Newsletter of Electronic Resources
New York State Technology Education and Egineering Educators Association

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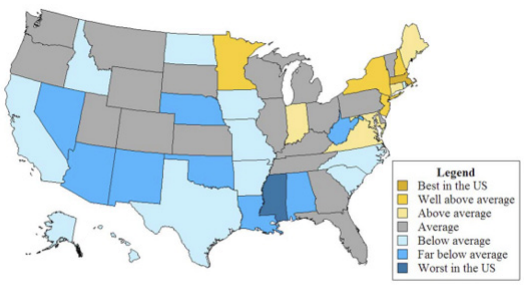
Myths, Monsters and Talismans

From the dawn of human time, man has sought to merge the magical and mystical with everyday life. One way of bringing the two together has been the carrying of talismans, amulets or some sort of charm. In essence, they are all the same thing – a trinket of some kind, held in value by the person possessing it. People who carry or wear talismans do so out of a strong belief that their particular charms will bring them good luck or protect them from harm.1 These artifacts can range from simple crystals, stones or works of jewelry to complex combinations of chemicals, powders and organic matter tied in a sack and worn or secreted on the body.

http://www.aviationnews.us/articles.php?art_id=14264&start=1



States Ranked Best to Worst on Science Education

A new ranking of how well the United States' schools are preparing students for science and engineering careers shows that although there's a small number of high performers, most states are doing a poor job of educating students in these subjects.

According to the ranking of schools teaching kindergarten through 12th grade, Massachusetts leads the pack with a score of 4.82 on a scale of 1 to 5, while Mississippi trails behind as "worst in the United States" with a 1.11 score. Twenty-one states in total, including California, earned what the ranking classified as "below average" or "far below average" scores, and only 10 states earned scores above the national average of 2.82.

http://www.livescience.com/14950-state-science-education-ranks-announced.html

Evidence Suggests that the Internet Changes How We Remember

A study says that we rely on external tools, including the Internet, to augment our memory.

The flood of information available online with just a few clicks and finger-taps may be subtly changing the way we retain information, according to a new study. But this doesn't mean we're becoming less mentally agile or thoughtful, say the researchers involved. Instead, the change can be seen as a natural extension of the way we already rely upon social memory aids—like a friend who knows a particular subject inside out.
Researchers and writers have debated over how our growing reliance on Internet-connected computers may be changing our mental faculties. The constant assault of tweets and YouTube videos, the argument goes, might be making us more distracted and less thoughtful—in short, dumber. However, there is little empirical evidence of the Internet's effects, particularly on memory.

http://www.technologyreview.com/web/38032/page1/

The Sector Information Technology Forgot

Information technology has mostly passed the energy sector by... but for how long?

Information Technology revolutionized the way we buy things (Amazon, eBay), how we get information (Google, Wikipedia, the decline of newspapers), and how we interact with out peers (Facebook, Twitter, LinkedIn.) Yet so far, it has had little, if any transformative impact on energy. Tim Healy, CEO of EnerNOC (ENOC), the world's largest third party provider of Demand Response to utilities and grid operators, thinks that's about to change.

Demand Response (DR) began decades ago with Interruptible loads and Interruptible rates, driven by simple economics. It 's much cheaper to pay users to temporarily curtail usage during peak periods than is is to build new capacity. Under Interruptible loads and rate, utilities give large customers favorable electricity prices in return for an agreement that the utility can turn off certain parts of their equipment (interruptible loads) or their entire power supply (interruptible rates) for a few hours per year in the event there is not enough spare generation capacity to meet demand. My first encounter with DR came as far back as the late 1980's, when I was an undergraduate at Harvey Mudd College in Southern California. At the time, the college was on an interruptible rate plan. I don't recall any power outages because of the interruptible rate, most likely because I was not on campus at the time. For an institution where most students and faculty are away during the hottest months of the year when Southern California energy demand peaks, an interruptible rate must have made a lot of financial sense.

http://www.altenergystocks.com/archives/2011/07/the_sector_information_technology_forgot.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+AlternativeEnergyStocks+%28AltEnergyStocks.com%29

