

Steve Thomas, President  
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Barry Humphus, Editor, George Kuffel  
Gary Rock, Jeff Cormier, Dick Trough

**Mentoring Program** - If you have a project, a problem in any woodworking area, these members have volunteered to help. Give them a call. Jeff Cormier: 582-3278; George Kuffel: 478-2707; John Marcon: 478-0646; Gary Rock: 433-1679; Eltee Thibodeaux: 436-1997; Dick Trough: 583-2683. Each have years of experience and knowledge.

#### April Meeting Highlights

Jack and Marie Stegall were our hosts this month at their great shop. It is always great to be there and we had a great meeting. We had guests from the newly forming Baton Rouge woodworkers group: Roland Dormmet, Leo Guidry and Tyson Duplantis. It was terrific to see them and we hope that their effort at forming a new woodworkers organization that will be most successful.

Steve Thomas presented our safety discussion this month and he talked about dust protection. There are dangers with the dust we create as you likely understand. But certain woods are more toxic than others and you must be very aware of the problem. Steve mentioned oleander, ewe, sassafrass and MDF as wood or wood products for which you much be aware. More information about the toxicity of the wood you may be working with is available at <http://www.hse.gov.uk/pubns/wis30.pdf>.

Jeff Cormier mentioned that another safety item is the position you use regarding nail guns of every discription. The angle of approach of a nail gun entry is critical. Make certain that the head of the gun is square to the work and be aware of possible knots or other obstructions you may encounter.

Pie Sonneir reminded us of the Sulphur Man Show from July 4 through August 8. Please drop by there and view all of the wonderful work by guys in the Lake Area at the Henning House Museum on Ruth Street in Sulphur.

Show and Tell brought Steve Thomas's beautiful walnut, oak and purple heart bowl with Flur de Lis motif.



Steve also reminded us that when you use aniline dyes dissolved in water that you allow the grain to rise and then do a very light sanding before proceeding.

J. W. Anderson brought us a great cutting board of gum and walnut. Jack Steagall did scroll crosses

with a navtity scene that was lighted.

Ray Kibodeaux had a display case of mahogany while Ronnie Kramer had a purple heart, walnut and lyptus wood. The peice was heavy!

Joe Comeaux has been to a training semenar in Austin, Texas (my home town) to learn how to build a beatiful Texas Star and he brought the one be built. This was built of mesquit, walnut and spalted pecan. Great work and Joe told us all the details (and difficulty) of the of construction. The jointery was somewhat complex. Joe warned that the construc-



tion is not obvious so if you want your own Texas star, be certain to contact Joe as the the online instructions are not complete.

Mr. Gary Rock did a firewood eccentry turn for his latest project. It included a base of mimosa and fluted. plus a fluted cherry spalted work and sycamore piece. Gary also won the Show and Tell prize and the Bring Back was won by Steve Thomas.



Next up in May . . . The Shop of Jeff and Mary Cormier in the community of Iowa. This is a great place to visit and Jeff knows so much in terms of woodworking that it make you cry. 9:00 A.M. and you may have coffee, a donut or Mary's biscuits.

## Battery Frustration

Lithium ion batteries on the market today typically use graphite for the anode. For the cathode, cobalt oxide is commonly used for consumer electronics while other compounds, such as iron phosphate and manganese oxide are also found in electric cars and power tools. OK - just ask Jeff Cormier.

Recently I took apart my home battery powered hand vacume. The idea was to replace the batteries as they would no longer hold a charge. Sadly the battery pack was propriatry and there are no replacements on the market. This means that I have to throw away this appliance and it ends up in a land fill. That is just not where it should go. Interestingly, the batteries had a lable saying that they should be recycled despite the extreme difficulty of removing them from the unit. There was actually a 800 number on the battery pack.

So now I have two problems: where should the batteries be disposed of properly and how should this product be designed so that the battery pack be easily removed for disposal? The manufacturer (Dirt Devil) has no suggestions on their web site.

The folks at Radio Shack, however, will take your old Ni-Cd, NiMH, Lithium-ion, and Lithium-ion-polymer batteries. They will also recycle lead-acid batteries up to 2 lbs. They do not recycle primary batteries, rechargeable alkalines or lead-acid batteries weighing more than 2 lbs. according to their official web site. Have you every saw a weight scale in a Radio Shack store? Haha!

There may be a solution to this delima. A startup spun out of Northwestern University, called SiNode Systems, is building a lithium ion battery using a piece of graphene drilled with tiny holes. The unusual structure can boost the amount of energy that a battery's anode can hold by ten times, and can also enable the battery to be charged much more swiftly than conventional lithium ion batteries.

For the past two decades Lithium-ion batteries have become the primary technology powering the rapid growth of portable electronics, power tools and more recently electronic vehicles. The demand for ever increasing range, power, and performance of these devices has created a problem through the fact that lithium-ion batteries have not been able to sustain pace with the technologies they power. As a result batteries have become the largest single component in portable electronics and the most expensive component in electric vehicles.

SiNode Systems is building on research developed by Northwestern Professor Harold Kung, whose work focuses on the use of a composite of silicon nanoparticles and graphene for the anode part of a battery. A battery is made

up of an anode and a cathode and an electrolyte in between, and electrically charged lithium ions flow between the anode and the cathode to discharge or charge the battery.

This involves creating a porous structure in the graphene to speed up the movement of electrons between the anode and the cathode and to stabilize the silicon, creating a sort of scaffolding around it. Silicon swells and contracts quickly and could fall apart easily without a supporting structure. In fact this swelling and contraction leads to the ultimate failure of the battery. The graphene structure also makes it possible to cut the charging time of the anode by about 10 times compared with the typical charging time of a smart phone or power tool at home.

