HELPING MAKE ESB YOUR SOCIETY

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NEWS

News Blurbs Now! (NBN)

Systems Personnel is trying to fill a Technical Writer position with an And sonotubes aren't just good for an economical way to pour individual with experience in the manufacturing industry. Creating standard forms for quality assurance, maintaining databases, and training are some of the responsibilities. Contact Christine Genek at

christineg@systemspersonnel.com or 716-870-0534.

Thirty years experience...project manager...recently emigrated from the UK...it's Jim Sullivan! Jim has joined the Picone Construction Corp team.

Welcome! Picone has demolished, renovated, and added a group instruction space to the Performing Arts Wing at Pioneer High School. Added clouds (acoustical diffusers) and sound absorbing fabric panels provide for greater acoustic harmony. The architect of record is Gordon W Jones Associates.

concrete foundations. Twenty volunteers used dozens of sonotubes, along with four trucks to move over 100 crocodiles, alligators, and caimans from a Toronto area resident's home to a nice safe and warm

home at the Indian River Reptile Zoo. Some lived in the residential home for almost ten years and were almost ten feet long! Anyone want to guess if this man was married or not?

Remember last month's article about Atari treasure in Alamogordo, NM? Well, 881 games from the landfill sold for \$107,930. Guess it wasn't trash after all! And they didn't even sell all of the games that were uncovered.

Did you know that 96 million black plastic balls could save 300 million gallons of water from evaporating? This is the solution that is being tried in the Los Angeles Reservoir. Creative thinking!

NBN recently stated that a built to scale, fake town will be built in New Mexico but there was already one built on the University of Michigan campus. Mcity, 32 acres on the Ann Arbor campus, has mechanical people and cyclists along with its faux buildings and roads so self-driving cars can be tested. Cost: \$10 million.

Robin M Closs SE PE has begun her new position as a part time faculty member at Nardin Academy. She will be teaching junior and senior high school students about the principles of engineering and introducing them to many different engineering disciplines. If you would be willing to share your discipline for an hour, please contact her at clossr@yahoo.com or 716-864-4419.



If you still have some vacation time, you might want to travel to New York City where you can be immersed within the newly opened SeaGlass Carousel. Check out the video at www.nytimes.com/2015/08/14/arts/design/new-yorks-new-carouselputs-you-in-a-whirling-school-of-mechanized-fish.html

We need your news blurbs NOW! We want to know about your recent projects, awards, hires, promotions, patents, new products, partnerships, open houses, tours, and anything else vou'd like to share. Send your news to ESB1894@gmail.com. It's free advertising for your company really. Why wouldn't you want to tell us about something you are doing? Picone Construction does it every few weeks. Why can't you?!?



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PRESIDENT'S MESSAGE



"Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has."

-Margaret Mead

As The Engineering Society of Buffalo (ESB), established in 1894, enters the 2015 - 2016 season officially, the excitement and momentum from years past continues to grow exponentially. As the incoming President of ESB, I am both extremely proud and tremendously excited about what lies ahead.

First off, I would like to extend a personal thank you to our Past President Marco Scofidio PE. Your leadership throughout the past year has built an exceptionally strong organizational base, with a surge of momentum that will only continue to grow. Secondly, thank you to our Treasurer Steve SanFilippo, who stepped in when we really needed help and did a commendable job revitalizing our banking accounts. And of course, thank you to our Secretary and WNY Engineer Editor Robin M Closs SE PE who has unbelievable organizational skills, does an incredible job with the newsletter, and yet she makes everything seem so easy.

The directors throughout the past year help ESB run smoothly: Emil Bandriwsky, Richard T Cartwright PE, Gene Colucci, Mark Masse, Jeff Mooney, Ron Papaj, Matthew Plizga PE, and Jeff Wach. We have ESB members that are past officers and board members and still offer their help on committees: Don McMahon PE and Jon Kolber PE. Thank you all for your dedication and your work ethic in building ESB to where

we are today.