Largest Flywheel Engergy Storage (FESS) Almost Up In Stepnentown, NY

Beacon Power, a company that manufactures and installs flywheel energy storage systems, says that it is completing the installation of the largest FESS (Flywheel Energy Storage System) in the world for the purpose of frequency regulation. When generator speeds are adjusted (but not much, due to impracticality) to meet power demand, frequency changes as well. This is due to the fact that generator speed is increased so that they generate more electricity, and frequency increases with speed.

http://cleantechnica.com/2011/06/13/largest-flywheel-energy-storage-system-fess-almost-up-in-stephentown-new-york/

The Return of the American Diesel Car

There hasn't been an American made, diesel powered passenger car since the Oldsmobile diesels of the 1980's, and few people, including GM, have mourned the passing of those old heavy, smoky, loud and slow beasts. For those car drivers who want a diesel, the only option since then has been the venerable Volkswagen diesels, the various iterations of the Jetta, Passat and Golf.

But that is set to change. General Motors' top selling compact car, the Cruze, is available in overseas markets with the option of a 2L turbo diesel engine. The first rumors surfaced in February that this diesel version might be sold in the US, though GM refused to confirm anything. It was then reported earlier this month that a decision had been made, though again, no official word.

http://www.consumerenergyreport.com/2011/07/28/the-return-of-the-american-diesel-car/

Vacuum-formed plastics replace real items in film and stage sets

Thermoplastic forms stand in for bricks, stonework, and all manner of scenery while maintaining paintability, impact resistance, and recyclability.

Whether it's the 1954-era brick buildings in the Martin Scorsese/ Leonardo DiCaprio thriller Shutter Island, turn-of-the-century cobblestone roads in the movie Beloved, or the bare cinder-block jail cell in a television crime series, set designers rely on lightweight, rigid materials to deliver the look and feel of the real thing. They turn to specialized suppliers like Provost Displays, Norristown, Pa., for architectural elements fabricated from lightweight, thin-gauge, rigid thermoplastic.

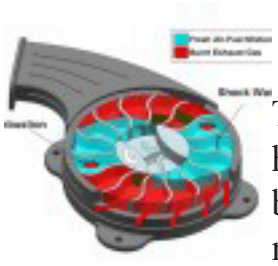
http://machinedesign.com/article/vacuum-formed-plastics-replace-real-items-in-film-and-stage-sets-0707

Scientists Build Battery in a Nanowire: Hybrid Energy Storage Device Is as Small as It Can Possibly Get

The Rice lab of Professor Pulickel Ajayan has packed an entire lithium ion energy storage device into a single nanowire, as reported this month in the American Chemical Society journal Nano Letters. The researchers believe their creation is as small as such devices can possibly get, and could be valuable as a rechargeable power source for new generations of nanoelectronics.

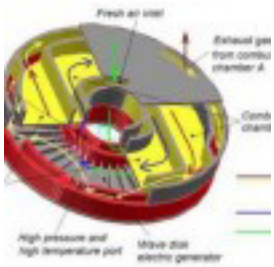
testing two versions of their battery/supercapacitor hybrid. The first is a sandwich with nickel/tin anode, polyethylene oxide (PEO) electrolyte and polyaniline cathode layers; it was built as proof that lithium ions would move efficiently through the anode to the electrolyte and then to the supercapacitor-like cathode, which stores the ions in bulk and gives the device the ability to charge and discharge quickly.

http://www.sciencedaily.com/releases/2011/07/110729175607.htm



The revolutionary wave disc generator combustion engine

The mid-term future for fuel efficient vehicles with useful range is likely a hybrid solution of electric motors powered by batteries, topped up by a fuel-burning generator. Dr. Norbert Müller at Michigan State, backed by $2.5 million from the US Government, aims to make that last part of the equation a much more compact and efficient proposition with a revolutionary new form of combustion engine.



The culmination of years of research, the latest version is in the form of a spinning metal disc with precisely-calculated radial channels. Fuel/air mixture enters via the central hub and travels outwards. As the disc spins the channel exit becomes closed off causing a back-shock. Because the inlet port is now closed off to the channel this causes compression (like a piston) and the fuel/air mixture is then ignited. The expansion of the explosion powers the wheel, opening the channel once more to the inlet and outlet ports. The exhaust gas is ejected and fuel/air is sucked in to repeat the process - at very high speed naturally.

