



MECHANICAL ENGINEERING NEWS

October 8, 2004

A newsletter for the UML Mechanical Engineering community (also available online at <http://mechanical.uml.edu>)

Any items you would like to see included in the newsletter or any suggestions/comments?

Please email them to: peter_avitabile@uml.edu or leave them with Jackie Paradise in the Mech Eng office.

Mechanical Engineering Seminar Series - Speakers for Fall 2003

Sept 22	James Sherwood, UMASS Lowell
Sept 29	Dhiren Marjadi, Altaire Engineering
Oct 6	John Dignam, Mentis Science
Oct 13	Chris Niezrecki, UMASS Lowell
Oct 20	Fred T. Willett, DRS Power Technology
Oct 27	Lauri Kantola, University of Oulu
Nov 3	Steve Semuskie, Tyco Electronics
Nov 10	Sammy Shina, UMASS Lowell
Nov 17	open
Dec 1	open

Spotlight on COMPANIES

Mentis Sciences, Inc.

Mentis Sciences



www
.mentissciences
.com

Mentis Sciences has attempted to address High Temperature Composite Radome Development with the development of a high temperature inorganic laminate suitable for these extreme environments. Composites based on inorganic polymers and quartz fibers have been evaluated over the past 10 years for advanced radomes. Thermal shock, and thermal loading are not an issue for composite radomes, as compared to their ceramic counterparts. Precise placement of the quartz fibers improves both structural and electrical performance, and the similarities in dielectric properties of the reinforcement and matrix results in efficient signal transmission.

Recent advances in fibers, resins, and composite fabrication techniques allow the planning and initiation of programs to develop advanced RF seeker protection, i.e. radomes which can result in significant missile system cost and weight reduction, as well as critically required improvements in performance.

John Dignam was at UMASS Lowell to give a seminar to the Mechanical Engineering students. He discussed some of Mentis Science recent work with development of a high temperature inorganic laminate suitable for extreme environments. These are important for hit-to-kill interceptor performance which require radar seeker accuracy and missile weight/agility to be addressed.

Spotlight on COMPANIES



Altaire
Engineering

www.altaire
.com

Altaire Engineering is a world leader in developing and applying optimization technology for solving design problems. A presentation was given by Dhiren Marjadi on practical applications to link what students learn in school to how that knowledge is applied in many different ways in industry. Challenging design problems were presented in various industries such as automotive, aerospace, consumer products, etc.

The presentation centered on Altair® OptiStruct® which is a finite-element based structural analysis and optimization software for conceptual design and design refinement. OptiStruct's topology, topography, shape, and size optimization capabilities can be used to design and optimize structures to reduce weight and tune performance.



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OWNERSHIP OF LEARNING

Many students arrive at school everyday with the expectations of being taught and enlightened in the area of their expertise and program of study. However, it is extremely important for the students to realize that what they learn and what they comprehend and understand is directly proportional to the effort they put in to the entire educational process.

Yesterday, two students were walking down the hallway and the following statements were overheard.

Student #1 - "You wouldn't believe the professor I have this semester. This guy gave homework assignments last week and they were due yesterday but he hasn't even covered the material yet. He just covered the material the day it was due. How could he expect us to do the homework without covering the material? He said the material was review of previous material but I don't ever remember covering any of that stuff before."

Student #2 - "So what did you do? Did you get the homework assignment done?"

Student #1 - "Oh yea. I got the homework done. I looked in the text book and found some sample problems. Most of the homeworks were pretty similar to the ones in the book so they weren't too bad to do. But I mean the nerve of him to give homework and we had to figure out how to do them ourselves"

Now just listen to what was just said. Notice that the student was able to pull the pieces together and complete the homework assigned. He was able to investigate further beyond the material covered in class and make successful strides to complete the assignment handed out. This is every professor's dream --- to have students who learn how to think on their own and solve problems by themselves. This shows that the students have comprehended the material – not just performed exercises that were assigned. The professor has most likely covered a significant portion of the material and expects (hopes) that the students can pull the rest of the pieces together.

It has been said that "After two weeks, people generally remember 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they hear and see, 70% of what they say, and 90% of what they say and do." This clearly indicates that shifting the learning of material to the student is important for retention of information.

By forcing the students to "take ownership of learning the material", they tend to learn the material more fully and deeper than with other teaching approaches.

Whether students want to believe this or not, where ever you go to work, you are going to be expected to be able to solve problems. There will not be a textbook with answers to the problems and you will be expected to think – so there is not a place or time better than now to start to take responsibility for learning material. Your professor is just a facilitator to the learning process while you are here at school. Take the time now to learn how to learn – you will need this skill for the rest of your life.



DEPARTMENT OF
MECHANICAL
ENGINEERING

University of Massachusetts at Lowell