examine the essential components of urban railroad systems to evaluate and analyze the on-going development of Puerto Rico's Tren Urbano. The study examines the physical and engi-

neering aspects and social elements related to this type of transportation system. Among these, for example, are the political context of the project, citizens' participation, security, interest groups involved, the public transportation market, the type of consumer, and the opinions and coverage conveyed by the press regarding the project. Besides secondary sources and participation in expert seminars and panels, the researcher team has done informal interviews, questionnaires, and site visits. The project was begun in 1995 and is funded by the NSF for its entire duration of three years.

Another of the Center's projects is DESEA, "Developing Studies of Moods in the Caribbean". It is headed by UPRM's Janet Bonilla and Douglas Santos; Guillermo Bernal, from UPR-Rio Piedras; Isabel Louro, from the Cuban Health Ministry, and Clara Benedicto, from the Dominican Republic's Autonomous University of Santo Domingo.

DESEA seeks to promote and establish collaboration ties with academic and research centers in the Caribbean and the development of depression-related studies. Instruments such as self-reporting ques-

tionnaires regarding behavioral, cognitive, and effective indicators of depression were adapted to the Caribbean context. The questionnaires have been administered in clinical and non-clinical settings in Puerto Rico, Cuba, and the Dominican Republic. This project, which receives funding from ATLANTEA, also studies the effectiveness of the adapted instruments in terms of their reliability and validity.

The Center is currently involved in other projects, such as a project with HIV/AIDS patients; the Monument 2000 Project; the Public Opinion and Electoral Participation in Puerto Rico Project; Feminine Labor Force in the Puerto Rican Tuna Canneries; a study on codfish consumption in Puerto Rico; and the MOST program, among others.

These projects are funded by the US National Science Foundation, Ford Foundation, the Sea Grant Program, ATLANTEA (of the University of Puerto Rico), and UPRM's Faculty of Arts and Sciences and the UPRM Research and Development Center. More than 20 UPRM students are participating in CISA's projects. •

LATIN AMERICAN STUDENTS AT UPRM:

Marlene Vargas-Solleiro: a triumph of dedication in academics and athletics

In every issue, *CoHemis...update* includes an interview with one of the hundreds of Latin American graduate students in engineering or sciences at UPRM.

Armed with great pride and dedication, Mexican student Marlene Vargas-Solleiro graduated last December from the UPRM's Electrical Engineering Department with high honors. Rejecting tempting job offers from American firms in the area of communications, her field of specialization, she remained in this institution to complete an MS degree in Electrical Engineering. Born in Mexico City, Marlene pursued her BS Engineering degree in UPRM as a recipient of an athletic scholarship, and she is now funding her graduate studies with a teaching assistantship.

Marlene finished high school in one of the prestigious prep schools operated by UNAM, the National Autonomous University of Mexico, where she excelled in athletics as well as academics. She represented Mexico in Central American youth track competitions, an exposure which eventually brought her an athletic scholarship offer by the University of Puerto Rico at Mayagüez. At that time, she was beginning her first semester of Mechanical-Electrical Engineering studies at UNAM.

She was barely 17 years old when she arrived to Puerto Rico in January, 1993, to live away from home for the first time. Because of youth and homesickness, her first two years here were very difficult, and more than once she almost abandoned her studies at UPRM to head back home. It was thanks to the love, advice and support she received from her friends and some faculty members that she finally conquered her insecurity and nostalgia. However, at no point did she let down in her pursuit of excellence in both academics and athletics.

Among the successes that she reaped as she went through UPRM's excellent 5-year engineering program were undergraduate research projects, such as: implementation of algorithms for parallel processing in MPI and PVM; satellite image classification through the ERDAS-Imagine program; de-



velopment of an ACCESS data environment in MATLAB for the analysis of noise in power lines; and spectrum modulating techniques for digital cordless communications and their execution in MATLAB. The application of unit transforms for solving this last problem is Marlene's MS thesis proposal for her next semester under the direction of Dr. Domingo Rodríguez.

During her five years at the Bachelor's Degree level, Marlene trained and competed in track and field, not only in hurdle racing, which was her specialty in Mexico, but also representing UPRM in the heptathlon and decathlon events as well. The many hours that she spent daily in training and physical conditioning throughout the year earned her medals and prizes in collegiate competitions, including recognition as UPRM's most outstanding female athlete two years ago. In spite of these accomplishments, Marlene was not satisfied with her performance in hurdle racing, and she mentions not having reached her full potential as an athlete as the main complaint of her undergraduate career.