This elegant design does away with many of the moving parts and circulatory systems of conventional combustion engines that lower their fuel-use efficiency, typically 15%. Dr. Müller is obtaining efficiencies of 60% with the wave disc design and of course the weight of the engine is greatly reduced.

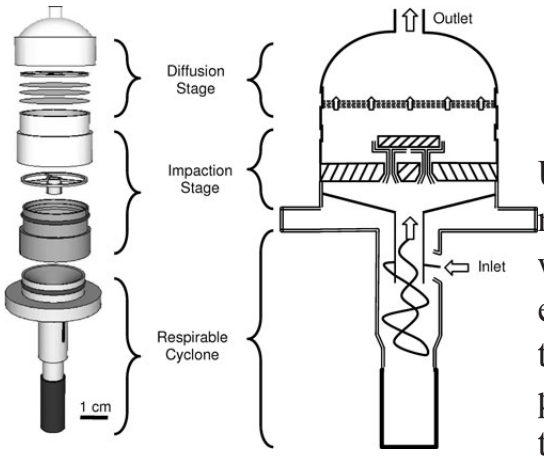
http://www.gizmag.com/wave-disc-generator-combustion-engine/19394/

How Design Software Will Shape Manufacturing's Future

Autodesk, a multinational software company based in San Rafael, California, makes 3-D design software used by everyone from automotive manufacturing giants to Hollywood studios. Now it is betting that those digital tools will have an increasingly powerful role in what happens on factory floors, enabling manufacturers to embrace more flexible strategies that deliver more customized products.

Buzz Kross, who heads the company's manufacturing industry group, says the manufacturers he works with see an opportunity in new technology at a time when they sense that the boom in outsourcing to China has run its course. "There have always been companies that differentiate based on their ability to manufacture most efficiently, and others based on design and invention—it's the difference between GM and Tesla," says Kross. "Now a lot of manufacturers are leaning more to the design model."

http://www.technologyreview.com/business/37951/?nlid=nldly&nld=2011-07-28



Personal nanoparticle respiratory deposition sampler streamlines exposure assessment

Until more information becomes available on the mechanisms underlying nanomaterial toxicity, it is uncertain what measurement technique should be used to monitor exposures in the workplace. Current research indicates that mass and bulk chemistry may be less important than particle size and shape, surface area, and surface chemistry (or activity) for some nanostructured materials.

Many of the sampling techniques that are available for measuring airborne nano aerosols vary in complexity but can provide useful information for evaluating occupational exposures with respect to particle size, mass, surface area, number concentration, and composition. Unfortunately, relatively few of these techniques are readily applicable to routine exposure monitoring. NIOSH, the National Institute for Occupational Safety and Health in the United States, has initiated exposure assessment studies in workplaces that manufacture or use engineered nanoparticles

http://www.nanowerk.com/spotlight/spotid=22308.php

Brighter and cheaper LEDs thanks to better semiconductor processing equipment

Getting the light out

It has been a challenge to get high levels of light from LEDs, partly because the materials used to form the diodes have high refractive indices. This causes much of the light the LED generates to reflect back into the diode at the interface between the material and air. These reflections heat up the diode material as well as reduce light output. And even with today's high-brightness LEDs, light-extraction efficiencies are generally below 20%. So the topic of light extraction has gotten a lot of attention both by LED developers and makers of LED production equipment.

Most of the light from an ordinary LED emerges within a few degrees of perpendicular to the surface of the chip. Internal reflections can emerge from the LED chip from other crystalline faces if the angle of incidence of the reflections can be kept sufficiently low and if the crystal faces can be oriented so as not to act as mirrors to the light rays. Therefore, a lot of the research into boosting LED light output targets the shaping of the facet angles in a manner analogous to the facets of a Fresnel lens.

http://machinedesign.com/article/brighter-and-cheaper-0707?page=0%2C2

nyserda
Energy. Innovation. Solutions.

Workshops

Energy Smart Students workshops are free of charge and are offered year-round for educators in New York State. Workshops focus on such topics as energy forms and sources, energy efficiency, and renewable energy.

Educators who attend a workshop participate in hands-on instruction, earn staff development hours, and receive FREE curriculum correlated to the New York State Learning Standards in Math, Science, Technology, Social Studies, English/Language Arts, and Family and Consumer Science. Curriculum materials include an assortment of lesson plans, colorful posters, reproducible worksheets, kits, and supplemental materials for students.

