N E W S L E T T E R---

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CUP YACHTS SAIL ON CHEMICAL TECHNOLOGY

An expensive sea battle was waged in Auckland, New Zealand by the big boys and their toys: their closely matched sailing yachts. All of these America's Cup craft have been built out of composites of fiber and thermoset resins along with as little metal as possible.

The designers and builders vied with one another to have the lightest boat with sufficient strength and toughness to hold up to the stresses imposed by huge sails, rough seas and gusty winds. Added to this is the driving eagerness of the crew to push the boat and rig to the limit to gain a tenth of a knot more speed or make a surprise sudden maneuver to get ahead of the other boat.

The major parts of a sailboat are the hull (bottom and deck), the spars (mast and booms) and the sails. Traditional hulls had progressed from oak and pine to steel and aluminum; spars from wood to aluminum and magnesium; and sails of linen and cotton to nylon and polyester. Chemical industry has now provided materials and processes that are lighter, stronger and stiffer than these to make each of the three sailboat components work more efficiently and productively for one purpose: win the grueling siege of race competition.

Since 1950 boat builders have perfected hulls made of thermoset polyester resin reinforced with glass fiber. These provide improved strength and easier maintenance over wood and metal. Recent demands of extreme racing have required new materials and methods. The latest combinations for hulls and decks are epoxy resin with high-tech synthetic polymer or carbon fiber. Spars now are being made of the same kinds of materials.

Sails have undergone the most revolutionary design and material changes. The new structures are complex, with woven fabric, strands of high strength fiber and sheets of oriented polymers, laminated in giant presses to computer-designed shapes. The use of the materials with the greatest strength to weight ratios and resistance to elongation allow the fabrication of sails that are strong, light, durable and stable both under sailing stresses and their repeated raising and lowering.

The three classes of sails: mainsail, foresail and spinnaker are custom designed for their very different purposes. But they collectively are the engine that converts wind energy into forward motion through the water. Each has its specific function and each is designed to deliver it reliably.

The mainsails on these boats are formed into curves that mimic the curve of an airplane wing and must be able to assume the same shape when the wind blows on either side.

Such sails could not be possible if the polymer and plastics industry had not already developed these advanced products for such purposes as bullet proof vests, parachute fabrics, rope and packaging film and tape.

The winners have spent fortunes on their boats and equipment and trained their professional crews for years, but if they don't keep up with the technological advances made possible by chemical polymer technology they find themselves left behind.

WELCOME NEW MEMBERS

ARTHUR J. POWER - No. 693 - Boulder, Colorado. Phone (303)440-7216, E-mail: art.power@cwix.com. Power has been an affiliate member, transferring to full membership. He is prepared to service clients in the following specialties: Safety and Hazards Engineering; Industrial Wastewater Treatment Engineering; Technical Writing; Environmental Impact Analysis; and Biochemical Engineering.

GAETANO "Guy" D'ANGELO, No. 878 - Center Moriches, NY. Phone (516)878-2912, E-mail: gnkdan@li-fish.net. D'Angelo offers general chemical consulting help towards solving technical problems. He has biotechnology laboratory and organic synthesis skills, among others.

RICHARD A. FIELD, No. 879 - Summit, NJ. Managing Director of ChemSource & Services. Phone (908) 608-0794, Fax (908) 608-0795, Web Site: http://chemsource-services.com, E-mail: rafield@aol.com. Field specializes in developing and sourcing new chemical entities and second sources of supply for intermediates and active pharmaceutical ingredients. Provides cGMP manufacturing assistance and assists US and international manufacturers in sales and marketing, focusing on the pharmaceutical chemicals industry.

MYOUNGHEE NOH, No. 880 - Aiea, Hawaii. Phone (808)484-9214, Fax (808)484-1219, E-mail: m_noh@aloha.net. Web page www.http://www.noh-associates.com. Ms Noh consults in environmental assessment & remediation and pesticide registrations, with Federal Environmental certification. She has experience with the Pacific Rim countries. Her website is worth checking out -- well-done!

CALVIN K. JOHNSON, No. 881 - Lockport, Illinois. Phone (708)301-4417, Fax (708)301-0428, E-mail: johnsonck@prodigy.net. Johnson has deep experience in foundry molding processes and the resins they use. He consults in plastics, chemical, oil field and related industries with a special emphasis on process, product and applications development.