As we have all worked together through this previous year, I found myself often times amazed at the amount of leadership skills, the decision making abilities, and the individual engineering strengths that surround me.

ESB committees work hard all year providing entertainment and events such as the Annual Scholarship Run, Scholarship Awards, the Golf Tournament, and the Bowling League. Our networking events have increased in both number and attendance. We have an exciting car show coming in 2016 that is currently the big talk. Our youth committee is currently working on new strategies to redefine itself. We are always recruiting new members. It is an exciting time for ESB. We also provide educational opportunities such as PDH classes and FE preparatory classes.

As the new season begins, it is easy to see the tall task I have ahead of me, as far as matching the accomplishments of previous administrations. I am both enthusiastic and motivated at working with our officers, our board, as well as all members. Great things lie ahead for us all, as our organization continues to grow.

Michael J Samol ESB President msamolacs@gmail.com

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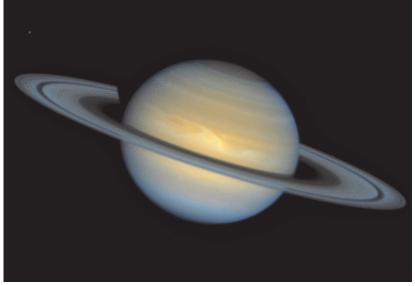
- 1. News Blurbs Now!
- 2. President's Message
- 3. Next Big ESB Event PPD Dinner
- 4. Historical When The Cows Come Home
- 5. Differentiate Yourself
- 6. PDH Opportunities
- 7. Advertise in This Newsletter Contract

- 8. Engineering Tourist Tokya Skytree
- 9. Insert Your Article Here
- Career Corner Learning is Power, Free is Good
- 11. ESB Car Show 2016
- 12. Possible Future ESB Events
- 13. Tech Article From Tea Bags To Miatas, Bioplastics Are On The Rise
- 16. Amusement Sketchplanations.com Moore's Law
- 17. Is Bowling For You?
- 18. ESB Member Application
- 19. Engineering Without Borders
 Northeast Regional Conference
- 20. Read It! Start by Jon Acuff

CALENDAR OF EVENTS					
09-08-15 7	pm	FE Exam Review Classes Begin	University at Buffalo North Campus		
09-09-15		Bowling League begins			
09-14-15 6	pm	Ways and Means Meeting	2555 Walden Ave, Buffalo (Wendt Corp)		
09-14-15 7	pm	Directors Meeting	2555 Walden Ave, Buffalo (Wendt Corp)		
09-15-15		Deadline for newsletter content	,		
10-??-15	,	Junk Warriors/Adopt A Highway	Corner of Colvin & Brighton, Tonawanda		
10-22-15		Past President Dinner	977 Delaware Ave, Buffalo (The Saturn Club)		
10-24-15 10	0am	ABCD, ASCE, NACE, & NYSSPE Football G	ame/Networking Event at UB Football Stadium		
11-06 to 11-08		Engineers Without Borders Regional Conference Syracuse			

NEXT BIG ESB EVENT

ESB Past Presidents Dinner 2015



Picture by NASA/ESA/STSci

Dinner Choices

- Seared Atlantic Salmon Jasmine rice pilaf, fresh vegetables, dill buerre blanc.
- French Bistro Chicken Whole grain mustard veloute, forbidden rice, fresh vegetables.
- Slow Roasted Beef Tenderloin Chanterelle mushroom ragout, fresh vegetables, and veal demiglace.
- Vegetable Napoleon Layers of grilled fresh garden vegetables, aged goat cheese, house made tomato sauce and gnocchi.

Send name, address, phone, email address, dinner selection, & payment by Oct 12 to:

ESB PO Box 1677 Amherst NY 14226 The Engineering Society of Buffalo will be hosting its Annual PPD on

Thursday October 22

at

The Saturn Club of Buffalo

977 Delaware Ave Buffalo, NY 14209

6:00 pm Cocktails - Cash bar
7:00 pm Dinner followed by program/
presentation

\$70 per person

Free to ESB Past Presidents and Scholarship Recipients. (No shows will be billed, however.)