In her last two undergraduate Summers she undertook student internships in United

States laboratories, first in NASA-Langley at Hampton, Virginia, and second in General Electric's Medical Systems Lab at Milwaukee, Wisconsin. On both occasions Marlene felt as well or better prepared than fellow interns from top US universities. This opinion was shared by her employers at General Electric, who made her a very good permanent job offer. She rejected this offer, as well as several others made by US and Puerto Rican companies such as Kodak and EMC, to enter UPRM's graduate program in Electrical Engineering.

"Ever since I entered college I wanted to complete at least a Master's degree, and although some job offers included the opportunity of getting my master's while I worked, I preferred to stay in Mayagüez as a full-time student. Dr. Rodríguez is a top-level researcher and I was already well-adjusted here, so I chose to postpone working and accepted UPRM's assistantship offer," she explains as she sits in front of her computer in the Remote Sensing and Image Processing Laboratory. "As a graduate student and lab instructor, I have full trust and access to good facilities, and I take my courses with only six or seven other graduate students."

UPR's commitment to science, technology and internationalization is renovated and enhanced

The University of Puerto Rico is beginning this 1997-98 academic year with the commitment to strengthen three critical areas: science and technology, telecommunications, and internationalization.

Dr. Norman Maldonado emphasized that these plans go hand in hand with the development plans of the government of Puerto Rico, which in turn "has a science and technology policy".

The Science and Technology capacities of the UPR system were immediately enhanced by the appointments of Dr. Manuel Gómez, CoHemis individual advisor, as Vice President of Research and Academic Affairs. Dr. Gómez has excelled in the creation and financing of education and research programs related to science and engineering.

The added focus on internationalization has reinforced, among others, UPR's commitment to hemispheric interaction through the CoHemis Center. The Center receives an annual budget of \$100,000 directly from the Office of the President of the University of Puerto Rico. •

Propitiating hemispheric trade

The establishment of the Hemispheric Trade Development Institute (HTDI) was recently announced by UPR President, Dr. Norman Maldonado. It is part of UPR's strategy to expand its participation in international entrepreneurial development programs and activities.

The Institute, along with over 100 Hispanic Serving Institutions of higher learning throughout the United States, will aid students, professors, entrepreneurs, and other Hispanic-American and Puerto Rican professionals. HTDI will facilitate the exchange of information relating to international, also including careers in international trade, as well as business and networking opportunities.

The Institute's principal objectives are:

1. To operate a Hemispheric Think-tank to promote the exchange of ideas regarding public and private sector policy and to exchange programs and projects that could increase the participation of students, professors, and other professionals in issues related to Latin American trade.

2. To operate an Information Clearinghouse, a linked data bank that would connect students, professors, entrepreneurs and other professionals to academic and business resources or opportunities relating to Latin American trade.

3. To facilitate access to specialized seminars in English and Spanish about trade development and educational services and products.

4. To promote and facilitate the formation of strategic alliances, support groups, and other collaborative efforts among those interested in pursuing a career in international trade or marketing products or services throughout the Americas.

HTDI will also provide a feedback system for users to access comments regarding issues that should be revised or addressed, benefits accrued from services provided, and unsatisfied needs.

The primary medium of distribution for this information is the Internet. The address is www.upr.clu.edu/trade. For more information contact Mr. Victor Rivera, Project Director, at 250-000 extension 2044. •

UPR program supports exchanges and joint research at a regional level

Atlantea is a UPR faculty initiative that has been promoting ties and exchange opportunities within the Caribbean region since 1994. It operates out of the Office of Academic Affairs at the University of Puerto Rico's Central Administration. Its primary goal is to enrich the academic community at the University of Puerto Rico by promoting ties with colleagues in the region. Atlantea promotes collaborative work between faculty, students and non-faculty employees. It includes the Caribbean islands, the continental territory from Mexico to Venezuela, and the states in the US with significant Puerto Rican populations. These ties have proven to be an effective instrument for the encouragement of interdisciplinary collaborative work within the Caribbean Basin, while also maximizing the potential for professional development and productivity of the participants.

