



econotalk

THE LATEST NEWS FROM ECONOTECH AND FRIENDS | WINTER 2003/04 | VOLUME NO. 17



Have you visited www.econotech.com lately?

We are proud to announce the launch of our new [website](#)! We might call this version 6.0 since our first single page presence on the web was posted back in October of 1995. Since those heady early days of the web (we were listed on Yahoo! when their servers were still at Stanford!), our website has matured through numerous iterations.

The most noticeable change in this latest version is the look. We have taken the simple and clean design from our award-winning brochure and applied it to the web, keeping a consistent corporate image. Site navigation has been improved with a more intuitive menu structure. A new "Our People" page gives clients the opportunity to put a face to a name and learn a little bit about our staff. Many new images of our lab and instruments adorn the site as well.

All the old favorites are still there; our ever popular econotalk newsletter archive, comprehensive pages about our [services](#) and important information concerning [sending us samples](#). As an adjunct to econotalk, we've added a "Latest News" section for immediate postings, informing visitors of the latest happenings at Econotech. Handy features like a site search page and an "at-a-glance" contacts page are also available.

Much thanks to Hangar 18 Creative Group for their inspired and superlative conceptualization of our corporate image in its various forms. They've provided an inventive and constructive atmosphere for us to fully realize our promotional image.

So fire up that web browser, surf on over to www.econotech.com and check us out! <<



Customer Focus is our business

One of the primary goals of our organization and the [Microscopy department](#) is to continually improve our Customer Focus. In a broad sense, this translates to understanding exactly what you as a customer want, and then delivering to meet or exceed your expectations.

Customer Focus is core to all of our initiatives and we are constantly looking for ways to improve in these areas. Recently, with help from microscopy clientele, we conducted a survey to better understand your needs in the area of individual care. We are also working to improve your reports. For example, Microscopy has started emailing reports in PDF format to guarantee their original integrity and quality. >>

Evanescent vessel
continued inside





< Sandra Fodor and her two girls, Ashley & Claire

Customer focus is our business continued

>> 'Value Added' has become one of Microcopy's mottos over the last few years. We want to ensure your company's resources go that extra mile and we continually keep this in mind when working on your projects. For some of our ongoing customers, we maintain complete spread sheets that chart trends; for others, photomicrographs say a million words. Need that analysis rushed? We understand deadlines are a major part of this business so we will do our very best to ensure that your projects are done when you need them.

Personal customer contact has always been our source of pride. Do not be surprised if you receive the personal touch of a telephone call or that extra email. We guarantee that you receive the service that you deserve.

If there is anything we can improve to be of better of service to you, please let us know. We appreciate that your success is our success. <<

MICHAEL O'GRADY - TECHNOLOGIST, AND ONE OF YOUR CUSTOMER SERVICE REPRESENTATIVES
michael@econotech.com *recycled fibers*

See you at EXFOR!

Sandra Fodor, Eric Chao and Michael O'Grady will be in Montreal January 27-29, representing Econotech at EXFOR 2004. They invite you to drop by booth #5010 for a visit. Find out more information on this annual pulp and paper event at www.activexpo.com/exfor. <<

What is the diffuse and directional brightness?

Brightness is the most commonly used optical property in the pulp and paper industry. It is normally referred to as the reflectance of blue light and is measured at the effective wavelength of 457 nm. Instruments used to measure brightness can be designed using either directional or diffuse geometries.

Directional brightness is referred to as "GE brightness" or "TAPPI brightness" and is measured in accordance with TAPPIT452 "Brightness of pulp, paper and paperboard (directional reflectance at 457nm)". The instrument uses a 45° illumination and 0° viewing geometry, where parallel beams of light illuminate the paper surface at an angle of 45°. The instrument uses a 13 mm diameter area of illumination and a 9 mm diameter area of viewing. With the smaller viewing area, brightness measurements from the directional geometry instrument can have a higher degree of variation compared to data obtained using a diffuse geometry instrument. Directional brightness measurements on paper measured in the machine direction and cross direction will also vary. An advantage to using directional geometry is the specular gloss is completely eliminated from the measurement.

Diffuse brightness is referred to as "ISO brightness", "PAPTAC brightness", "SCAN brightness", "Elrepho brightness" or "Technibrite brightness" and is measured in accordance with ISO 2469 "Paper, board and pulp measurements of diffuse reflectance factor". The geometry used for the diffuse brightness instrument consists of diffuse illumination and 0° viewing sphere geometry. Lamps within the instrument illuminate the inner wall of the sphere, which is coated with a high reflectance BaSO₄, based white material, allowing multiple reflections to diffuse the light before it strikes the sample and is viewed by a photocell. The viewing area for the instrument is a 30 mm diameter area that reduces brightness measurement variations commonly found using a directional brightness instrument. In addition, brightness measurements taken in both the machine direction and cross direction are not effected by directionality and are very similar. Diffuse brightness does have two disadvantages; the specular gloss cannot be completely removed and the incident light illuminating the inner sphere wall can reduce the amount of ultraviolet energy used to excite fluorescence.

If you are comparing brightness measurements, it is important to note the type of instrument geometry being used. Brightness measurements taken from a directional brightness instrument and a diffuse brightness instrument will give different results. Presently, there is no correlation factor available for various paper grades to convert data from "TAPPI brightness" using directional geometry to "ISO brightness" using diffuse geometry. <<

If you have any questions regarding directional and diffuse brightness measurements please contact:

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Reference: Technidyne Corporation "Measurement and Control of the Optical Properties of Paper", second edition, 1996.