Richard T Cartwright PE CHMM CPIM will present on Engineering Career and Survival Skill Development.



Mr Cartwright is a business development manager at USA Environmental, which provides costeffective solutions to difficult environmental remediation, ecological restoration, and radioactive health physics-related problems. He is an internationallyrecognized motivational speaker who regularly blogs about hazardous materials and career development topics. He doesn't create hazardous careers nor develop topical materials though. He can be reached at rcartwright@usaenviro.com or 716-550-6436.

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HISTORICAL

When The Cows Come Home By Dan Lewis

The events of the 9/11 attack on the United States has a number of villains rightfully attached to its history. But there are also a number of heroes who emerged on that day as well. Some ran into the carnage to save lives, giving theirs in the process. Others, realizing that they were ill-prepared to help in that way, tried to find other ways to help - even if symbolically.

Like by donating a cow.

Kenyan-born Kimeli Naiyomah was in New York City on September 11, 2001. His story was already one of perseverance and a desire to do good for his community. At a young age, according to CNN, was battling against long odds: his father was out of the picture, his mother was an alcoholic, and his grandmother had been murdered. His family was destitute and the town he grew up in lacked electricity, running water, phones, and roads. Yet somehow, when his mother fell ill, she (with him in tow) managed to make it to a hospital. Naiyomah, inspired by what he saw there, wanted to become a doctor. When he reached high school age, he left his village without a penny to his name. He walked nine miles to the nearest school, where he pleaded with the administration to let him stay and learn. Even though he didn't have the money for books, housing, or a uniform, the school agreed. And after high school, he earned a scholarship to the University of Oregon, and after that, to Stanford Medical School.

He was a Stanford med student on 9/11. But he wasn't in California that day, as noted above. He was in New York to meet the President of Kenya, who was making a diplomatic visit. Naiyomah's rags-to-education story made the student a celebrity back home; the student was the dignitary's guest in New York. When the planes hit the World Trade Center, he wanted to help, but wasn't yet a doctor. Instead, in the spring of 2002, Naiyomah approached his village elders to ask their permission to purchase and donate a cow to the United States. Naiyomah is a member of the Maasai people, a semi-nomadic clan of warriors dating back centuries. Cattle play a large role in Maasai culture, as explained by Wikipedia:

Traditional Maasai lifestyle centers around their cattle which constitute their primary source of food. The measure of a man's wealth is in terms of cattle and children. A herd of 50 cattle is respectable, and the more children the better. A man who has plenty of one but not the other is considered to be poor. A Maasai religious belief relates that God gave them all the cattle on earth, leading to the belief that rustling cattle from other tribes is a matter of taking back what is rightfully theirs, a practice that has become much less common.

Donating a cow? That's a very big deal if you're Maasai.

The elders not only agreed to Naiyomah's gesture, but also agreed to match it - each. In total, the Maasai tribe donated fourteen cattle to the United States. The cattle were presented to an American attaché in a special ceremony; Maasai attendees offered their condolences while the Star Spangled banner played in the background.

Because of agricultural regulations, though, the US was unable to bring the cows to America.

Originally, per the BBC, the cows were to be "sold at a local market and the proceeds used to buy beads," after which "Maasai women [were to] fashion traditional beadwork with commemorative messages, including perhaps the Stars and Stripes of the US flag [which was to] be handed over to the people of New York for display in the city." But that didn't go over well with the Maasai. Instead, as CNN further notes, on the five year anniversary of 9/11, the US Ambassador to Kenya worked with Naiyomah to establish a preserve for the donated cattle. The cows were to stay in Kenya under the watchful eye of Naiyomah's tribe. (The cows and their progeny have special tags on their ears depicting the World Trade Center buildings.) And the US, in recognition of the gift, established fourteen scholarships for children from Naiyomah's village to attend local schools.