In comparison to other competing anode technologies, they have a unique advantage as a highly scalable and low cost solution for large-scale production. Much of the synthesis procedure for porous graphene scaffold and the resulting composite relies on solution-based chemistry. Readily available industrial equipment such as drying oven and centrifuges can be used to maximize efficiency during scaled production. No specialized or custom-made machinery is necessary for any step of the production process.

The unique characteristics of their anode provide a number of manufacturing advantages and could eliminate the need for certain components required by current Li-ion batteries.

The next big thing in battery technology is not strictly a battery but a capacitor. But not any capacitor but a electric double-layer capacitor. So how can a supercapacitor help you charge your cordless power tool? For starters, a supercapacitor could act as a power supply that not only charges faster, but also gives those devices a charge that lasts for a longer period of time. Imagine charging your cordless drill in seconds and then having that charge last for up to a month.

Supercapacitors are also more environmentally friendly than their battery counterparts. Not only are the lifespans of supercapacitors longer than batteries (as they can be charged and recharged indefinitely), but they're also much cleaner and safer. They don't waste much energy, making them more efficient than batteries. And supercapacitors are not made using corrosive or toxic chemicals or metals.

Recently, a team of UCLA researchers, uncovered a way to create graphene-based supercapacitors that charge and discharge three times faster than current lithium batteries. Once they had a few slices of graphene, an electrolyte was placed between the slices and a new kind of supercapacitor was born. *Barry Humphus*.

## Woodworking in the Digital Age - Part 1

My day job as a college teacher in computer science hits me with a constant barrage of innovation, at an exhilarating pace that I enjoy. The technology tools I use every day in my classrooms at SOWELA were science fiction not long ago.

In stark contrast, I have found the rate of innovation in woodworking to be a yawn. For example, if you compare a table saw, band saw, jointer, etc. today, with its counterpart from 70 years ago, the differences are relatively subtle (some would argue that we have in fact regressed).

Juxtapose that against the typewriter-to-laptop computer evolution that has taken place in a similar period that I teach every day, or the transformation in medicine, automotives or aeronautics during that period and you get the idea. I know there are exceptions in woodworking, but they are just not keeping pace with other areas. Don't get me wrong: I do not desire technology for technology's sake, but surely there must be some application of the digital age that can help in your shop. I look at woodworking gadgets all the time but rarely buy any. Mostly they scream "gimmick" to me. If it doesn't make me better, productive, or save me money, it is just clutter in my shop. But now, the digital revolution is making its way into the woodshop by way of several types of digital measuring devices that have been introduced to the market in recent years and I like what I have seen.

Some of the reasons I like the idea of using digital measuring devices include:

**Objective readout:** Have you ever noticed how much difference your viewing angle can have on a measurement? If I get my eyes right in front of the measuring tool I get one value, but if I am rushed and view from a slight angle, I can be off by a meaningful amount. If I measure it and then ask someone else to measure it, chances are good we will read it slightly differently. With digital, the measurement is the same from any angle by any person.

**Clarity:** Is that a 32nd or a 16th of an inch? Which degree line is that closer? Where are my glasses? If you are 40 or older, you know what I am talking about. Because digital devices do not need to cram a bunch of numbers onto the scale, they can display the only number that you care about at the time in a font size that can be easily read by anyone. I don't even need extra light.

**Repeatability:** Digital precision means superb repeatability. Did you cut a bunch of pieces at an odd angle yesterday, and today you realize that you need one more? Repeating yesterday's setup of a tool can be tricky, but if you set it up using a digital tool once, you can easily return to that exact setup value at any time in the future.

Is digital more accurate than analog? Not necessarily, but don't get too hung up on that. Digital measuring devices are not inherently more accurate than their analog counterparts, but given the other advantages that they do offer, I believe that the end result is more accurate woodworking in my shop.

They offer more precise readout in almost all cases, measuring in extremely fine increments of thousandths of an inch or tenths of a degree, but that granularity doesn't mean that they are necessarily more accurate. I didn't go to great lengths to verify the degree of accuracy, but I checked these tools against calibrated bar stock, engineering squares, etc., and found the tools to be consistent to one another and to the standards used within a range of .002" or .1 degree. On a good day I can only discern to a 1/64", so these deliver more accuracy than I will ever need. But in fairness to my LCWW colleagues who may be reading, I need to point out that digital does not imply perfection.

As an example of this, it is hard to beat the precision of a good engineering square for setting your saw blade square to the table. A digital angle gauge can dial this in to within a tenth of a degree, but a good square could theoretically do better than that. But, how about when you need to set your blade angle to 73.6 degrees or some other oddball angle? That is where digital wins every time, especially if you need to return your saw to that same setting tomorrow or next year to match a cut that you have made.

When I started doing some research in this category, I found a long list of tools that had incorporated a digital readout. I decided to keep my focus relatively narrow, looking at only those products that I believe I would use regularly in my shop, figuring that I can always expand my digital arsenal later.

When looking at the various categories of digital measuring devices, it became apparent that Wixey Digital was a strong innovator in this space, with offerings in nearly every type of tool that I care about. They also seemed to be one of first entrants to market in each category, which suggests a pattern of innovation that I find appealing. Their modest price points are also appealing to thrifty hobbyist like me. Their reputation is also impressive, evidenced by solid reviews and chatter in woodworking forums. For all of these reasons I decided to focus this article on the Wixey product line. To be clear, there are other products in some of the categories that I viewed but no single company offers a full portfolio of digital measuring products in a consumer price range.

OK - just hold on to your safety glasses as we will finish this idea next month. *Barry Humphus.*