High-tech pollution

During my recent trip to Asia, our tour bus experienced brake problems and had to make an unexpected stopover for repairs. As our bus stumbled into a tiny village in the countryside just outside a large city, we saw dense smog covering the whole area and could smell strong sulfuric acid fumes. As we disembarked and strolled along the side streets, we saw computer parts scattered everywhere. Computer monitors and television sets were piled up in the small shops. Everybody was busy hammering the circuit boards and electronic components, dissolving solder with sulfuric acid to retrieve the memory chips and scrap metal. Some worked with their bare hands as they handled these hazardous materials. After this process, the computer waste was scattered everywhere and the acidic cleaning solutions were poured into the streams. We wondered whether anybody checked the pH of the water because all of the plants were dying. Our tour guide told us these poor peasants would make no more than a few dollars a day.

When we took a closer look at this equipment, we could see that some pieces were actually from Canada, with company logos still on the computers. Everybody on the tour was shocked to see that our high-tech waste was actually causing a hazardous environment for these people.

For many years, environmentalists have been blaming the pulp and paper industry for bad environmental practices and our industry has spent billions of dollars meeting government regulations. We are seeing another environmental disaster looming because we are striving to improve our efficiency by installing new and faster computers and larger monitors. According to Environment Canada statistics, Canada alone generates about 30,000 tons of high-tech wastes every year and our municipal dumpsites are running out of space. This e-waste could end up in the hands of those poor peasants who cannot handle its detrimental environmental impact. Yet, we have not seen any government policy to control our high-tech waste.



With our advanced technology, one wonders why our high-tech industry cannot develop reusable computer parts to recycle our old machines. They should take some steps and social responsibility before relentlessly pushing for more sales and profits. As I was writing this article, my monitor died. I was told it would cost \$200 to repair my monitor or I could buy a new monitor for about the same price. I was struggling with my moral responsibility and I decided to compromise and buy a second-hand monitor. As I was walking out of the second hand store, another big load of used computers arrived. Some government agency was replacing their computer system. I am once again struggling with what to do with my dead monitor, and my old Commodore and Pentium II computers stored in my basement. Should I wait for our high-tech industry to develop a solution to this waste problem or should I send our problem to those poor peasants and let them take care of it? <<

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Effective Residual Ink Concentration (ERIC)

In recycled pulp and paper the presence of ink influences the brightness and color. Trace amounts of residual ink can leave recycled paper darker or greyer than paper made from virgin pulp. The ERIC method converts near infrared reflectance measurements to light absorption which is related to ink concentration. The infrared area of the spectrum is chosen for these measurements because in this area of the spectrum, ink (not dye, lignin or other colorants) is the predominant absorber of infrared light. <<



The chemistry of a salt water aquarium

When I walk into my house after a day of work, the first thing I do is head downstairs to see my fish. They seem very happy to see me, swimming back and forth, up and down, expecting to be fed. The pretty lemon peel and the smart Picaso triggerfish are my favorites. Gazing at their beautiful colors makes the stresses of the day just disappear.

I bought this salt-water aquarium system five years ago, starting with only three damselfish, which can survive in severe conditions. After three months, the fish tank had matured and more delicate fish were added.

In a new tank, there are not enough bacteria to convert harmful chemicals to less harmful chemicals. Ammonia (NH_3) and ammonium (NH_4^+) which come from fish food and fish wastes are highly poisonous to any fish. The ammonia and its compounds have to convert to less toxic nitrogen compounds. In a mature tank, the good bacteria first converts ammonia (NH_3 and NH_4^+) into nitrites (NO_2^-), then; the other good bacteria converts nitrites into nitrates (NO_3^-) which are less harmful to the fish. The built-up nitrates are converted to nitrogen gas by algae or removed by partial water change. This process is called the nitrogen cycle.

There are two additions which are very important to the nitrogen cycle in the fish tank. First, live rocks (rocks with living things on them) accelerate the water maturation process with their rich bacteria and start to build the biological filtration. The second addition is a protein skimmer. There are two kinds of protein skimmers: Co-current and Counter-current. Both skimmers use foam fractionation to remove dissolved organic wastes in the water.

Besides the nitrogen cycle, there are lots of other things to pay attention to. The drawers under my aquarium are filled with chemicals such as a de-chlorine agent, a de-ammonia agent, a pH stabilizing agent, a reef builder, potassium chloride, calcium chloride, magnesium chloride, sodium bicarbonate and activated carbon, which are chemicals specially used in salt water aquariums. These chemicals are used to adjust the aquarium water pH, salinity, specific gravity and alkalinity.

Fish, like other pets in your house, are enjoyable if you take the time to care for them. <<

KEVIN LAM – TECHNICAL SPECIALIST
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What do you think?

Whether it's about our new look or a topic you would like to see covered in a future issue, we'd like to hear from you. Please contact Jacquie Stanley with your comments or suggestions. <<

JACQUIE STANLEY – ADMINISTRATIVE ASSISTANT
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Mechanical pulp handsheets

Did you know that using whitewater recirculation to make up handsheets might improve **Opacity, Porosity and Smoothness?** Learn more in our next newsletter. <<



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