Dan Lewis sends a daily emailed newsletter that you can sign up for at nowiknow.com or order his books entitled Now I Know and Now I Know More.



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Take a Review Course (RC)*:

FE Exam review course

- Classes begin September 8 in Room 233 at Jarvis Hall on UB North (Amherst) Campus.
- Classes meet Tuesday evenings, 7 to 10 PM for twelve review sessions covering the following topics included on the civil, environmental, and mechanical engineering exams: ethics, mathematics, probability, mechanics, economics, and fluid mechanics.
- Registration fee is \$500 and includes copies of the lecturers' notes.
- If interested, please contact the coordinator Gino Forte PhD PE at fortemg@aol.com or 716-417-2971.

PE Exam review course Part II for civil engineers

- Classes in civil engineering begin in January 2016 on the UB North (Amherst) Campus.
- Classes meet from 7 to 10 PM for eleven review sessions covering the following topics included on the civil PE exam:
 - environmental, structural, geotechnical water resources, and transportation engineering.
- If interested, contact the coordinator Donald McMahon PE at dmcmahon@mmce.net or 716-834-8932.

Organized and Coordinated by
The Engineering Society of Buffalo
and the

Erie-Niagara Chapter New York State Society of Professional Engineers in conjunction with the University at Buffalo School of Engineering and Applied Sciences.

Local/Online PDH Opportunities

Loodi, Olimio i Dil Opportalimo							
Date			Information	Cost			
09/10/15	7.0	Buffalo	Engineering Law and Ethics	\$269			
09/10/15	2.0	Webinar	Superpave5: Constructing Asphalt Pavement w/Road Air Voids Equal to Design Air Voids	\$89			
09/10/15	1.5	Webinar	Wind Engineering: Beyond the Code	\$275			
09/10/15	1.5	Webinar	Bracing Connections Part 4: Vertical Bracing Corner Connections	\$285			
09/10/15	1	Webinar	Structural Building Condition Surveys: Looking for Trouble	\$299			
09/14/15	1	Webinar	Connection Solutions for Wood-Frame Structures	\$299			
09/15/15	1	Webinar	Introducting AssetWise-Supporting Infrastructure Operations & Maintenance	Free			
09/15/15	1	Webinar	The CONNECT Edition: The Common Modeling Environment	Free			
09/15/15	1	Webinar	Speed Up Your Industrial Foundation Design Using STAAD Foundation Advanced	Free			
09/15/15	1	Webinar	The Latest ASME and EN 13480 Code Updates in AutoPIPE Explained	Free			
09/16/15	1	Webinar	Introducting AssetWise-Supporting Infrastructure Operations & Maintenance	Free			
09/16/15	1	Webinar	Speed Up Your Industrial Foundation Design Using STAAD Foundation Advanced	Free			
09/16/15	1	Webinar	The Latest ASME and EN 13480 Code Updates in AutoPIPE Explained	Free			
09/16/15	1.5	Webinar	Multimodality in Major Cities: Urban Success Stories	\$89			
09/16/15	1.5	Webinar	Verification of Computer Calculations by Approximate Methods	\$349			
09/17/15	1	Webinar	System-Level Modeling Techniques, Improvements to Biomechanical Systems Design	Free			
09/17/15	1	Webinar	Introducting AssetWise-Supporting Infrastructure Operations & Maintenance	Free			
09/17/15	1	Webinar	Speed Up Your Industrial Foundation Design Using STAAD Foundation Advanced	Free			
09/17/15	1	Webinar	The Latest ASME and EN 13480 Code Updates in AutoPIPE Explained	Free			
09/17/15	1	Webinar	BIM the Building Code: Automating the Building Code into Your Model	\$240			
09/18/15	1.5	Webinar	Using Nonlinear Analysis and Fiber Wrap Material for Efficient Seismic Retrofit	\$349			
09/22/15	1.0?	Webinar	Practical Steps to Taking Control of BIM Before It Takes Control of You	Free			
09/22/15	1	Webinar	Advances in ProSteel: Keep Calm and Detail On with ProSteel	Free			
09/22/15	1.5	Webinar	Design of Adhesive Anchors	\$349			
09/23/15	1	Webinar	Important Product Delivery Considerations for the Internet of Things	Free			
09/23/15	1	Webinar	Advances in ProSteel: Keep Calm and Detail On with ProSteel	Free			
09/23/15	1.5	Webinar	Joist Models in Standard Structural Software	\$75			
09/24/15	1.0	Webinar	EMC Simulation of a Motor Control	Free			
09/24/15	1	Webinar	Advances in ProSteel: Keep Calm and Detail On with ProSteel	Free			
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09/30/15	1.5	Webinar	Design of Building Structures for Serviceability	\$349			
10/01/15	1.0	Webinar	Tubebundle & Tubesheet Design for Shell & Tube Heat Exchangers with AutoPIPE Vessel	Free			
10/02/15	2.0	Webinar	Renovation of Slabs On Grade	\$399			