Atlantea fosters the development of long-term work groups or regional research networks. Self-subsisting networks that bring to life collective, comparative, intra-systemic, inter-disciplinary, and inter-institutional studies are encouraged. Atlantea sets out to support these projects, not to control or impose criteria on them.

Atlantea organizes a yearly call-for-proposals in order to receive group or individual proposals and subsidizes publication, research and curriculum development.

The project has established and maintained work relations between faculty members of the University of Puerto Rico and research groups in twenty other countries. Dozens of researchers and professors from the region have come to Puerto Rico, and over a hundred members of its academic community have visited to other Caribbean countries.

Continues in Page 8

CoHemis receives an equipment grant

In August, 1997 the CoHemis Center submitted a proposal to the Office of Information Systems of the UPR's Central Administration, requesting \$21,404.30. These funds were meant primarily to improve CoHemis' capabilities for presenting workshops, seminars and conferences. On October 21st, Dr. Norman Maldonado, President of the University of Puerto Rico, announced that the proposal had been approved.

Most of the equipment requested, which includes computers, a "datashow", and a color printer, among others, has been received and installed. This equipment will result in greater efficiency and effectiveness, as well as higher-quality presentations and activities, both at the local and international levels. •

Federal Reserve Bank of New York visits UPR

Dr. Steven Malin, Assistant Vice President, and Mr. Lloyd Bromberg, Director of Educational Programs, both from the Federal Reserve Bank of New York (FRBNY), will visit the University of Puerto Rico on April 28-30, 1998. This visit is being arranged by the CoHemis Center as a result of a previous visit to FRBNY by CoHemis' Coordinator, Prof. Luz Leyda Vega to FRBNY.

Dr. Steven Malin will lecture to students and to faculty of business administration and economics. The Deans of the Colleges of Business Administration at the Mayagüez and Río Piedras campuses of the University of Puerto Rico are sponsoring this activity.

UPRM's Teachers' Education Program and the PR Department of Education are sponsoring a presentation by Mr. Bromberg to interested school teachers from the Western part of Puerto Rico. The bank official will introduce the "Fed Challenge", an Economics competition for high school teams. The FRBNY hopes to launch this program in Puerto Rico in the Fall of 1998. •

International journal...

of the journal's editors, Mo Shahimpoor and Jeff Weinrach, requested papers on the subject from its consortium and network in the region. Dr. Velez collaborated in the selection and editing of the papers submitted from Mexico, Brazil, Costa Rica, Colombia, Venezuela, Puerto Rico and Bolivia.

The contents of the special issue are:

- Heating Greenhouses with Renewable Energies
- Environmental Impact Minimization of Utility Plants
- Preventing Industrial Pollution in Bolivia
- Use of Scrap Tires in Retaining Walls
- Reducing Environmental Impacts in Housing Projects
- A Possible Role for Photovoltaics in Latin America
- Environmental Performance Model: A Multi-Criteria Approach to the

IMPORTANT CUBAN CENTER SEEKS SCIENTIFIC AND EDUCATIONAL LINKAGES

The Center for Development for Scientific Equipment and Instruments (CEDEIC) of Havana, Cuba, is interested in establishing scientific, technical and academic cooperation with other national and international institutions. Founded in 1987, the Center is located in Old Havana. The Center is operated by a group of multidisciplinary researchers, specialists, technicians, and highly skilled laborers, who work in the research and development of laser equipment. Their director, Dr. M. Margarita Cobas-Aranda, describes the Center's premise: "lasers serving industry and health".

CEDEIC is a scientific and technical complex specializing in the development of biomedical and analytical equipment and their applications. The Center conducts research related to optics, lasers, and their applications in medicine, the pharmaceutical, sugar, food, and electronics industries. In addition, they develop medical equipment to be used in physiotherapy

and rehabilitation, as well as laboratory analytical equipment, such as polarimeters and densitometers. The Center also offers technical assistance, maintenance, and reparation of this equipment.

Among CEDEIC's products and achievements are the LASERMED medical equipment used in physiotherapy and rehabilitation; LASERPOL brand polarimeters, used universally in measurement of different substances used in industry; the automatic laser densitometer DENSYSYSTEM LD02, with multiple applications in biology, biochemistry, pharmacy, and medicine. The Center has also developed an automatic ellipsometer and high-tech equipment with applications in the electronics industry. Postgraduate courses in related fields are also offered.