NYSERDA also offers substitute stipends for any workshop taking place during school hours. Alternatively, we can bring these free workshops to your district on a staff development day. To learn more call 1-877-NY-SMART (Option 6) or email info@nyess.org.

http://www.getenergysmart.org/EnergyEducation/Workshop.aspx

America's Home Energy Education Challenge

The America's Home Energy Education Challenge is designed to 1) educate students across the United States in grades 3-8 about energy and the benefits of energy efficiency, 2) teach students to recognize that lowering their home energy use saves money and 3) engage students and their families in a save energy, save money initiative. Sponsored by the U.S. Department of Energy and administered by the National Science Teachers Association, the America's Home Energy Education Challenge aims to enhance and extend existing energy-focused programs, provide specific home energy-saving tips, and make materials that support the learning of science and energy available to schools. Participating schools compete for more than $200,000 in prizes distributed at the regional and national levels of the competition.

Teachers, students and families can participate in two ways: The first is through the Home Energy Challenge and the second is through the Energy Fitness Award. Each is designed to encourage learning about science and energy with the added benefit of saving money.

http://www.homeenergychallenge.org/about.html

What is the role of vocational education in STEM?

What is the role of STEM in vocational education?
What is your experience with Career and Technical Education and STEM?
Do you have data that shows a positive correlation between Career and Technical Education students and college entry?
How do STEM CTE programs connect rigor, relevance and relationships,and why is this integration important and valued in teaching practice?

http://www.changemakers.com/groups/stem/discussion-2

Superlight folding canoe fits in a backpack

First of all ... yes, you're right, there are already folding canoes. Those boats don't necessarily pack up all that small, though, and typically weigh in the neighborhood of at least 18 kilograms (40 lbs). They're portable, but you'd certainly notice that you were carrying one. Israeli designer Ori Levin, however, has created a one-of-a-kind folding canoe called the Adhoc, that tips (no pun intended) the scales at just 4.1 kilograms, or 9 pounds.

The single-passenger Adhoc features a carbon fiber frame, and a hull made from aramid fabric, which is also used in racing sails. Custom-made locking mechanisms hold the telescoping longitudinal framework poles in place at the bow and stern, while a "parasol-like" center folding mechanism allows the boat to hold its shape in the middle. Its single seat is a hammock-like fabric and webbing arrangement.

http://www.gizmag.com/light-folding-canoe-in-backpack/19448/

Ford EVs to come with household solar-panel option

Ford and solar-panel maker SunPower have created a solar-powered electric-car package.

Buyers of Ford's electric vehicles will have an option to have SunPower's rooftop solar panels installed for about $10,000 after a federal tax rebate. The companies estimate that the 2.5-kilowatt array will generate enough juice, about 3,000 kilowatt-hours a year, to fuel a car for about 1,000 miles a month of driving.

The "Drive Green for Life" program means drivers can cut the cord on fossil fuels by generating power during the day and charging at night, according to the companies.

Ford plans to release an all-electric Ford Focus and its C-Max Energy plug-in hybrid in 19 states next year and in Europe in 2013.

SunPower makes high-end solar panels, which means a 2.5-kilowatt array will require 11 of its residential panels, which will take less space than less-efficient panels. Like other panels, they have 25-year warranties. SunPower said that state-specific incentives and rebates could lower the installation cost below $10,000.

http://news.cnet.com/8301-11128_3-20090600-54/ford-evs-to-come-with-household-solar-panel-option/

Women in science, technology, engineering and mathematics (STEM) jobs and higher education

n a report released by the U.S. Commerce Department's Economics and Statistics Administration (ESA) on science, technology, engineering and mathematics (STEM) jobs and higher education titled 'Women in STEM: A Gender Gap to Innovation' the major conclusions are that there are fewer women than men in STEM jobs and attaining degrees in STEM fields. But interestingly, that's true despite the fact that the wage premium for women in STEM jobs is higher than that for men and that there's greater income parity between genders in STEM fields than there is in the employment market as a whole.