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September 2015 - August 2016

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	May	3	\$105	\$195	\$330	\$570
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Tokya Skytree

Tokyo Skytree is a broadcasting, restaurant, and observation tower in Suminda. It became the tallest structure in Japan in 2010 and reached its full height of 2080 feet in March 2011, making it the tallest tower in the world. Skytree was completed on 29 February 2012, with the tower opening to the public on 22 May 2012.

The design is based on the following three concepts; fusion of neofuturistic design and the traditional beauty of Japan, catalyst for revitalization of the city, and contribution to disaster prevention (safety and security.) The base of the structure has a structure similar to a tripod; from a height of about 1150 feet and above, the tower's structure is cylindrical to offer panoramic views of the river and the city.

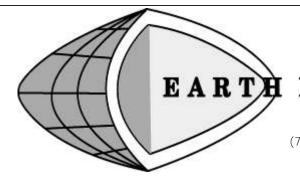
There are observatories at 1150 feet with a capacity of up to 2000 people and at 1480 feet with a capacity of 900 people. The upper observatory features a spiral, glass covered skywalk in which visitors ascend the last 16 feet to the highest point at the upper platform. A section of glass flooring gives visitors a direct downward view of the streets below. On opening day, strong winds forced two elevators to be shut down which left some visitors briefly

stranded on the observation deck. The tower construction cost was \$806 million.

The tower has seismic proofing, including a central shaft made of reinforced concrete. The main internal pillar is attached to the outer tower structure 410 feet above the ground. From there until 1230 feet, the pillar is attached to the tower frame with oil dampers, which act as cushions during an earthquake. According to the designers, the dampers can absorb 50 percent of the energy from an earthquake.

The exterior lattice is painted a color officially called "skytree white." This is an official color based on a bluish white traditional Japanese color called aijiro. The tower is illuminated using LED lights and has two different illumination patters that are alternated daily.

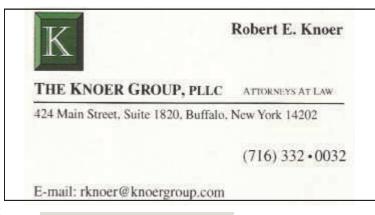
The tower was named by requesting suggestions from the general public. A committee chose six final candidate names and then a nationwide vote was taken. Japanese doesn't have spaces between words so it's not clear whether the name should be Tokyo Skytree or Tokyo Sky Tree.



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Your story, topic, inspiration, hobby, project, random thoughts, or ??? could be right here in our next issue. Please consider writing for your WNY Engineer newsletter. Don't worry, editing is included free of charge. We know that you are an engineer.







Don't know what to write about? Send an email to ESB1894@gmail.com and Robin M Closs SE PE will send you a few topics to choose from and probably an article with some good information to get you started. Showcase some of your talents in an upcoming month.



