TIERNAN EXPRESS

NJIT CHAPTER OF AIChE
AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

VOLUME 10 ISSUE 4 SPRING 2006

VICE PRESIDENT'S CORNER

The 2006 spring semester has been another great selection of speakers who have given our AIChE members more insight into what students can do after graduation and a look at some tools to help with the job process. Mr. Menon came from Merck to start off the semester and conducted two mock interviews that allowed the members to really see what an interview is like. He conducted the two interviews with completely different styles and it was nice to get key hints on how interviews were and how to answer questions. Before the spring break, two NJIT alumni came in to give talks but it was interesting to compare how their career paths have gone in two drastically different ways. Jim Van Splinter talked about his career path in law and how with his chemical engineering degree it had helped him get into law school and secure a job. Going to law school after obtaining a chemical engineering degree isn't a path usually taken, but Jim has found great success and his talk opened another window for students to look out when preparing to finish here at NJIT. The week before spring break, Joe Keber talked about his adventurous and exciting experience working at Schering Plough. Joe talked about the work he does at Schering and also gave a great story and advice on how to handle working with difficult people. Joe allowed the students to see that it isn't always pretty working with people but by conducting himself in a professional manor, he was able to get out of the tricky situation.

At the Regional Conference at Penn State

After spring break there was a look at process safety and how it is important to keep in mind when doing any project. Daniel Simon came in from Saint Gobain Performance Plastics and gave a great talk on safety and how it will affect our students directly when they design equipment and processes in the future. Joshua Mathew from Pfizer came in at the end of the semester and gave the AIChE members a great look into the world of pharmaceutical employment and the industry.

On Monday, April 24, it will be Coney Island day where members and friends can come and hang out while eating hotdogs and ice cream. Also on May 3rd, which is the reading day, AIChE will hold their annual picnic where students, faculty and friends can come to eat and maybe play a game of softball or soccer. If there are any suggestions for speakers that members would like to see, do not hesitate to stop in 103T and speak to David Nare and the E-board. Thank you for another great semester and the E-board hopes you will join us again next semester. Have a safe and fun summer.

Nothing is a waste of time if you use the experience wisely. ~Auguste Rodin

Mark Materna
Vice President, NJIT AIChE Student Chapter

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If you want to be a part of the Tiernan Express Team from jokes, articles, cartoons to photography, please contact dnn3@njit.edu or scm3@njit.edu. Writing looks good on your resume!!!!

Check out the NJIT AIChE Chapter online at :
http://web.njit.edu/~aiche/

MESSAGE FROM THE CHAIR

Today is April 17, 2006 and we are approaching the end of yet another academic year. Sometimes it feels as if it was only yesterday that the 2005-2006 academic year started and some other times it feels as if it started a long time (and many efforts!) ago. Be that as it may, let me share with you some thoughts.

The primary concern of all faculty members of the department is our students. We are always trying to give you the best we can, prepare you with a solid foundation to build your careers on, help you overcome problems that you may encounter in your efforts to complete the chemical engineering curriculum. We are all proud of all of you. Every one of you has accomplished something important: some have won awards; some have successfully resolved difficulties in courses or other fronts. You should all feel good about yourselves and look towards the finish line (final exams and projects) with confidence and a winning attitude.

We are especially proud of those of you that have been recognized at various forums. First, let me congratulate the AIChE Student Chapter that has been recognized with the 2006 NCE Outstanding Student Organization Award. The student chapter is an integral part of our tradition of excellence; there are no words to thank you for your continued efforts. By the way, let me take this opportunity to also congratulate you for the superb newsletter you have been publishing lately. Second, let me congratulate Patrick Robinson who was selected as our outstanding senior and then won the 2006 NCE Outstanding Senior Award. Patrick was selected to represent our department at the NCE level by a departmental committee who really had a tough decision to make as we have a number of students that could be named as outstanding ChE seniors. You should all keep in mind that in the person of the winner, all deserving students are honored. Getting the NCE recognition reflects on Patrick, on all our seniors, and on our department. Congratulations to all. Two of our undergraduates (Camila Modenese and Hua Yang) won 1st and 2nd place in the 2nd Provost's Research Showcase in the undergraduate

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MESSAGE FROM DR. BASIL C. BALTZIS, DEPARTMENT CHAIR CONTINUED

category. The event was held on April 12 and the judging panels involved industrial representatives and NJIT faculty. This is indeed a great honor for the two McNair scholars and for our department. Undergraduate students also won distinctions at the McNair Poster Presentation event held on Friday, April 7. You, the students, have so much to be proud of and we thank you for your distinctions as they also reflect on the department that we all love. On April 19, we will have our annual Awards Ceremony. A number of you will be receiving awards sponsored by various industries as well as the department. It will be a day to honor you (as well as your families) for your accomplishments.