Opportunity to expand STEM employment for women

The report stresses that science, technology, engineering and math (STEM) workforce is crucial to America's innovative capacity and global competitiveness. Yet women are vastly underrepresented in STEM jobs and among STEM degree holders despite making up nearly half of the U.S. workforce and half of the college-educated workforce. That leaves an untapped opportunity to expand STEM employment in the United States. Other findings from the research by the Economics and Statistics Administration of the U.S. Department of Commerce were:

http://www.eukn.org/E_library/Skills_Capacity_Building/Skills_Capacity_Building_General/Women_in_science_technology_engineering_and_mathematics_STEM_jobs_and_higher_education

Plastic “Tree” Uses Biomimicry to Convert Atmospheric CO2 into Green Gasoline

Recycling has always meant reusing materials like glass or plastic, and reducing atmospheric carbon has traditionally meant cutting emissions, but what if the two could be combined and make combating climate change profitable by recycling carbon out of the atmosphere? EnergyNOW! correspondent Josh Zepps looked into a new technology that could pull a thousand times more carbon dioxide out of the atmosphere than trees and could one day power our cars and trucks with green gasoline.

http://cleantechnica.com/2011/08/13/plastic-%E2%80%9Ctree%E2%80%9D-uses-biomimicry-to-convert-atmospheric-co2-into-green-gasoline/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+IM-cleantechnica+%28CleanTechnica%29

Department of Defense Funds Two UB Researchers

University at Buffalo researchers Jason Corso and Natalia Litchinitser have been awarded funding from the U.S. Department of Defense (DoD) to conduct research into technologies that could help save the lives of American soldiers.

http://www.buffalo.edu/news/12764

Our youth need education in technology ethics

When Marshall McLuhan’s ground-breaking work in mass communication theory catapulted him into the spotlight more than 30 years ago, the internet and social media were faint blips on the world’s technological radar screen.

What many people do not know is that the late University of Toronto professor and Roman Catholic convert also referred to the electronic media as “an unholy imposter” and “a blatant manifestation of the anti-Christ.”

Did Apple and Research In Motion executives, when they released their innovative iPhones and BlackBerrys several decades later, have similar thoughts or a glimpse inside the Pandora’s box that their own brave new gadgets might unleash?

The internet and these wonderful digital devices that have helped connect and educate millions across the globe. They have shed light on and hastened the collapse of repressive regimes and accelerated humanitarian disaster relief efforts.

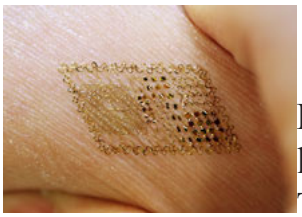
http://www.therecord.com/opinion/columns/article/577334--our-youth-need-education-in-technology-ethics

New Mexico Court Strikes Down Surcharge For Revenue Lost To Energy Efficiency

Utilities are often dismissed or ignored in most discussions of energy efficiency and green building I find this quite remarkable. First, many state laws mandate that utilities engage in energy efficiency efforts. Second, as utilities are directly connected to the energy consumer, utilities are often the best place to advocate for energy efficiency and deliver energy efficiency programs.

The problem is that utilities are not usually incentivized, and are often disincentivized, from promoting energy effiiciency. Historically, utilities have made money by selling electricity or natural gas, and recovering a return on their sales and investment in infrastructure from ratepayers. The trouble with this scenario is that it does little to incentivize utilities to promote energy efficiency. If the utility promotes conservation, thus selling less energy and reducing investment in infrastructure, they will make less money.

http://blog.cleantechies.com/2011/08/12/new-mexico-court-strikes-down-surcharge-for-revenue-lost-to-energy-efficiency/



Stick-On Electronic Tattoos

Researchers have made stretchable, ultrathin electronics that cling to skin like a temporary tattoo and can measure electrical activity from the body. These electronic tattoos could allow doctors to diagnose and monitor conditions like heart arrhythmia or sleep disorders noninvasively.

John A. Rogers, a professor of materials science at the University of Illinois at Urbana-Champaign, has developed a prototype that can replicate the monitoring abilities of bulky electrocardiograms and other medical devices that are normally restricted to a clinical or laboratory setting.

