



Currents

Newsletter of the American Institute of Chemical Engineers

NEW OPTION IN CHEM E – MARINE BIOTECHNOLOGY

By Pip Reeder



Yes! There is a new option for chemical engineers at UC Berkeley! For those of you with interests in marine biology aching to explore the new frontiers of the deep ocean and other extreme environments - this may be the option for you. The new option in the Department of Chemical Engineering – Marine Biotechnology – is an offshoot of the Marine Bioproducts Engineering Center (MarBEC) Education Program. Aimed at both graduate and undergraduate students, the program seeks to bring students into the loop of the MarBEC system which includes: the University of California, Berkeley, the University of Hawaii at Manoa, numerous industrial patrons, and connections to all the National Science Foundation (NSF) Engineering Research Centers. MarBEC itself is a NSF-funded Engineering Research Center aimed at the discovery and development of novel marine bioproducts for industrial applications. The key frontiers now being focused on by the MarBEC team are the largely unexplored extreme environments found both at the bottom of ocean and in lakes at the top of terrestrial volcanic peaks.

(Continued on page 7)

GOODBYE TO A FRIEND

By John O'Brien

“Rocks are Hard, Water is Wet,
It Either Balances or it Don't”

I suppose his quote could be applied to anything, anywhere. It's such a simple statement, yet so profound. So was the life of former UC Berkeley Chemical Engineering Professor Fred H. Vorhis. On one side—a practical, problem-solving engineer. On the other side—a complex, mysterious philosopher. The persona of Professor Vorhis earned him the respect of his colleagues, friends, and most importantly, his students.

During Spring Break of 1999, I received an e-mail from Fred asking if I'd like to participate in a research project. I jumped at the chance. I thought—this guy was my key to getting a really *sweet* job. He knew everybody, everywhere. I didn't even know Fred, but boy, did I know him. Professional Engineering degree with no prior study, knew all the company representatives from all of the companies who came to Cal, and taught the most demanding class in the undergraduate curriculum in one of the most prestigious chemical engineering institutions in the nation--with only a masters degree. I knew Vorhis. At least, I thought I did.

From day one, I knew I was working with an engineer—a real engineer. *(Continued on page 6)*

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EVERYTHING I EVER NEEDED TO KNOW I LEARNED IN 140...

As I draw near the end of my tenure at Cal, I realize how useful Chemical Engineering 140 really was. Back then, I saw it as the "weed-out" class, but I have come to appreciate that 140 is more than that. It was a class that taught social skills and when to ask for help.

I learned early on that if I ever hoped to survive or get anything done, I needed to make friends quickly. I realized that my classmates were a valuable resource, not only to help me finish my homework, but also for my ego. Nothing was more comforting to me than knowing that there was a classroom of people cursing under their breath about the stupid flow of species A into a tank and knowing that the only reason we cared about "how many residence times we would have to wait for A to cause an appreciable change in the overall composition in the tank" was because it was worth 8 points.

Seeing the professor proved to be an invaluable experience; not only does this help you with your homework, you get to know the faculty. One thing that I have found is that the professor is there to help and that you should take advantage of that fact. There is no shame in asking for help and who better to ask than the person who asked the question.

Sure in 140 you learn about the basics of Chem E, but you learn the most important thing of all - you learn how to interact with your classmates and your professor. Skills that you should take with you as you venture forward in your life. With this you learn the basics of networking and that, my friends, will be the secret to your success. ♦

COMPLAINTS FROM CHEMICAL ENGINEERS

By Anonymous

John Ives is a punk ass bitch

The drinking fountain in Tan Hall outside 180 Tan never works

All Chem E classes are only 3 units and they're the hardest the school offers

The mean on our midterms is 25/100

Look to your left, look to your right, at the end of the semester those people will not be there.

The fact that study buddies become closer than friends

Why is the Daily Cal never available in the Chem Quad?

The fact that our labs never work

The fact that we have labs

The fact that the Chem Library is not in the Chem Plaza

Who says the donuts are only for Chemistry Grad Students?



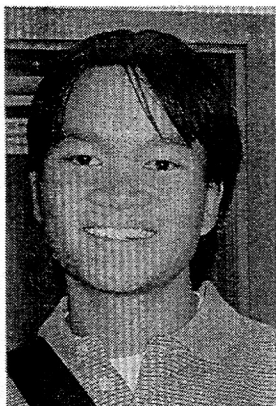
What Good Thinking Can Do

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I NEVER WANT TO LEAVE

By Stephen Chan



Just over three years ago I arrived on a Southwest Airlines jetliner to begin my collegiate career. I was barely 18 and very, very underexposed to the world around me. Behind me were the confines of little, conservative suburbia. Cal was to bridge my adolescence and my adulthood. It all seemed so simple. I'd go to college, earn my Chem E degree, and return to suburbia employed by a petrochemical mogul. That was the plan. And it all seemed so simple.

