Newsletter from the MIT Ocean Engineering Student Engineering Association

Making Waves

Volume 5, Issue 2 Fall 2006

Special points of interest:

- Renew SNAME, MTS, and IEEE memberships today!
- 13Seas awarded the MTS Outstanding Student Section Award at OCEANS conference.

Inside this issue:

Students Revolutionizing Marine Science and Technology at Oceans2006/Boston

By Prof. Alexandra H. Techet

This year the Marine Technology Society (MTS) and IEEE Oceanic Engineering Society hosted OCEANS 2006 here in Boston at the Hynes Convention Center, September 18th-21st. The conference theme was "Revolutionizing Marine Science and Technology". Oceans2006 Boston welcomed 2184 total participants, 882 exhibitors, and 124 students. I had an excellent time working with the students to organize the student poster program – it was a great success!

The student poster program at OCEANS was an exciting opportunity for graduate and undergraduate students to present their "revolutionary" research related to a marine science and technology. The student poster competition participants were undergraduate and graduate students majoring in the sciences and engineering and conducting research in topic areas relevant to the conference. This year's Student Poster Program had over 40 applicants and brought 24 students to Boston. Students from the US, Canada, Venezuela, France, Russia and the UK participated in this competition. This year, eight of the participants were women, and five of the participants were undergraduates. These students represent some of the best and brightest studying in ocean related fields.

New this year was the addition of a Poster Précis which allowed students a brief opportunity to present a concise overview of their project in 2-3 slides to the judges' panel and to a wider conference audience. It was widely received and well attended – many thanks to the conference technical chair, Dr. Vince Premus from Oasis Systems, Inc., for the suggestion.

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Ms. Lauren Cooney (SB OE '06), MIT, accepting her second place graduate prize for her paper "Design and Performance of an Acoustic-Homing Autonomous Surface Vessel" co-authored by her 2.019 classmates: Michael J. Stanway (SB OE '06), Peteris Augenbergs (SB ME '06), Heather Brundage (SB OE '06), Bridget Downey (SB OE '06), Timothy Pennington (SB OE '06), Thaddeus Stefanov-Wagner (SB ME '06), and David Tobias (SB ME '06)

SNAME Meets in Ft. Lauderdale

By Jordan Stanway, '06

The SNAME Annual Meeting (SMTC&E) was held in Fort Lauderdale, FL on October 10-13. This year's meeting featured technical presentations, an industry vendor exposition, and several alumni dinners and other networking events. A full student program complemented the regular schedule of events.

The Student Steering Committee, headed by our recent alum Matt Unger (G 06), planned and executed the entire show. Highlighted events were:

Student Design Competition - This year's design competition was based on the TRANSPAC yacht race, 2225 nautical miles from Los Angeles to Honolulu. The race is famous for its fast downwind and broad reach sailing, and the design challenge this year was to create a yacht that would outperform the competition in those conditions. Each team of students was given a cardboard box with common household materials (scissors, construction paper, packing tape, popsicle sticks, a plastic

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Oceans 2006, Boston

The students did an excellent job of explaining their work concisely and got an opportunity to practice their public speaking skills. The student posters were judged on their technical content, contribution to the field, their presentation of the data, and the student's ability to relay this information to the panel of judges. Judges are drawn from all sectors of the community including academia, industry, military and research laboratories.

We are extremely grateful to our sponsors, especially the continued support from Dr. Frank Herr and the Office of Naval Research, and for the first time this year, support from the National Science Foundation's Dr. Michael Plesniak, CTS Fluid Dynamics Division, and Lisa Rom, Ocean Sciences Division. Their generous financial support allowed us to pay full registration and housing for all students participating in this program, as well as offer travel awards to offset transportation costs to and from Boston.

Oceans 2006 student poster program awards were presented to eight students. The $300 first place graduate prize went to Mr. Brandon Cochenour, a student at Johns Hopkins University. The $250 second place prizes went to two of our own MIT graduate students in an even tie: Ms. Lauren Cooney and Mr. Jordan Stanway. The third place tie was between Mr. Alexander Pavin, from Vladivostok (Russia), and Mr. Ye Li, from British Columbia (Canada). The undergraduate prizes were awarded as follows: First ($300) Mr. Zhipeng Sun (Harvard), Second ($150) Mr. Jeff Kaeli (Virginia Tech), and Third ($75) Mr. Andy Schneider (Great Lakes WATER Institute, U. Wisconsin Milwaukee). Congratulations to all of the winners and participants for their hard work and excellent posters!

Many thanks are also due to the MIT students who volunteered at the registration desk and for other functions at the conference. Your help was greatly appreciated. For those of you interested in attending a future OCEANS conference, check out next year's conferences at http://www.oceans2007.org.

13Seas was awarded the MTS Outstanding Student Section Award. Jordan Stanway accepted on behalf of 13Seas.