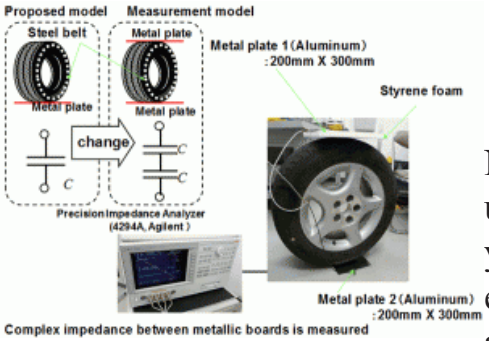
http://www.technologyreview.com/computing/38296/?nlid=nldly&nld=2011-08-12

Venture Capitalists Back Away from Clean Energy

As governments around the world are scaling back support for renewable energy, venture capitalists are shifting their clean technology investment strategy. They’re focusing less on high-risk technologies and more on ideas that could have a faster payoff but a smaller impact, such as technologies for improving energy efficiency. The shift is raising concerns about how innovative energy technologies will be commercialized.

Venture capitalists have traditionally focused on companies with low capital requirements that can quickly get bought up or go public. Many Internet startups fall into this category. But in recent years, many venture capitalists have been enticed to risk longer-term, high-capital energy investments in clean energy, thanks to generous government subsidies in renewable energy markets. In particular, they spent hundreds of millions of dollars on solar-cell startups that need to build expensive equipment and factories to prove their technologies, and can take many years to generate a return on investment.

http://www.technologyreview.com/energy/38295/?nlid=nldly&nld=2011-08-11



Unlimited Range EV? Power from Tires!

Nikola Tesla created a device for wireless energy transfer using high frequency electromagnetic radio waves over 100 years ago. Ultimately, we will be using wireless transfer of energy to at least charge electric vehicles. Many researchers are proposing to power electric vehicles wirelessly giving us unlimited range. Often suggested is induction using the alternating current in one coil to induce electricity in another coil. This is the same technology that is used in transformers, like the power supply for your laptop battery. It is also used to wirelessly charge mobile devices and has been seen in wireless toothbrush chargers.

http://cleantechnica.com/2011/08/27/unlimited-range-ev-power-from-tires/

Nanotechnology's rapidly growing footprint on the scientific landscape

It is quite difficult – not least because there is no consensus about a proper definition – to assess the scope of nanotechnology research and its impact on the overall scientific body as well as its commercialization prospects. In a new attempt to put some numbers behind the general perception of a rapidly expanding nanotechnology field, two researchers at UC Davis have trawled scientific databases and come up with some surprising findings.
What exactly is nanotechnology? One of the problems facing nanotechnology is the confusion about its definition. Most definitions revolve around the study and control of phenomena and materials at length scales below 100 nm and quite often they make a comparison with a human hair, which is about 80,000 nm wide. Some definitions include a reference to molecular systems and devices and nanotechnology 'purists' argue that any definition of nanotechnology needs to include a reference to "functional systems". Back in 2006, the inaugural issue of Nature Nanotechnology asked 13 researchers from different areas what nanotechnology means to them and the responses, from enthusiastic to sceptical, reflect a variety of perspectives. Today, the picture appears to be as diverse and confusing.

http://www.nanowerk.com/spotlight/spotid=22504.php

The green jobs bonaza: where's yours?

These days green-collar is fast becoming the new white-collar, and lots of people are looking for a piece of the action. After all, what’s not to like? It’s a burgeoning area in which you can spend more time in the great outdoors, feel good about doing your bit to save the planet – and take home a good salary.

http://www.newscientist.com/article/dn20609-the-green-jobs-bonaza-wheres-yours.html

Speeding Up Materials Design

A new computer program accurately predicts the behavior of proposed materials, which means faster development of new electronics and solar cells.