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A Construction Kit for Secure Wireless Network Design	9-24-15	Infineon System Solutions for Industrial Automation	
Tolerance Rings: For Mounting Round Components When Tolerances Are a	9-24-15	Critical Power: Selective Coordination in Health Care Buildings	
Open and Closed Systems - Net Positive	9-28-15	American Welding Society - AWS D1.1 Structural Welding Code	
Suction Head: Why Should Engineers Care Don't Get Caught in the Storm! Learn How	9-29-15	Powers IntelliStation: A Smart Mixing and Recirculation Solution for Domestic Hot	
Utilities are Improving Storm Operations		Water	
Automotive Semiconductor	9-30-15	Mouser Electronics Europe Webinar	
The Connected Home	9-30-15	Precision Polymer Engineering Ltd Webinar	
5 5 1	0 30 15	Navigating Coal-Fired Power Plant Fire	
	9-30-13	and Safety Standards	
Thermoplastic Composites in Aerospace, Energy, and Ballistics	10-1-15	A Guide for Selecting Non-Contact	
System-Level Modeling Techniques Bring Dramatic Improvements to Biomechanical Systems Design	10-1-15	Measurement Technologies Energy Monitoring at the Machine Level: Challenges and Solutions	
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ESB Car Show 2016



Place your job opening on our website for free! (It might be included within this newsletter as well.) Send an email to ESB1894@gmail.com for details.





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Tel. 716-822-5755 • Fax: 716-822-8429

Possible Future ESB Events

Please send us a quick email if you have even the slightest interest in any of the following potential events.

Otherwise, we might delete, modify, or change the event. And, if you have any other ideas for future events, please

send them to ESB1894@gmail.com!

October 2015 Junk Warriors/Adopt A Highway Cleanup

November 2015 Covanta Energy Tour

December 2015 Holiday Interactive Networking Event

January 2016 Dinner and Speaker on Brownfield Cleanup

February 2016 Engineers Week Activities at the Buffalo Museum of Science

Hamburg Brewery Networking Event

March 2016 Instrumentation PDH

April 2016 Junk Warriors/Adopt A Highway Cleanup

??? Tour

May 2016 ESB Election

UB Solar Panel Tour

June 2016 Boat Ride

Car Show

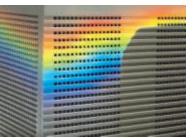
July 2016 Explore Buffalo Event

Scholarship Run

August 2016 Golf Tournament



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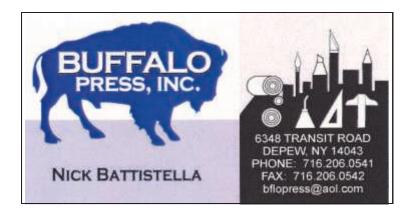


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From Tea Bags To Miatas, Bioplastics Are On The Rise By Jacqueline Concistore

It's no longer common to hear, "Paper or plastic?" at the supermarket. In many jurisdictions, the plastic option is curbed. Hundreds of local governments around the world--even entire countries, such as China and India--ban or tax lightweight, single-use plastic bags. Every year in the United States, more governments enact such restrictions, which are part of a larger shift away from petroleum-based plastic.

As people grow more concerned about throwaways destined for landfills (or worse, for the open ocean) and the problems associated with fossil fuels, businesses of all sizes are looking beyond "traditional," petroleum-based plastics to alternatives derived from plants, or even synthesized by microorganisms. Bioplastics are made wholly or in part from renewable biomass sources such as sugarcane and corn, or from the digest of microbes such as yeast. Some bioplastics are biodegradable or even compostable, under the right conditions. These new, more ecofriendly plastics are cropping up in all sorts of places, from tea bags to 3D printing media to medical implants. In Finland, for example, consumers can now buy milk in cartons, made by Tetra Pak, that are 100 percent plant-based. In the United States, a small company called Iris Industries used Kickstarter to get off the ground with "Denimite," a marbleized blue composite made of recycled denim and a thermoset resin binding agent that is partially bio-based. And NSF-funded Ecovative makes a packing