J. DAVID BOWER, No. 883 - Long Valley, NJ. Phone and FAX (908)852-3346, E-mail: bower@goes.com. Dr. Bower covers pharmaceutical industry areas of polymers, coatings, emulsions and drug characterization data for IND submissions. He has experience in formulations for toxicology studies and characterization of drugs for FDA application.

PAUL W. SIGMUND, No. 884 - Morristown, NJ, is a registered Professional Engineer. Phone (973)538-8204, FAX (973)292-3199,E-mail: pwsigmund@worldnet.att.net. He is expert in pilot/small plant design and construction, process simulation and control, as well as technology development.

Please welcome these new members, look over their qualifications and, if you see you have something in common, call one or more or send them an E-mail. Don't overlook the possibilities for income through joint consulting.

E-MAIL IS A POSTCARD

E-mail is easy. More and more correspondence travels by this medium. With "attachments" even FAXing is being replaced. But there is a privacy risk that often is forgotten. It lies in the mechanism by which these messages are whisked from one computer to another. The question is "Who might be able to intercept your message and use it to harm you or for unauthorized business purposes?"

You are not usually warned that each new e-mail message is not a secure document even though you often meet them on Internet sites that are asking you to submit personal details as you prepare to place an order, register as a member in their service or give your credit card number.

The simplicity of e-mail operation makes it seem as safe as talking on the telephone or sealing a letter in an envelope and putting on a stamp. This is covering up the fact that your message goes from your computer into the "server" computer of your provider and is forwarded to the server of your addressee. It resides there until the addressee opens his mailbox and downloads a copy. After that it a copy may remain in both servers for some time.

The keepers of the e-mail servers are probably doing a competent job of blocking access to private messages by others but the nature of the Internet injects an element of insecurity in transmission. The message may go directly as described above but most likely is goes by a roundabout route through many servers as channels of communication are available. It is saved on each of these servers also. This feature is what gives the speedy "broadband" character to the Internet.

An article in the New York Times Business Section on January 31 by Bob Tedeschi describes in some detail the businesses already offering services to add security to e-mail traffic. They take your message and encrypt it under a password that only you and your correspondent know. This transforms the message into a first-class, sealed letter. It is no longer like a postcard.

If you are an Internet user and you want learn more about Internet privacy or to find out what someone else can learn about what you do with your computer consult: http://privacy.net/anonymizer/ for a privacy analysis of Your Internet Connection.

A POLYMERIC ELECTRONIC NOSE

A fascinating Patent (No. 6,017,440) has just been issued to two Cal Tech researchers for an analytical system that can measure mixtures of organic vapors by an array of microelectronic sensors and suitable software. Basically it comprises an array of chemically sensitive resistors of different, similar compositions. Each provides an electrical path between conductive elements. In the inventors' words "An electronic nose for detecting an analyte in a fluid may be constructed by using such arrays in conjunction with an electrical measuring device electrically connected to the conductive elements of each sensor."

In use, the elements of the device measure a difference in resistance between conductive elements when contacted with a fluid containing a chemical analyte at a first concentration, and the resistance when contacted with a fluid comprising the chemical analyte at a second different concentration. Electrical signals would be interpreted by special computer software.

The inventors discovered how to fabricate chemically diverse sensing elements by preparing processable, air stable films of electrically conducting organic polymers. This was achieved through the controlled chemical oxidation of the compound pyrrole using phosphomolybdic acid in tetrahydrofuran. As a result, trimers of pyrrole form, which are thermodynamically favorable to producing solvent-soluble polymers than can be spun-cast into objects for fabricating resistors.

By mixing the polypyrrole with other polymers such as polystyrene and other vinyl polymers, the resistance properties of the coating can be custom made to be sensitive to various vapors such as acetone, benzene, chloroform, ethanol, hexane, methanol, and toluene. There is even the possibility for detecting and identifying specific microorganisms through the effects of them on such chemiresistors as described here. Signals produced by an array of different detecting elements, when processed by sophisticated software "expert programs" could approximate the ability of a human or animal nose to identify different specific living systems.

Other inventors have worked on similar systems, but the simplicity of using organic chemical polymers as the electrical resistors is an essential part of this invention.