A chemical compound designed with the aid of a Harvard-created computer program has turned out to be one of the best organic electronic materials to date. This new material, an organic semiconductor, could be used to make new electronics such as colorful displays that roll up. It's an important proof of principle for using computers to aid materials design.
Organic semiconductors could enable less expensive, lightweight electronics that can take new forms, such as flexible displays and printed solar cells. It's hoped that the materials will also make solar power more widespread, because it should be less expensive to make solar cells from them than from silicon and other inorganic materials. But in the decades since chemists began working with organic semiconductors, progress has been slow, and these materials have found limited applications, such as in short-lived portable solar cells. The main challenge is that these materials just don't conduct electrons and their positive counterparts, holes, nearly as fast as conventional semiconductors like silicon, making them much less efficient.

http://www.technologyreview.com/computing/38405/?nlid=nlmat&nld=2011-08-25

Could You Drive an EV? Part 1 EV Profiler

Electric Vehicles are a relatively new possibility. Fleet owners and consumers need to know if an electric vehicle will provide a sufficient range with their present driving habits. It is possible to make estimates based upon EPA vehicle ranges but the EV Profiler is a sensor that is plugged into your vehicle and a system that can provide hard real world data. While fleet owners may especially need this kind of documentation, consumers may find it reassuring as they anticipate purchasing an electric car.
The system operates by combining a GPS unit, a Driving Data Recorder and a cellular connection with online software. The device, known as a DDR, is suction cupped to your present vehicle windscreen and plugged into the car's utility 12 volt outlet. The unit then tracks and stores information on your driving, including altitude, acceleration, distance traveled and route. Some information like temperature may be gathered from other sources. Every evening, around 7PM, the DDR sends this information to the company computers which results in your receiving a daily analysis in your email.

http://cleantechnica.com/2011/08/24/could-you-drive-an-ev-part-i-ev-profiler/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+IM-cleantechnica+%28CleanTechnica%29

3-D Design Simplified

Researchers at Cornell University have launched EndlessForms, a website that lets users create sculptures virtually and render them in physical form. The site demonstrates a technology that designers could use to create new products and accelerate the broader adoption of 3-D printing.

People can use EndlessForms without any prior 3-D design experience. The user begins by choosing an object from a randomly generated gallery. The site creates a new gallery of variants of the chosen object, and the user selects one of the variants. The process repeats, gradually refining the design into the shape the user desires. Users can share this shape with other users and, if they wish, send the object to a 3-D printing service to render it in a variety of materials, including plastic, silver, and gold-plated steel. A five-to-seven-centimeter plastic model typically costs less than $10.

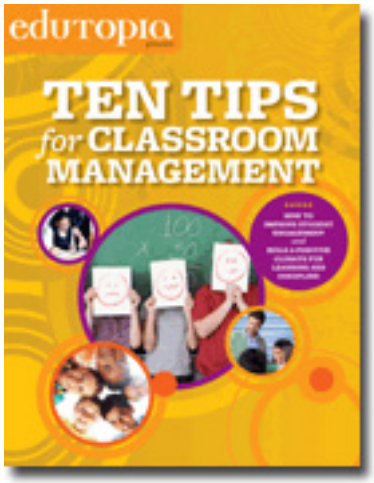
http://www.technologyreview.com/computing/38433/?nlid=nldly&nld=2011-08-25

Fool's Gold - using ultrasound technology to combat counterfeiting

Evidently all that glitters is not entirely gold. Just ask the many disappointed bankers and investors who have discovered some of their large gold bullion bars were ersatz - real gold on the outside, far less valuable tungsten on the inside. Enter General Electric with its Phasor series of portable ultrasonic detectors. Using non-invasive technology identical to that deployed in peering at developing fetuses, GE's devices allow a quick and thorough examination of gold bars for flaws, bubbles and even different materials.

Downplayed by the media to avert potential worldwide panic, the story has understandably received little mainstream press, but, as the value of standard 400 oz. bars nears US$700,000, it's easy to understand why gold counterfeiting is on the rise.

http://www.gizmag.com/ge-detectors-fake-gold/19621/



Ten Tips for Classroom Management

Many of you will return to your jobs on the frontlines of education: teaching in the classroom.

With school starting back up, this is the perfect time to review strategies and tips that can help you build a more effective, collaborative, and mutually respectful environment.

No matter where you are in your teaching career, our Ten Tips for Classroom Management are sure to improve student engagement and build a positive climate for learning and discipline

http://www.edutopia.org/classroom-management-resource-guide

Algorithms Tell Consumers When to Buy Tech Products

One startup thinks it can help people find the balance between buying right away (and paying top dollar) and buying later (and possibly getting an outdated gadget).