Those interested please contact Dr. M. Margarita Cobas-Aranda, telephone numbers: 53 - 3 7 - 619505; 53 - 7 - 610196; 53 - 7 - 612846; fax: 53 - 7 - 338707; or by e-mail at: cedeic@ceniai.inf.cu. •

ATLANTEA...

Four hundred professors throughout the UPR's campuses are in some way affiliated to Atlantea. It offers funding to roughly 85 projects at each call-for-proposals, and accepts applications from students, faculty, and non-faculty employees.

Atlantea seeks to become a regional project with an International Assessment Board capable of promoting ties between all countries in the Caribbean basin. The reaffirmation of its regional character will increase the project's prospects for attracting outside funding. •

- Regulation of Toxic Substances in Developing Countries
- Biodiversity and Biocatalysis: Alternatives for sustainable manufacturing processes

Some articles appear in Spanish, but most are in English. For more information on the journal and this special issue, you can contact Dr. Shahimpoor at shah@unm.edu. •

Presidential Career Award granted to UPRM Professor Dr. Velez-Reyes

Dr. Miguel Vélez-Reyes, professor from the Dept. of Electrical and Computer Engineering received a *Presidential Career Award* on November 3, 1997. This prestigious award was granted to him in a special ceremony at Washington DC. Dr. John Gibbons, scientific advisor to President Clinton, **personally** handed the award to Dr. Vélez and to many others engineers and scientists. Dr. Vélez, an expert that using algorithms to analyzed remote sensing data, is one of the professors who have expressed their availability to offer short courses in Latin America. (See *CoHemis.. update*, Vol. 7 No. 1)

Months earlier, Dr. Jorge González, from UPRM's Department of Mechanical Engineering, received a *Career grant* from the National Science Foundation (NSF) Thermal Systems Program. •

Consortium growth...

Santos, and the renown Brazilian futurist, Jacques Markovich, USP's new chancellor. The agreement seeks to encourage collaboration in engineering research and education between the Brazilian school of engineering (EP) and the rest of the Consortium members, including UPRM. The USP-EP delegate to the CoHemis Consortium is Dr. Rolando de Breyne-Salvagni, director of the school's Continued Education Program. Dr. Breyne's e-mail address is: salvadb@usp.br. USP's web site is: www.usp.br.

The Instituto Geográfico Agustín Codazzi (IGAC), located in Bogota, Colombia, is responsible for the cartography, catastral work and land use data planning of the Republic of Colombia. CIAF, the Institute's remote sensing, research and education unit, provides services to other IGAC dependencies, as well as to graduate students from various Latin-American countries. Drs. José F. Martínez-Galvis and Dr. Iván Alberto Lizarazo-Salcedo, directors of IGAC and CIAF respectively, facilitated IGAC's entry to the CoHemis Consortium trying to increase its international contacts resources for education and training and image exchanges. The participation of Dr. Fernando Gilbes, researcher at UPRM's Marine Sciences Department, in the presentation of a short course on the applications of remote sensing to coastal management served as the catalytic agent in the signature of the agreement between IGAC and UPRM. Dr. Lizarazo is the official liaison for the Consortium. His e-mail is: ilizaraz@igac.gov.co. IGAC's web site is: www.igac.gov.co.

IGAC is the second Colombian institution to join the CoHemis Consortium, the first one being the prestigious Universidad de los Andes (UNIANDES — www.uniandes.edu.co).

The Universidad Mayor de San Simón, at Cochabamba, Bolivia, is the first institution from this country at the heart of South America to join CoHemis' hemispheric network. This university maintains thriving projects with diverse institutions and funding entities from the European Community. Its delegate is Eng. Virginia Vargas, head of the

Dept. of Formation and Promotion of Scientific Research Direction. Her e-mail address is for.prom@umss.edu.bo or dicyt@umss.edu.bo, and the university's web can be visited at www.umss.edu.bo.

Although there was already a cooperative agreement between CoHemis/UPRM and the Peruvian CONCYTEC which is meant to serve as a vehicle of collaboration between the many national educational facilities and UPRM and other Consortium members, the Universidad de Piura (UDEP) recently joined the Consortium as an individual entity. This University, whose main campus is located in Piura, Peru, also manages an important educational center in Lima. This young institution, a trend-setter in Peruvian academic and research excellence, counts with a strong Spanish presence, thanks to the collaboration of the Opus Dei. The Consortium agreement was personally facilitated by UDEP's chancellor, Dr. Antonio Mabres. The institution's liaison is Dr. Sergio Balarezo Saldaña, Di-

rector of the Hydraulics, Hydrology and Sanitary Engineering Institute. His e-mail address is: rector@upiura.edu.pe. More information on UDEP can be found at their web site: www.udep.edu.pe.