Fast-forward just over three years.

I'm lost. Graduating in under 8 months with no idea of what I'm going to do, what I'm going to be, where I'm going to live. Grad school would be torturous and the job market red-hot. So I guess I've got to find a job, simple enough. But, have the past 6.5 semesters prepared me and qualified me to make fifty grand a year? I laugh...but this is real and very eminent.

Solution: I'll stay in school forever (avoiding the real world)

Problem: For me, it's too late

In the just over three years that I've been at Cal, the one thing that I've learned is 'make the most of your time here'. Yes, chemical engineering IS the toughest major around and we devote endless hours to it. (Continued on page 4)

AICHE SPORTS UPDATE

By Dale Weber



As of yet we have only had one undergraduate versus graduate sporting event. We went bowling on October 24, and there was a good member turnout, but there were no graduate students. There are rumors circulating that they had some sort of test the next day, bologna. My personal theory is that since we came so close to beating them last semester, they simply knew better than to show up.

With only undergrads in attendance we turned the match into an old fashioned battle of the sexes; boys versus girls. I bet you can't guess who won, twice. In the spirit of good sportsmanship and trying to avoid chauvinistic, I won't say. I will disclose that we all had a good time.

I must recommend that if you join AIChE for the next bowling event, take a stroll up San Pablo Avenue and check out the Hotsy Totsy. If you want to fit in, you need to be either old and haggard or about fifteen and look like you belong in the FFA. If you choose the latter, make sure you check out the Chem E girls from Cal (that is what happened on our visit), especially if there's only one guy for the three of them - they can't all be taken, can they?

Anyway, our next sporting event is November 5. That'll be football at Lake Anza in Tilden Park at 12:00 noon. Carpools are meeting at 11:30 at the Mining Circle. ♦

Never Leave

Continued from page 3

But these are the college years and you're youthful and free. So make time away from the books and please don't waste it! You'll regret it. Don't watch the television mindlessly or play computer games all night. Go out! Never again will you ever be in your prime in such an amazing place as the Bay Area. It's so diverse, so culturally rich, and so big. The city of San Francisco is utterly amazing and less than a 30-minute BART ride away. Go enjoy the afternoon at Golden Gate Park. Go listen to a concert at the Fillmore. Go explore the neighborhoods: Mission, Haight, Presidio, etc. Go dance the night away at a club. Go do whatever you desire. You get the point.

Even looking beyond California, I implore you to wander the world. Once you start working you'll never have such large gaps of time to travel 'til you retire! Travel during spring break and definitely during the summer. Take a semester off and study Chem E in another country. My number one regret: never looking into the education abroad program (EAP).

For me, it's too late (and too expensive) to stay another semester or two. Sadly this means that in less than 8 months I'll be working at some really exciting Chem E job [insert *sarcasm* here]. In the meantime, I'm making lots of free time and making the most of that time!

At one time, it did seem so simple. Now I'm fighting the hands of time and struggling to ward of graduation. Maybe I'll fail a class!

If I could, I'd stay forever. ♦

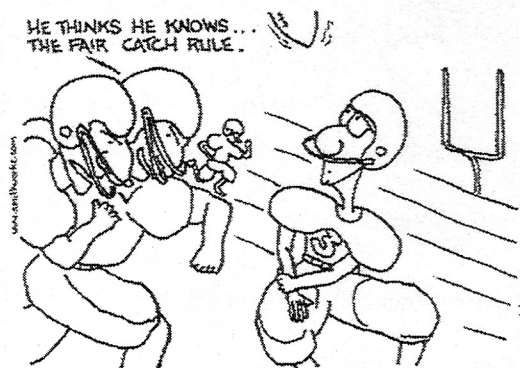
UPCOMING EVENTS

1. Undergraduate v. Graduate football
November 5, 2000
12:00 -- Lake Anza, Tilden Park
11:30 -- Carpools meet by Tan
Food and Drinks Provided
2. AIChE Movie Night
November 8, 2000
5:30 - 180 Tan
Food and Drinks Provided

Questions about #1 or #2 email pippi@uclink4 or linx9@uclink4

3. AIChE Student National Conference
November 11-13, 2000
Los Angeles, CA
Hosted by Cal Poly, Pomona
Registration is \$65 by Nov 3 and \$75 by Nov 11
The club is partially funding the trip.