It's a classic question when a lovely new gadget comes out on the market: when is the right time to buy? Buy the product early, and you get bragging rights and more time enjoying its features, but you almost certainly pay more than if you'd waited.
Case in point: HP's departure from the tablet business, with its announcement last week that it would stop making its Touchpad. Touchpad owners who had paid the full price of $499 for a device unlikely ever to see new apps, peripherals, or support from its parent company were insulted further when HP discounted the Touchpad to $149 for the 32-gigabyte Wi-Fi edition and $99 for the 16-gigabyte model. In one weekend, an estimated 350,000 people bought Touchpads, at more than $300 off the prices they would have paid just a couple of months before.

http://www.technologyreview.com/computing/38406/?nlid=nldly&nld=2011-08-24

Flywheel Hybrid Bicycle Brings F1 Tech to the Bike Lane (video)

Hybrid flywheel energy storage got off to a bit of a shaky start in Formula 1 back in 2009, but the technology is gaining ground outside the motorsports arena in production cars, utility companies, and – now – it's found its way into bicycles!
The bike you see here has been rigged up with a 15 lb. automotive flywheel that's mated to a CVT, which allows the rear wheel to transfer kinetic energy to the flywheel under "braking", effectively slowing the bike down. Once the cyclist is ready to pick up speed again, the CVT is shifted the other way, and the spinning mass of the flywheel "boosts" the rider's legs and provides forward motion – just like the flywheel KERS systems proposed by Williams

http://cleantechnica.com/2011/08/18/diy-flywheel-hybrid-bike-boosts-without-batteries-video/

How Much U.S. Shale Gas Is There, Really?

A new estimate suggests there's 80 percent less gas than previously thought. That may still be plenty.

The U.S. Geological Survey (USGS) raised eyebrows last week when it released its latest estimate of the amount of "undiscovered technically recoverable" natural gas in the Marcellus Shale formation, a rock formation that reaches through New York, Pennsylvania, Ohio, Maryland, and West Virginia. The estimated volume, around 84 trillion cubic feet (TCF), is 80 percent smaller than an estimate published earlier this year by the Energy Information Administration, an agency within the U.S. Department of Energy

http://www.technologyreview.com/energy/38463/?nlid=nldly&nld=2011-08-31

How to Fix Our Math Education

THERE is widespread alarm in the United States about the state of our math education. The anxiety can be traced to the poor performance of American students on various international tests, and it is now embodied in George W. Bush's No Child Left Behind law, which requires public school students to pass standardized math tests by the year 2014 and punishes their schools or their teachers if they do not.

All this worry, however, is based on the assumption that there is a single established body of mathematical skills that everyone needs to know to be prepared for 21st-century careers. This assumption is wrong. The truth is that different sets of math skills are useful for different careers, and our math education should be changed to reflect this fact

http://www.nytimes.com/2011/08/25/opinion/how-to-fix-our-math-education.html?_r=1

STEM Education--It's Elementary

Increasingly, business leaders, educators, industry experts, and others are rallying around the importance of science, technology, engineering, and mathematics (STEM) in education. This is a key issue for K-12 education and it's a requirement to create the kind of workforce our country needs. The Obama administration has clearly focused on this as a major education initiative and a business imperative.

Children at birth are natural scientists, engineers, and problem-solvers. They consider the world around them and try to make sense of it the best way they know how: touching, tasting, building, dismantling, creating, discovering, and exploring. For kids, this isn't education. It's fun!

Yet, research documents that by the time students reach fourth grade, a third of boys and girls have lost an interest in science. By eighth grade, almost 50 percent have lost interest or deemed it irrelevant to their education or future plans. At this point in the K–12 system, the STEM pipeline has narrowed to half. That means millions of students have tuned out or lack the confidence to believe they can do science.

http://www.usnews.com/news/articles/2011/08/29/stem-education--its-elementary

LiquidRoam RoamBoards ready for sale

Motorized two-wheeled and three-wheeled personal transport innovations like the Solowheel and the cheap and cheerful Solaron certainly look like a fun way to get around, but if it's four-wheeled action you're looking for then the new RoamBoard is definitely worth a look. The result of two years of designing, building, testing and tweaking, this stand up transportation solution brings together technologies seen in the electric skateboard, bicycle, snowboard, and automotive industries and merges them into a land-surfing motorized skateboard.

http://www.gizmag.com/roamboard-stand-up-transportation-solution-launched/19676/