As a result of the collaboration between CoHemis and the Universidad del Zulia in Maracaibo, Venezuela during the joint presentation last April of an international workshop on the repair and rehabilitation of infrastructure, the Zulian institution joined the Consortium. Its delegate is Prof. Jesús M. Rivero, whose e-mail address is: jrivero@luz.ve. The prestigious university maintains a web site at: www.luz.ve/.

The Université Quisqueya, one of Haiti's best-known educational institutions, has collaborated with CoHemis in initiatives related to global change studies in the Caribbean. Recently, UQ joined the CoHemis Consortium and named Eng. Ernst Laraque, Dean of the School of Sciences, Engineering and Architecture as liaison. His phone number is 509-22-9002 and fax 509-23-7430. •

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REPORT ON THE RIO+5 CONFERENCE

by Jan A. Andersen (President of IATAFI)

Not much of dimension has been achieved since the 1992 Rio Summit on Environment. Although a good number of well intended actions like the eco-villages and wind-generators could be reported, development in general is headed in an unsustainable direction with a far too high use of both non-renewable and renewable resources.

There seem to be three cultures or world societies:

- The political society, including the administrators
- The industrial/economic world, with its tight networks
- The web of research/university societies, including a range of non-government organizations (NGOs)

Communication between these three groups is not effective since their knowledge bases and their ways of thinking, planning and acting are very different. Although a large number of NGOs and political systems have been engaged in a large number of projects to promote sustainable development, the development headed by the Western world is running in an unsustainable direction. It is the conflict between the market economy and the environment and ecosystems which really hampers sustainable development.

One can conclude that the world society needs a range of new organizations, NGOs, where industry, government agencies and science can work together towards a new paradigm which fully integrates the ecosystems, the environment and human capital.

The enormous development of information technology (IT), has created a power shift between national alliances, a new power balance. Thus:

1. The new IT-technology has already played and will continue to play an ever increasing role in social and economic development.

2. In the global economy, the power of government will decrease and will have to be shared by business/industry

in a constructive way. The web of new knowledge-based NGOs will play a key role.

3. Today's UN system seems unfit to master the challenge of advancing a sustainable world development. The end of the cold war seems to have increased the gap between the really poor world and the rich threatening a healthy democratic development (400 of the richest people in the world possess more wealth than half of the world population).

Should the world community leave it to future generations to confront global crises when these come up, or should it do all that is possible today to prevent there crises, which are the inevitable consequences of our life-styles. •

CoHEMIS PRESENTS LATIN AMERICAN PROJECT IN IATAFI WORKSHOP IN BRAZIL

Between October 27 and 30, Dr. Luis Pumarada, sponsored by Argonne National Laboratory and the International Association of Technology Assessment and Foresight Institutions (IATAFI), attended a two-pronged workshop in Buzios, Brazil entitled "The Zero Emissions Concept and Technology Assessment for Sustainable Development in a Global World".

Dr. Pumarada, who is a member of IATAFI's Executive Committee, delivered the paper "A Latin American Initiative for a Regional Technology Foresight Project". This paper summarizes the proposal being prepared with UNIDO as a consequence of a workshop held in Bolivia in December, 1996. Together with other members, he participated in a meeting of the IATAFI Executive Committee and also visited Petrobras' Technology Assessment Unit in its magnificent R&D Center. He also visited the Technology Assessment Unit of the national oil company Petrobras, located at their impressive Research and Development Center in Rio de Janeiro. •

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News Briefs

UPRM Collaboration

On February 12, 1997 Dr. Ricardo López, Professor of Structures of the Department of Civil Engineering, presented an intensive course on "Non Lineal Analysis." It was held in the "Instituto Técnico de Santo Domingo" (INTEC) as part of the collaborative initiative between the Civil Engineering Departments of both institutions.

Computational Mechanics Congress

Dr. Luis Suárez, Professor at the UPRM Department of Civil Engineering, will be one of the guest speakers on the Fourth World Congress on Mechanical Computation. This Congress, organized by the International Association of Mechanical Computation, will be held at Buenos Aires, Argentina, on June 29 to July 2, 1998.