INTERNET SITES OF INTEREST

We are finding many sites that seem to offer opportunities for making contact with clients. Here are three.

ChemicalPartners seeks exceptional service providers with industry experience as partners and as fee-for-service vendors. Service providers work with us as representatives of their organizations and as individuals. Our needs vary by project; some examples are: market research, engineering, procurement testing and analysis, product testing, due diligence assistance, legal services for patents, venture formation, marketing Contact them and register your expertise to be become part of their network and be considered for opportunities. Some service providers, because of their industry experience and expertise, also have know-how that could be the basis of a ChemicalPartners enterprise. Contact them and let them know how you envision working together.
http://www.chemicalpartners.com

Elance is a service that can connect you with clients all around the world. Providers and users can find each other, negotiate a deal and even use eLance as a platform for delivery of the service. They use eLance tools such as the Work Space -- a shared file system accessible to both for exchanging and viewing files -- and private message boards to get the job done across any border. This service is new and in its "beta" phase. For now it is free to use, and it's always free to register.
http://www.elance.com

ExpertCentral is another venue for people to share information and digital goods with each other. This includes consultant to client contacts. It provides infrastructure for sharing information and

transactions. This site also can facilitate the charging of fees by members to each other. The site is not involved in any way in the content of the information or digital goods that are shared between users and experts. For now there is no charge to use the site. It does not endorse, warranty, or guarantee the quality or accuracy of the content entered by users. A consultant registers with the site and can examine queries for consultants and get in touch with the client. You can also place your resume in a section that can be searched by clients. Visit this complex site for lots more detail.
http:www.expertcentral.com

SPEAKERS CORNER FEBRUARY 2000

Charles E. Miller, Esq., Senior Partner of Pennie & Edmonds LLP, spoke on the implications for the chemical and related industries of the recent revisions of U.S. patent law. These are part of the legislation signed on November 29, 1999 that goes under the title of *Intellectual Property and Communications Omnibus Reform Act*

Dr. Miller received his PhD in Organic Chemistry and later a Juris Doctor degree. He remains a member of the American Chemical Society and is active Japan and other overseas countries.

Dr. Miller concentrated on the Inventor Protection section of this new law. He also showed his familiarity of the inner workings of the Patent Office in Washington. Members and guests participated in a very informative discussion.

ESSENTIAL TOOLS FOR CONSULTING
Mentoring

Mentors are those who know more about a certain area of expertise than you do and are willing to help. Mentoring is a partnership between a professional with in-depth experience and knowledge in a specific area and an apprentice seeking learning and coaching.

Finding a mentor is up to you. Look around for people in your profession who are seasoned. Take the initiative to approach one or more. Once connected, look for ways you can help him/her as well.

Mentor/protege relationships work best when they are two-way streets. Listen generously to what they need, and you will find it easier to ask them for what you need. Don`t be a taker! Be a giver!

One class of mentor is the technical expert in your field or specialty. Your profession or business field is continuing to change and evolve. An experienced person who is willing to help you can keep you current on important technical and business changes in your field.

Another input you may receive from a mentor is an understanding of the informal values and practices of your common profession. Remember that there are people everywhere who know how to get things done quickly and effectively. They know about billing, making a winning presentation, speeding up proposal making and selling yourself and your skills. Look for such a person and stick your neck out to ask for advice. He or she may become one of your mentors.

Look for possible mentors on the Internet. Any of the roles described above can occur online. You may never actually meet them face-to-face, but you can avail yourself of their wisdom and coaching, when you most need it. Again, be on the lookout for how you can support them - alerting them to articles, books and other items. As the business world becomes increasingly fast-paced and complex, you may need multiple mentors. Be on the lookout for people who can play a variety of mentoring roles. Ask for help. But, be sure that you go out of your way for them and express your gratitude. Try to make a good mentor-protege relationship last. Soon your will be on an equal footing. They will be nodes in your network. *The above column is based on an article written by Caela Farren, PhD, CEO of MasteryWorks, Inc., Annandale, VA. She is an expert on organizational career development, author of* **Who`s Running Your Career?** (Bard Press, 1997). www.masteryworks.com or call her directly at (800) 229-5712 or via email at cfarren@masteryworks.com.