Mr. Jordan Stanway (SB OE '06), MIT, accepting his second place graduate prize for his paper "Small Diameter Ducted Contrarotating Propulsor for Marine Robots," co-authored by Thaddeus Stefanov-Wagner (SB ME '06).

SNAME Annual Meeting

bag, etc.) and a set of design requirements to be met. Stability tests and time trials were performed in an inflatable pool at lunch the next day, in front of a standing-room-only crowd. Strong 'tradewinds' were provided by an industrial carpet-drying fan. A $500 cash prize was given to "Team Ramrod" and their high-performance catamaran.
(short movies posted at http://web.mit.edu/squall/www/13seas/SMTC&E)

Student Summit -
SNAME's officers and leaders came and sat with the student attendees for a brainstorming session on the challenges SNAME faces, both on the international level, and in our own student sections.

Student Poster Session-
This new event drew great interest from both students and professionals. The atmosphere was very collegial, with questions and suggestions for every project presented. Everyone that attended learned something new and got an idea of what students are working on at other schools.

Student Paper Presentations -
The four winning papers of SNAME's international student competition were presented to SNAME members and industry professionals. Jordan Stanway presented last year's class design project *Design of an Acoustic-Homing Autonomous Surface Vessel* , which won Second Prize in the undergraduate division.

Student Job Fair -
Several of the companies from the expo attended the job fair, giving student attendees the opportunity to network and learn more about the jobs available in the maritime industry.

There was also a reception for MIT OE alumni, run by Prof. Marcus. It was good to meet some of the former students from our school who have become so successful in the industry.

The program at this year's meeting showed SNAME's commitment to its student members. The Executive Council approved $50K more to be spent annually on undergraduate scholarships, more than doubling the amount for a total of $90K. The meeting was an overwhelming success, so please show SNAME your commitment and join us next year in Fort Lauderdale.

Alumni Spotlight: Katy Croff, '00

By Katy Croff, '00

'Ocean Engineering? Do you want to be a lifeguard or something?' This is the response that I received when telling most friends that I was going to major in Course XIII at the beginning of my sophomore year at MIT. Despite the rather unenthusiastic initial reaction, I stuck with it, got involved with the department and as a result have been exposed to many opportunities that I could not have imagined at the time.

Aside from the daily rigors of taking classes and rowing on the Charles, there were two activities that were particularly meaningful for me as an undergraduate – 13SEAs and DeepArch. At the end of my sophomore year, Rob Damus, Nick Hahn and I took over the leadership of the student section of SNAME at MIT. We maintained the tradition of organizing talks for the department, collating student resume books for potential employers, and being involved with SNAME on a national level. This was a fantastic way to familiarize myself with the professional world of ocean engineering and naval architecture, but after a couple of years I realized that there were many other avenues to go down as an ocean engineer.

Anna Michel joined the department in 2000, and together we started 13SEAs as a way for students to be exposed to and involved with all aspects of ocean engineering, naval architecture, marine science and policy. I am very happy to receive Making Waves every quarter, knowing that OE students are active and 13SEAs is still going strong!

During my junior year, I started working with Prof. David Mindell and the Deep Water Archaeology Research Group (DeepArch) at MIT. This experience introduced me to a brand new field, one that allowed me to use my engineering skills to study the human past. I was able to work on two projects in the Black Sea with DeepArch, and was hooked on deep water archaeology and working at sea!

I then went on to earn my M.Sc. in Maritime Archaeology at the University of Southampton (UK), and am now working on a Ph.D. in Archaeological Oceanography at the Graduate School of Oceanography, University of Rhode Island. This new program at GSO is an excellent way for me to bring together my engineering and scientific skills with the study of archaeology. My current research focuses on geological changes in the Sea of Crete (southern Aegean Sea), and how those changes affect the archaeological record.

My involvement with 13SEAs taught me how important ocean engineering and marine science education is for the future of the field. This year, I was fortunate enough to be named to the 2006 class of Emerging Explorers at the National Geographic Society. This program will allow me to work with NGS in the future to bring my research to the public, hopefully inspiring future ocean scientists and engineers.

Finally, as an alumna and active member of one of the oldest departments at MIT, it was quite disappointing to see the closing of Ocean Engineering. I trust that the professors and students of the new Center for Ocean Engineering will carry on the tradition of excellence in teaching and research that I was so fortunate to experience.

Katy operates the winch during the recovery of Remotely Operated Vehicles (ROVs) ARGUS and HERCULES aboard the R/V ENDEAVOR.

"I am very happy to receive Making Waves every quarter, knowing that OE students are active and 13SEAs is still going strong!"

Katy (right) and URI Professor Mary Hollinshead aboard the R/V ENDEAVOR for the Sea of Crete Archaeological Survey Project.