I do not want to pretend that the year has gone by without problems here and there. There have been some bumps and we have tried to take care of things properly. As in any family, when there are problems we should be talking about them and trying to find solutions. To do that we want your input. To have a continuous line of communication, we have recently reinstituted the departmental Student Advisory Board. It is made of representatives that you elected and an equal number of students that the department has asked to serve. We had our first meeting on Friday, April 7 and we heard some views about our new curriculum. The board will be meeting on a regular basis and we hope to get your input on curricular affairs as well as on the running of courses. I also believe that there should be an open forum where all students can come and confidentially express concerns, problems, or even praises for courses and instructors. These forums are known as feed-back sessions and are held once every semester. I was surprised and disappointed to see that this semester no student showed up for the session that (as usual) was organized by the Student Senate. I understand that there was not enough advance notice and perhaps the time was not the best that could had been selected. I would really like to get your input (feedback) this semester and for this reason I have taken the initiative to organize a second feedback session to be held on Monday, May 1, 2006. You must have all already received the notice. I would like to take this opportunity to thank the AIChE Student Chapter Officers who kindly gave me their May 1 time slot for this event. I will be looking forward to seeing as many of you as possible and listening to your concerns and ideas. Other faculty members will not be present at the event as it is meant for the chair to listen to you in a way that ensures confidentiality. Please make every effort to attend.

I am getting accounts lately of increased incidents of plagiarism in project and/or lab reports. This is a very serious issue. I personally want to believe that in the great majority of cases there is no real intent to copy. There is rather a lack of understanding of what is involved when collaborative efforts are presented as individual ones, when comments or phrases are taken verbatim from sources available on the web, and when the cut-and-paste approach afforded by the word processors is used without a second thought. This is not a local phenomenon only. Similar observations are made in many universities in the U.S. and in Europe. It is a serious issue related to work ethics and may have very serious implications in your lives. This is why we will try to introduce some seminars on this issue for all students, staring as early as in ChE 101 (our introductory seminar course).

As the academic year comes to its end, we will soon graduate our class of 2006. Before you leave I would like to hear your views and reflections on your NJIT experience. You have all been invited to an individual exit interview. If you have not scheduled yours yet, please do so as soon as possible. Some of you will go to industry immediately upon graduation, others will go to graduate school starting in the fall, and others will continue your job hunting efforts. I wish the very best to all of you. It has indeed been a privilege to know, serve, and educate you. Please become active alumni and keep in touch with us. To the students we will see again in the fall, I wish a good (relaxing, if possible) summer. We will all be looking forward to seeing you when the next academic year starts.

Basil C Baltzis, PhD
Department Chair

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SWEET BUT NOT SO INNOCENT

More then two thirds of Americans are overweight and nearly one third are clinically obese. The consumption of fructose contributes to obesity and insulin resistance syndrome, which is a combination of risk factors for type 2 diabetes, including chronically elevated insulin levels, low "good" cholesterol, abdominal obesity and high blood pressure. It causes a significant increase in the concentration of uric acid, that it can be an indicator of heart disease.

Furthermore, fructose ingestion in humans result in increases in blood lactic acid, especially in patients with preexisting acidosis conditions such as diabetes, postoperative stress or uremia. Extreme elevations cause metabolic acidosis and can result in death. Fructose browns food seven times faster than glucose, resulting in a decrease in protein quality and toxicity of protein in the body this is due to the loss of amino acid residues and decreased protein digestibility.

Fructose is the sweetest of sugars, its chemical name is levulose, and is also called the fruit sugar. Until the 1970s most of the sugar came from sucrose derived from sugar beets or sugar cane. Then sugar from corn syrup, fructose, dextrose, dextrin and especially **high fructose corn syrup** (**HFCS**), it began to gain popularity as a sweetener because it was less expensive to produce. It can be manipulated to contain equal amounts of fructose and glucose. Or up to 80% fructose and 20% glucose .**HFCS** is made up of 42% or 55%fructose, 42-52% glucose (dextrose) and a few percent carbohydrates. It is produced by processing corn starch to yield glucose, and then processing the glucose to produce a high percentage of fructose. Three enzymes are required to process corn starch; the first enzyme is alpha-amylase that produces shorter chains of polysaccharides, the glucoamylase enzyme breaks the sugar chains down even further to yield simple sugar glucose allowing the third enzyme glucose-isomerase to convert glucose to a mixture.

Pure fructose contains no enzymes, vitamins or minerals and robs the body of its micronutrients treasures in order to assimilate itself for physiological use. While naturally occurring sugars, as well as sucrose, contain fructose bound to other sugars, **HFCS** contains a good deal of "free" or unbound fructose, which interferes with the heart's use of key minerals like magnesium, copper and chromium .**HFCS** has been found to inhibit the action of white blood cells so that they are unable to defend the body against harmful foreign invaders. It also interacts with oral contraceptives and elevates insulin levels in women on "the pill". The observation of increased body weight associated with fructose ingestion did not increase the production of two hormones, insulin and leptin, that have key roles in the long-term regulation of food intake and energy expenditure.