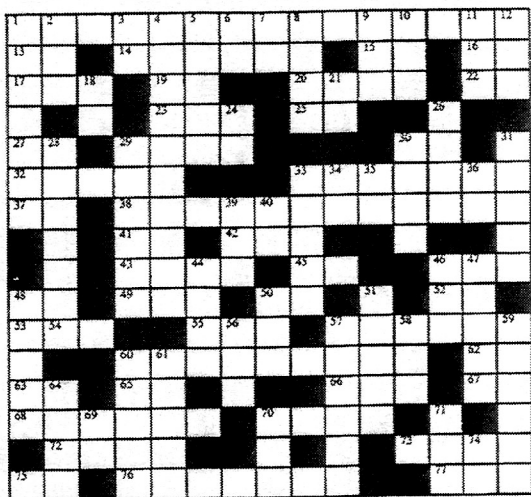
Questions about #3 email dalewh20@uclink4.



Chevron

TRY THIS CROSSWORD

By Jaya Boppana and Wendy Lin



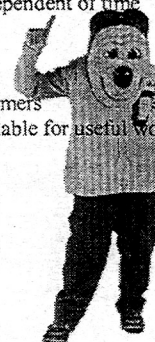
DOWN

- 1) dilute solution of acetic acid; tasty with lipids on lettuce
- 2) measurement tool for reading a meniscus
- 3) put too much in
- 4) free energy
- 5) group that declares carbon chains most important
- 6) disease characterized by cough
- 7) alkane suffix
- 8) co-author for form of EOS: $Z = PV/RT$
- 9) carbonyl group prefix
- 10) part of fish anatomy to aid in heat transfer
- 11) The Beatles mistook Lucy for this alkaloid.
- 12) mistake equation
- 18) alcohol suffix
- 24) socially synonymous with Jerry's Kids
- 26) denotes presence of large noble gas in molecule
- 13) mistake equation
- 19) alcohol suffix
- 25) socially synonymous with Jerry's Kids
- 26) denotes presence of large noble gas in molecule
- 28) opposite of cis-
- 30) pull up and fill up here
- 31) Bill Gates claims his programs are friendly to this group
- 33) "mutt" of metals
- 34) In a car, a gallon of gasoline produces more than a pound of this
- 35) daughter of rhenium
- 36) start-ups like these offerings
- 39) maiden loved by Zeus and changed into a heifer so that she might escape the jealous Hera (pl)
- 40) lightest metal known
- 44) find it at Edwards Air Force Base, Cape Canaveral, and Moffett Field, to name a few
- 46) juniper berry-flavored ethanol
- 47) something we all have in common
- 48) H - TS
- 50) diethylstilbestrol
- 51) Professor Cairns
- 54) opposite of trans- (reverse)

- 56) radius = 0
- 57) only 0 and 1
- 58) antiretroviral drug used to treat HIV
- 59) stove, furnace, radiator, etc.
- 60) homogeneous region of matter
- 61) densest gas known
- 64) more than all the air surrounding the earth
- 69) electrical engineer
- 70) equal, similar, identical
- 71) £1000
- 74) Hawaii's motto: ___ mau ke ea o ka aina i ka pono

ACROSS

- 1) speed silhouette
- 14) eye occasional vowel
- 15) type of connection between pair of oxygen molecules
- 16) ξ
- 17) ___ \rightarrow Y via β -decay; AARP invitee
- 18) new
- 19) period of oscillation = $33 \frac{1}{3}$ rev/min
- 20) in French: "jambe sur"; popular group of colors in the 80's
- 22) fluorine + isotope of hydrogen for which only one neutron
- 23) man-made structure to stop nature's PFR
- 25) ___ = $(D/x)Re_D Pr$
- 26) gas turbine; racing-class caliber of automobile
- 27) ozone-depleting chemical
- 29) account of
- 32) opposite of ___ violet rays
- 33) European fiber company
- 37) $Z = 88$
- 38) wave-viewing TV
- 41) candela, ampere, mole, etc
- 42) greasy, combustible, liquid substance
- 43) the limit as time goes to infinity (pl)
- 45) capital of Norway minus lo
- 46) for $P < P_c$ and $V >> V_c$
- 48) government issue
- 49) the pentose for this nucleic acid is 2-deoxy-D-ribose
- 50) 2/3 of a solution used to color
- 52) pirate greeting
- 53) solid substance with MW = 18 g/mol
- 55) pronoun for Professor Maboudian
- 57) Berkeley professor with an interest in biochemical engineering
- 60) Berkeley professor with an interest in thermodynamics
- 62) useful for making balloons float and giving humans funny voices
- 63) metallic chemical element with MW = 137.34 g/mol
- 65) response to a chemical engineer's joke
- 66) nat, net, nit, nut
- 67) electron affinity
- 68) state in which property is independent of time
- 70) OPEC member
- 72) achiral but with stereocenters
- 73) a chimney is an example
- 75) convention for naming enantiomers
- 76) measure of the energy unavailable for useful work in a system
- 77) 10^6 dyne/cm²