Katy (right) and fellow MIT alum Stephanie Chen (AA '00) learn Greek rafting commands during a trip to northeastern Greece.

ROV Team Heads to Houston

By Eddie Huo, '08

This past summer, the MIT ROV team took a trip down to NASA's Neutral Buoyancy Lab (NBL) in Houston, Texas to participate in the fifth annual ROV competition. The competition was organized by the Marine Advanced Technology Education (MATE) Center and the Marine Technology Society's (MTS) ROV committee, and took place between June 23rd and June 25th. This year's team, led by Jordan Stanway ('06), was comprised of nine undergraduate students, who competed against fourteen other teams internationally.

This year's task required each team to bring an "electronics module" to a mockup of a fiber optic node, and then insert a tethered power/ communications link into the mockup as well. The performance of the vehicle was only worth about half of the total points in the competition; an engineering evaluation, technical report, and poster made up the rest of the score.

In addition to the fiber optic tether from last year, this year's ROV sported four custom thrusters. The team designed and fabricated contra-rotating propellers from scratch using state of the art software and machinery. However, incorporating the new technology took too much time away from water testing, and as a result our tether was sucked in by the propellers at the competition.

These were hard lessons to swallow, but the team has already begun developing a new, more reliable platform for next year's competition.

The MIT ROV team is sponsored in part by MIT's Edgerton Center, ExxonMobil, Prizm, MIT SeaGrant, and MIT's Center for Ocean Engineering. The team's website can be found at http://rov.mit.edu

The ROV.

The team.

"These were hard lessons to swallow, but the team has already begun developing a new, more reliable platform for next year's competition."

Discover Ocean Engineering, 2006

By Jordan Stanway, '06

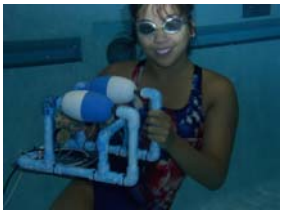
Thirty freshmen were welcomed to MIT this year with a four-day crash-course in Ocean Engineering. Beginning with the traditional kickoff BBQ at the MIT sailing pavilion, DOE2006 immersed its participants in the MIT OE community. The program may be centered around building a SeaPerch ROV, but incoming students also had the opportunity to meet students and faculty, visit labs, and go on field trips to Mystic, CT and Woods Hole, MA.

Upperclass mentors, drawn from past DOE classes and from the MIT ROV Team, taught new students basic OE principles and skills (like buoyancy, soldering, and proper use of monkey dung) while they built simple ROVs. After construction, the robots were tested and trimmed in the Z-center and Alumni Pools, and groups of students toured the SeaGrant AUV Lab, Tow Tank, Water Tunnel, and Experimental Hydro Lab. Mealtimes were time for relaxing and getting to know OE professors and students. One lunch featured a 'lecture' by Franz Hover, which illustrated some of the design challenges inherent in marine systems, and featured the MIT/ Bluefin Hovering AUV.

Students got a dose of Hollywood history watching SeaQuest on the bus ride out to Mystic, where we started out at the Aquarium and Institute for Exploration before continuing to the seaport for some fish & chips and another dose of maritime history. The final day of the program was a trip to Woods Hole Oceanographic Institution for a tour of some of their labs and SeaPerch deployment. Students used new color cameras and displays to explore the area around the WHOI docks, looking for fish, sea stars, and the odd buried treasure.

This program has been a delight to plan the past two years, and is always rewarding for students, mentors, and everyone else involved. If you would like to be part of DOE2007, be sure to contact us at

discoveroe@mit.edu



DOE Participant with her ROV during testing in the pool.

DOE Participants testing their ROVs at Woods Hole.

MAKING WAVES STAFF

Editor:
Julie Arsenault

Contributors:
Eddie Huo
Jordan Stanway
Libby Palmer
Alexandra Techet
Katy Croff

We're on the Web !
web.mit.edu/13seas

13SEAs Officers *13seas-officers@mit.edu*

13Seas is the ocean engineering student organization. We are a group of students, faculty, and alumni who work to build and maintain the vitality of the ocean engineering community at MIT.

Check us out on the web at: web.mit.edu/13seas

Email any questions or comments to 13seas-officers@mit.edu.

OFFICERS:

President: Jordan Stanway
Vice President: Seth Clark
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Reporter: Julie Arsenault

MTS Adivsor: Prof. Alexandra Techet
SNAME Advisor: Dr. Dave Burke
Webmaster: Harish Mukundan

Upcoming Events:

Holiday Student-Faculty Mixer

2.019 Presentation

SNAME New England Meeting (Design of Coastal Research Vessel with Low Radiated Noise Signature) Nov. 16

More Ocean Science and Technology Talks!

Look for the next Making Waves in the Winter!

Ocean ENGINEERING