Although obesity can be inherited by genetic components, it could also be caused by many factors, environmental factors like lifestyle behaviors such as diet and activity levels, psychological factors like negative emotion or stress. America emphasizes physical appearance but also elaborates junk food and **HFCS**, that make people eat even more; people hate to be informed and get some knowledge about the consequences of obesity.

Written By: Andrea Alcade, Freshman ChE

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REFLECTIONS OF A CHE COLLEGE CAREER AT NJIT

My four years at NJIT's Chemical Engineering (ChE) Department have been great. I chose to come to here after speaking to faculty and students who explained the benefits of an NJIT education. I knew of NJIT's excellent reputation and loved the small school atmosphere that allows students and teachers to build relationships. I came to NJIT undecided. However, after hearing one of the many stories by Dr. Angelo Perna, my freshman undecided engineering instructor, I decided that chemical engineering best fit what I looked for.

The ChE department does an excellent job at training students to excel in the industrial setting. I realized this with my internships at Merck & Company. The company hires intern chemical engineers from the most prestigious schools (MIT, Stanford, etc.) in the country and I saw that NJIT chemical engineers where just as qualified and able to excel in the industrial setting. As a matter of fact, a lot of the high level managers at the company were NJIT graduates.

Also, our department does a superior job of training people to go to graduate and professional school. With a chemical engineering degree from NJIT you could pursue graduate studies in ChE or other engineering disciplines at the country's most prestigious universities (Rocco and Danny at MIT) or you could decide to go to law or medical school as many in the past have done and excelled at.

My experience at NJIT was great. I got to meet amazing professors like Dr. Hanesian who genuinely care about students and got to work with leading experts in their field like Dr. Sirkar. The education and opportunities I got here have prepared me to pursue my goals and face the challenges ahead.

Written By: Hermes Alvarez, Senior ChE

CHEMICAL ENGINEERING FINAL EXAMINATIONS SCHEDULE

Course ID	Course Title	Instructor	Day	Date	Time	Room
CHE-210-002	CHEMICAL PROCESS CALCULATIONS I	BALTZIS BASIL C	Mon	May 8	2:30pm-5:00pm	TIER LECT 1
CHE-230-002	CHE THERMODYNAMICS I	HOWLEY MAUREEN A	Wed	May 10	11:30am-2:00pm	KUPF 205
CHE-240-002	CHEMICAL PROCESS CALCULATIONS II	LONEY NORMAN	Mon	May 8	8:30am-11:00am	KUPF 206
CHE-260-002	FLUID FLOW	WU JING	Thurs	May 4	8:30am-11:00am	KUPF 203
CHE-342-002	CHEM ENG THERMODYNAM II	GREENSTEIN TEDDY	Tues	May 9	2:30pm-5:00pm	KUPF 103
CHE-349-002	KINETICS & REACTOR DESGN	HANESIAN DERAN	Fri	May 5	2:30pm-5:00pm	WEST LECT 1
CHE-363-002	TRANSPORT OPERATIONS I	WU JING	Wed	May 10	8:30am-11:00am	FMH 108
CHE-364-002	TRANSPORT OPERATIONS II	GREENSTEIN TEDDY	Mon	May 8	8:30am-11:00am	KUPF 207
CHE-367-002	DIFFUSIONAL SYSTEMS	GREENSTEIN TEDDY	Tues	May 9	8:30am-11:00am	KUPF 205
CHE-375-002	STRUCTURE, PROP & PROC MATERIALS	XANTHOS MARINOS	Wed	May 10	2:30pm-5:00pm	TIER 104
CHE-427-002	BIOTRANSPORT	SIMON LAURENT	Tues	May 9	8:30am-11:00am	KUPF 210
CHE-471-002	EQUILIBRIUM STAGE PROC	HENDELA ARTHUR	Thurs	May 4	8:30am-11:00am	FMH 205
CHE-477-002	PROCESS DYN & CONTROL	SIMON LAURENT	Wed	May 10	8:30am-11:00am	FMH 110
CHE-485-002	CHEM ENGINEERING LAB I	KISUTCZA JOSEPH	Fri	May 5	8:30am-11:00am	TIER 106
CHE-486-002	CHEM ENGINEERING LAB II	HANESIAN DERAN	Fri	May 5	2:30pm-5:00pm	WEST LECT 1
CHE-654-002	CORROSION	TOMKINS REGINALD	Mon	May 8	8:30am-11:00am	FMH 108

On behalf of the E-board and the Tiernan Express Team, we wish you all good luck on your finals!

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AMERICAN INSTITUTE OF CHEMICAL ENGINEERS STUDENT CHAPTER