



GreatPoint Energy

GreatPoint Energy will be joining the ATMC's Technology Venture Center during the construction of their facility and pilot gasification tower in Somerset, MA.

GreatPoint is developing a process called coal gasification, in which they will take pulverized coal, (which they have in abundance), and create pipeline quality meth-

ane gas. Gas is a cleaner burning fuel than coal, making gas a valuable alternative. They will be one of the first companies in the US using this technology on an industrial process scale. Twenty interns from the ATMC will be working directly with GreatPoint. Mechanical and Electrical Engineering interns will be working on the various systems and checking and modifying the drawings for the facility. Chemistry interns will be working in the analytical lab (housed at the ATMC) supporting the process analysis. The gasification tower is scheduled to open in February 2009. The analytical lab is run 24/7, which is why the project requires a large number of interns. GreatPoint will be using the materials and optics labs at the ATMC, as well as bringing their own equipment.

Bio Engineering Lab

Several projects are currently on-going in the bioengineering lab at the ATMC. Lab manager, Dr. Chen-Lu Yang, has collaborated with other experts in the field on the development of three current projects.

Working with Dr. Yang on the **Reactive Crystallization of Calcium Hydroxyapatite project** is Kate DeMello (Undergraduate Student, Department of Chemistry and Biochemistry), Dr. Dapeng Li (Post Doctoral Research Associate) and Paul Calvert (Department of Materials and Textiles). Hydroxyapatite (HAP) is used to remodel bone, with little or no damage to existing tissue. Some goals of the project are to synthesis HAP without any toxic by-products, examine the potential of the material, and develop new uses.



SEM images of successful, in lab, modifications to crystal structure

Working on the project **Chitosan Microspheres for Sustained Drug Release** is Allison Helme (Graduate Student) and Dr. Frank Scarano (Associate Professor, Medical Laboratory Science), Yong Kim (Professor, Department of Materials and Textiles) and Dr. Chen-Lu Yang (Advanced Technology and Manufacturing Center). In this study, tetracycline is dissolved in a 1% acetic acid aqueous solution, then later saturated with chitosan. The is accomplished by mixing with excess chitosan powder at room tem-



Kate DeMello, working in the chemistry lab at the ATMC

perature for two hours to create chitosan microspheres. Result show the encapsulated tetracycline is effective in inhibiting *E. Coli* growth. A few of the tasks involved with this project are:

- Fabrication of chitosan microspheres
- Tetracycline encapsulation
- Efficacy of encapsulated tetracycline
- Drug release profile and mechanism

Bin Wu (Phosphorex, Inc.), Yue Huo (Department of Materials and Textiles), and Dr. Chen-Lu Yang (Advanced Technology and Manufacturing Center) are collaborating on a project involving **Antibody-Nanoparticle Conjugates for Rapid Detection of Residual Antibiotics**. Immunochromatographic strip (ICS) tests have been used to identify hundreds of dis-

eases, as well as many chemicals. There is a need for these tests on antibiotics. One expected result of the study is to have the ability to detect multiple antibiotics on one testing strip. These are just a few of the projects that are taking place in the bioengineering lab at the ATMC.

Conference Center

The ATMC's conference center has been the location for a variety of events this past Fall. The largest room in the conference center holds up to 200 guests. It was held several conferences such as the *Westport Garden Club*, with guest speaker Roger Swain from the *Victory Garden* television show, and *The Urban Initiative*, with Former Governor Michael Dukakis. The lobby is also available for networking and refreshments and tables can be placed on the outdoor patio over looking the lake. This set up was ideal for the *Clambake on the Lake*, fundraiser for New Bedford Film Festival that had over 100 guests, as well as the *Ocean Energy for New England* evening clambake. Break-out rooms are available for large conferences or for small groups. The conference center has wireless Internet access and a projector available for making presentations. Video conferencing is also available. Technical support will be provided in preparing for your conference. To schedule a tour or book your conference please contact Emily Alves - ealves@umassd.edu.



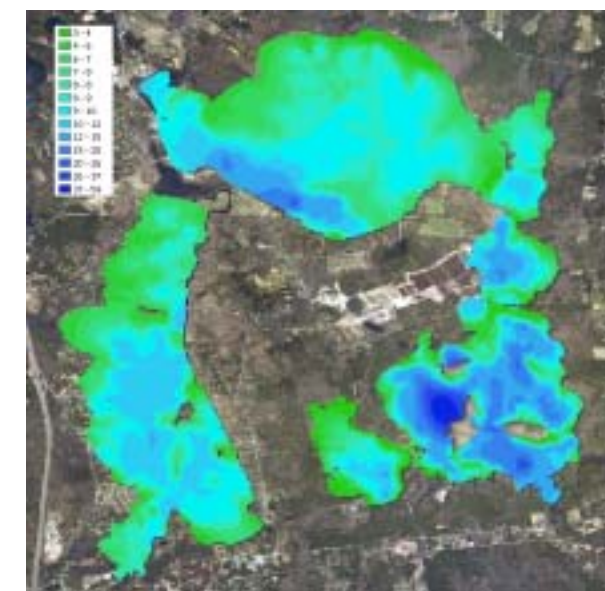
Ocean Energy for New England Conference Oct. 2008



A variety of conference room set ups can are available to meet your needs.

New Bedford Ponds Bathymetry

With the collaboration of ATMC interns and staff, as well as access to technology from OceanServer, Inc. and YSI Sensors a project to map information about five ponds in Lakeville, Rochester and Middleboro in Southeastern Massachusetts was developed for the City of New Bedford. The water depths of several ponds were measured using OceanServer's autonomous underwater vehicle (AUV) and the information was processed through a program with customized features. One goal of this project was to provide a volume estimate of the ponds to aid in economic development decisions. Using the AUV's measurements, and modern volume calculating techniques, the new data on the ponds is much more accurate than previous estimates, and was collected more efficiently.