New Books published by UPRM Professors

Dr. Luis Godoy, Professor from the UPRM Department of Civil Engineering, published the book *Thin-walled Structures with Structural Imperfections*. Dr. José F. Lluich published *Introduction to Construction Management*; and Dr. Leandro Rodríguez: *Structural Analysis III*, available both in English and Spanish.

Transferring Environmental Technologies

On November 7, 1997 CoHemis received Beta Corporation's two top executives, UPRM alumnus Dr. Ernesto Bonano and Atty. Adalberto León. They met with Dr. Luis Pumarada to discuss an alliance between Beta, CoHemis/UPR, Sandia National Laboratories, and WERC (New Mexico's Waste and Environmental Research Consortium) with the purpose of facilitating the assessment, adaptation, and transfer of Sandia environmental technologies to Latin America and the Caribbean. Also discussed were the possibility of WERC joining the CoHemis Consortium and an invitation for UPRM to participate in WERC's annual inter-university student-project contest on environmental technologies. •

Caribbean Seminar on Tsunamis in Mayagüez

Scientists, teachers and specialists in natural disasters recently organized a workshop in Mayagüez, Puerto Rico with the purpose of creating a Tsunami Alert Center in the Caribbean.

The Sea Grant Program of the UPR Mayaguez Campus, directed by Dr. Manuel Valdés-Pizzini, organized this important forum. Specialists representing the Virgin Islands, Venezuela, Russia, Hawaii, the United States, and the Caribbean participated in this three-day seminar and produced a series of recommendations regarding the alerting mechanisms and the management of an emergency of this type. The creation of an Alert Center in the Caribbean seeks to have an entity that coordinates an emergency plan and executes it if it ever became necessary. Such a center would work jointly with the National Center of Meteorology and the UPRM Seismic Network. •

Agricultural by-products in UPRM laboratory

The Food Technology Laboratory (FTL) of UPRM's College of Agricultural Sciences recently presented several current research projects. The participants in this activity included: Dr. Norman I. Maldonado, President of UPR; Mr. Fred Fernández-Coll, Technical Director of FTL; Dr. Miguel A. Muñoz, Puerto Rico Secretary of Agriculture; and Dr. Alberto Beale, Associate Dean and Sub-Director of AES. Also present were private sector partners: Mr. Milan Savich, President of the private research company Advanced Starch Research (ASR); Dr. William Doane and Mr. Steve Doane, ASR Research Director and Laboratory Manager, respectively; Mr. Luis Herrero, President of DENAF, Inc.; and Mr. Pedro Grau, President of MAKSIN, Inc.

The presentation featured the demonstration of a super-absorbent material produced at the FTL from yucca starch. It absorbs up to 500 times its weight in water. Among its possible applications are:
Personal hygiene - disposable diapers,

Forest Recovery: conclusions and worms

Dr. T. Mitchell Aide, of the Biology Department at the Río Piedras Campus of the University of Puerto Rico, is conducting a study that assesses the capacity for recovery of forests that have suffered interference due to various agricultural activities. The professor applies particular interest to the changes in plant and animal populations that have begun to inhabit abandoned pastures, coffee, or sugar cane plantations.

Research conducted jointly with Dr. Jess K. Zimmerman compared 23 former pastures having been abandoned between ten and sixty years ago, with seven areas with vegetation undisturbed for at least sixty years.

This first study demonstrates that after 40 years, forests that had suffered interference show characteristics similar to areas those that were never disturbed.

The professors observed a remarkable degree of recovery in terms of density and number of species present in areas that had been disturbed. However, the composition of species had varied. This information establishes that certain species would have to be introduced in order to guarantee the presence of a new forest.

The results from this first study will be applied in reforestation projects in the Dominican Republic and Puerto Rico. •

sanitary napkins and cosmetics.
Medical uses - management of liquids such as blood and urine, humidifying wound dressing, and as material for the manufacture of cold compresses.
Agricultural applications - for water and fertilizer retention in soils, to cover seeds and therefore increase the percent germinating, to retain insecticides in the upper layers of the soil.
Industrial applications - manufacturing material for joints and stops that would control water leakage in plumbing and machinery.

Martex Farms presented products developed jointly with the FTL. Among these products was an instant croquette mix. ASR has patented the technology used in the production of plastics made from starch instead of petroleum derivatives. •