Fred Vorhis

Continued from page 1

Fred presented me with an engineering design that he and another undergraduate had pursued back in 1992 that was never completed. The student worked on modeling the design, but eventually gave up after about a year. Six years later, I stepped in. About fifty pots of coffee, ten packs of caffeine gum, and an ulcer later, the project was completed in little more than three months. Was it worth it? Naaa...but I met a character unlike *any* other I had met at this university.

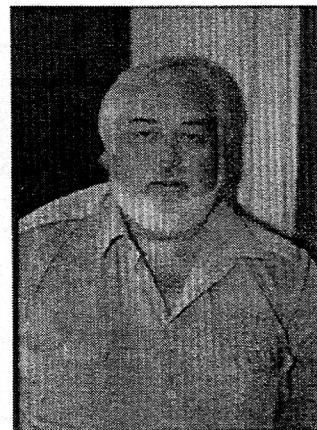
Seldom do we meet teachers who teach not only about the subject matter, but also about lessons in life. Fred didn't teach because it was part of his university contract—he taught because he *loved* teaching. He loved working with the brightest, most talented young engineers to emerge from this university. I can't really explain what gave Fred the ability to motivate his students like he did, but it was something magical. His students enjoyed excelling and seeing their countless, sleepless nights in Bixby come to fruition at the end of the semester. I'll never forget as a freshman, seeing all those red-eyed seniors, slaving away at those old 33 MHz stone-aged computers, trying to find converging solutions to their mass and energy balances. They weren't working to *avoid* a "C" (heaven forbid)--they were working to *earn* an "A." They were working for their supervisor--Master Fred Vorhis.

To many a surprise, Professor Vorhis passed away late last month. Words cannot express the feelings of losing a friend, let alone a friend like Fred. Even now, as I write this memoir, I cannot believe he is truly gone. I spoke with Fred in April and exchanged e-mail in

July. When I tried to call him a week ago, I failed to reach him at his home in Idaho. Little did I know that he had already passed away.

Upon hearing of his death, I found myself in utter disbelief. How could a man, so ALIVE with life, be dead? How could a man, with so much passion, be gone? How could such a man, with so much to offer his friends and family, be no more? I suppose in life, just like in chemical engineering, there are more questions than answers...

If it's normal to be angry after you lose a friend, then I guess I'm not normal. Cuz I'm pissed. I wish I could have one last opportunity to tell Fred how much he influenced my life, but I know it'll never be. If I could just say goodbye, dear friend, and good luck, I suppose I wouldn't be as sad. Although as much as I would do anything to hear his voice just one last time, I know I cannot. But his voice will live inside my heart for the rest of my life. I'll never forget the unique spirit of FHV—I know I will ever meet a character like Fred. Engineer, teacher, father, husband, consultant, counselor, masseuse, lecturer, mentor, health-guru, and friend, he did it all. After all, you can't spell Friend without F-r-e-d. ♦



Fred Vorhis

Marine Biotech
Continued from Page 1

MarBEC is based at both campuses, taking advantage of differing academic expertise. Field research is currently taking place in Hawaii and New Zealand (so far, the program is always expanding) at the hydrothermal vents and volcanoes present at the joining of continental plates. At these locations, MarBEC scientists are finding copious unique microorganisms with the potential to be highly valuable to both industry and society as a whole. The MarBEC student option includes opportunities to participate in this research in all aspects of the process, which combined with its component classes, will give students a unique perspective and outlook into the marine science and biotechnology industry and research communities. Per the MarBEC education plan mission statement: "The MarBEC undergraduate will think integratively, experience working in a team, have good communications skills, have familiarity with industry, and graduate with a strong start on his or her personal network of contacts in the field."