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Technology Venture Company Highlights



NuOrtho Surgical Inc. (NSI) joined the ATMC in October 2008. NSI is a start-up company focused on Tissue Preservation for Orthopedic surgeons and their patients. Their technology leverages a low level Radio Frequency energy to fix and heal tissues. NSI has 20 plus patented products for preserving healthy tissue that will help many people, particularly baby boomers. The first product, the ACE probe, will be released next year and will focus on articular cartilage and will help to maintain pain free mobility in knees. Dr. Jeremy Stern,

a leading South Coast orthopedic surgeon on the South Coast, comments the ACE probe's ability to contour cartilage without causing unwanted side effects like necrosis (killing of healthy tissue) "would be the holy grail."

The company moved from Santa Fe, New Mexico to New England as there is a rich talent pool for developing medical devices. NSI chose the ATMC facility because the Center provides the necessary infrastructure for emerging companies, giving them the opportunity to develop into technology and manufacturing leaders.

NSI has raised the initial funds needed to build their ACE Probe prototype for cartilage and is looking for help as they shift from the R&D to the commercialization phase. Surgeons, who understand the tremendous value and need for the ACE probe, provided the initial funding for the company.

The Mass Medic IGNITE program develops and mentors early stage medical device entrepreneurs to ensure their success in New England. The team has recently approved NuOrtho into their program and is further accelerating the growth of NuOrtho Surgical. For more information contact Jeffrey W. Morrill (Chief Executive Officer) at 617.848.8999 or via email, at jmorrill@nuorthosurgical.com You can also visit their website at www.NuOrthosurgical.com

Message from the
Director



Dr. Louis
 Petrovic

The ATMC continues to have a positive economic impact on the South Coast economy through its Tech Venture Center, industrial collaborations, and Intern Program. These activities are focused on:

- Renewable/Alternate Energy Technologies – biomass, wind, wave, tidal
- Bio-Manufacturing Advanced Materials

We believe that these areas form the basis for the next generation of manufacturing in the South Coast. Examples of some of the successes since our last newsletter include:

Marine Renewable Energy Center (MREC) – The environmental evaluation of the proposed demonstration site off of Edgartown is in progress. Also, we have received notification that MREC will receive an additional \$1 million in Federal funds to move forward with the site and the collaborations with UNH, URI, UMB, MIT, and others.

Bio-Manufacturing Scale-Up Facility – Massachusetts has notified us that \$15 million will be released to UMD for the construction of a bio-manufacturing scale up facility to be built in Fall River.

Tech Venture Center (TVC) – In keeping with our strategic focus areas, the TVC is home to 4 companies in marine renewable, wind, and biomass energy, 3 companies in biological process development, and 1 in advanced materials for medical devices.

Great Point Energy – Twenty UMD interns are working with the company at the Brayton Point Power Plant on the scale up of a major innovative process to produce methane from carbon containing materials. As part of this collaboration, we are moving towards a joint venture to supply scale up know how for biomass projects in the South Coast.

This combination of projects and industrial collaborations has the potential of establishing the South Coast as the place to go to demonstrate scale up of technologies in renewable and alternative energies and in bio-manufacturing. Basically, the unique combination of real size process equipment and technical personnel/students to working these areas does not exist anywhere else in the US.

To repeat, these are exciting times for the South Coast. Come visit us to see if there are ways that we can help you!

MREC Ocean Energy for New England Conference

The Marine Renewable Energy Center's (MREC) kick off conference was held Oct. 6, 2008. The event had expert speakers and panelist in several

fields. Keynote, Congressman James McGovern, spoke about federal initiatives to promote Ocean Energy and the impor-



tance of Marine Renewables to New England. Panelists Sean O'Neill (*Executive Director, Ocean Renewable Energy Council*) Andrew Mill (*Chief Executive, New and Renewable Energy Center, [NaREC], Ltd., UK*) Robin Wallace (*Head of Institute for Energy Systems, Univ. of Edinburgh, UK*) and Daniel Englander (*Renewable Energy Analyst, Greentech Media*) participated in a discussion of the State of the Ocean Power Industry. A discussion on Regulatory Considerations for Ocean Energy was led



UMass Dartmouth Chancellor Jean MacCormack

by a panel that included Carolyn Elefant (*General Counsel, Ocean Renewable Energy Council*) Kristen Murphy (*Environmental Biologist, Div. of Hydropower Licensing Office of Energy Projects, Federal Energy Regulatory Commission*) Robert LaBelle (*Deputy Associate Director for Offshore Energy and Minerals Management Minerals Management, Service, US Department of the Interior*) and Lucy Edmondson (*Deputy Commissioner for Policy and Planning, Mass.Dept. of Environmental Protection*). A panel on Public Policy Considerations of Ocean Energy was moderated by Jack Wiggin (*Director, Urban Harbors Institute, UMass Boston*) and included Deerin Babb-Brott (*Assistant Secretary for Oceans and Coastal Zone Management, Mass. Executive Office of Energy and Environmental Affairs*) Priscilla Brooks, Ph.D. (*Director, Marine Conservation Program, Conservation Law Foundation*) and John Duff (*Assistant Professor, Environmental Law, EEOS Department, UMass Boston*). MREC hopes to increase interest in the development of technologies that will use renewable power from the ocean and to foster the development of this industry in New England.

Featured Articles

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