The elective classes involved in the UC Berkeley marine biotechnology option include: Chemical Engineering 298 (a seminar – Marine Bioproducts Engineering Survey), Chemical Engineering 170M (biotechnology with a focus in the marine sector), Molecular and Cellular Biology 102 (principles of biochemistry and molecular biology), Chemical Engineering H194/196 (6 units of research under a MarBEC faculty member), and Plant Biology 120 (biology of algae with lab) or MCB C112 (general microbiology).

For more information about MarBEC contact Stacey Shulman, the Administrative Director for MarBEC at UC Berkeley. ♦

For more information on the new option contact your staff advisor or Stacey Shulman at stacey@cchem

TOP 10 REASONS I BECAME A CHEMICAL ENGINEER

Stolen by Ruben Omega
(from a UCLA tee-shirt)

10. Pre-med is too easy.
9. I mistook Heat Transfer as a sun-bathing class.
8. I thought plant design was a botany course.
7. Chem E's do more after midnight than most people do all day.
6. I misread simulation as "stimulation."
5. We react better in packed beds.
4. Became a sleep deprivation expert in the 3 unit engineering labs.
3. This kind of pressure turns coal into diamonds.
2. Got to learn how to use all those buttons on my calculator.
1. Who needs electives anyway?

ENGINEERS JOINT COUNCIL

By Gilbert Kwok



Hi, I m the EJC rep for this semester.... U must be wondering what da heck is an EJC rep.? Actually, I don't even know exactly what it is until this semester.... It is one of those position that no one knows what I do.... Well, herez it is: first of all, EJC stands for engineering joint council... basically it is an umbrella organization of all engineering clubs on campus... they provide funding and activities for all engineering clubs. Activities such as IM, broomball, and company presentations... pretty much what AIChE does but for all engineering discipline instead of chemical only. As a rep I am responsible to go to all EJC meetings (so I m like in two clubs now – not fun!) and inform AIChE's members about EJC's these events. Another thing an EJC rep responsible for is exam files... many of you weren't too responsive to candy bar for ur old exams... so now we r going to start buying them from u.... so watch for announcement of us buying ur old exams... Anywaz, thatz the gist of what I do.... Seriously, it is a really cool position because I have a chance to meet a lot of other engineers (great for networking). Alrighty, so now u know when u receive and email from the EJC rep, thanks for listening bye! - Please excuse my ghetto writing... still in the process of taking chE185 =). ♦

(Editor's note: I'm well aware of the grammatical state of this article, I just think its funny)

E-DAY

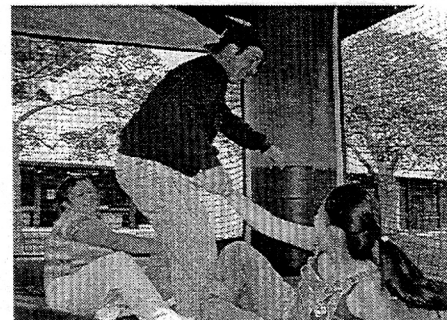
Despite what one e-mail prankster may have thought E-Day has nothing to do with any controlled substances that are referred to as "E." It is rather a day where students from community and junior colleges can come ask questions about engineering at UC Berkeley. This year E-Day was October 27, and as every year was hosted by the EJC.

Most of the clubs within the EJC had a table on Bechtel Terrace, armed with pens, post-its, and even pie. There was a BBQ and bouncy castles to boot. The highlights of the day for me included meeting prospective students (being the guy to answer some questions for once), wrestling in the bouncy castle, and tricking several girls into giving us there phone numbers (leading them to believe they were entering a raffle to Jamacia).

Enjoy some photos of this event:



A bouncy castle being destroyed from the inside



Getting taken down by some lovely ladies, oh too bad. ♦

ITS TIME FOR ... SOME RANDOM PHOTOS!!

Here are some photographs taken over the semester. If you can identify yourself in one, you win a prize – instant FAME! If you're not in one, go to more events.



Clockwise from upper left: (1) Some officers hanging out with “Bob,” Berdahl, that is, along with some Ford guy; (2) You can take the man out of the hood...; (3) DBG; (4) The men from Alza after their presentation to the club; (5) The Dow sponsored tailgate before the Utah game; (6) Members eating Pizza after the Alza presentation; (7) Riham and Jasmine posing at the Ford reception. **Dead Center:** The camera shy half of POW caught on film

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