material called "Myco Foam" that's designed to replace polystyrene packaging, that bane of environmentally aware consumers who nevertheless buy take-out meals. Bio-based plastics are on the rise. The thriving European market for bioplastics is growing by more than 20 percent per year. Global demand is expected to rise by 19 percent annually through 2017, according to market research group Freedonia. Global production capacities are set to increase by 400 percent by 2018, with most bioplastics being produced in Asia, according to European Bioplastics (EUBP), an association that represents the interests of the industry in Europe.

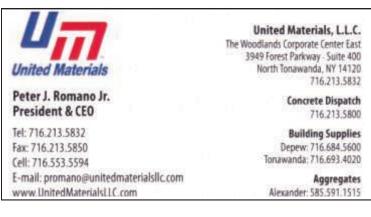
Packaging has been, and still is, one of the most common uses for bioplastics, but there is growth in other areas, such as textiles and automotive applications. "From functional sports garments with enhanced breathability to fuel lines, bioplastics are constantly spreading into new markets," said EUBP chairman François de Bie. Even the sports-car market appreciates bioplastics. Mazda announced late last year that it would use a new bioplastic in the interior (and, eventually, exterior) of its MX5 Miata. In a December 2014 press release, the company says the plant-based plastic it developed with Mitsubishi Chemical Corp. can be dyed and has a higher-quality, less-toxic finish than traditional painted surfaces. Likewise, the Ford Motor Co. said last July that it will work with Heinz to make plastic out of leftover tomato skins, for

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use in car wiring brackets and storage bins.

All of this activity is exciting, but most of today's plastic still comes from a nonrenewable resource: crude oil deposits in the earth. The oil is extracted and sent to a refinery to be distilled and yield an intermediate product called naphtha. Intense heat helps "crack" the naphtha into smaller hydrocarbon molecules such as ethylene and propylene. These chemicals are combined with a catalyst and polymerized to form chains of many linked molecules the materials we know as plastics. Different kinds of plastic will have varying polymer structures and distinct properties (toughness, stiffness, strength, transparency, etc.). Manufacturers then buy those bulk polymer pellets, granules, or liquids for creating plastic in different shapes using processes such as extrusion or injection molding.

The push to use alternative, more renewable feed stocks rests on increasing concerns about the impact of petrochemicals on health and the environment, as well as the wariness people feel about relying on finite fossil-fuel resources. Many petroleum-based plastics don't break down for hundreds, or even thousands, of years-the carbon-carbon bonds that form the polymers are that durable. According to the U.S. Environmental Protection Agency (EPA), in 2012, the U.S. generated almost 32 million tons of plastic waste, but only 9 percent of that was recovered for recycling, leaving about 29 million tons. Much of the rest ends up in landfills, as ground litter, or in the ocean.

In addition, petro-based plastics have been linked to health concerns such as endocrine disruption, and studies show some potentially harmful plastic chemicals accumulate in the human body.

To spur solutions, some governments are promoting global and national bio-based economies or so-called bioeconomies. In 2012, the Obama administration released a National Bioeconomy Blueprint that calls for increased research and development, technology transfer, training and other steps to drive the nation's bioeconomy. Businesses are interested in following that lead-in fact, they may actually be ahead of consumers, some of whom aren't willing to pay a premium for greener plastics. "The consumers want these materials, and they want to be more sustainable," said Marc Hillmyer, director of the University of Minnesota's Center for Sustainable Polymers (CSP). "But they're generally not going to do it at a cost. What we hear from industry is, 'Yes, we obviously have businesses that rely on petrochemical feed stocks, and we obviously want to be profitable in those businesse, but we want to be part of the future as well," Hillmyer added.

Nearly three dozen company affiliates support the CSP's work, including 3M, Ashland, BASF, Coca-Cola, General Mills, Henkel, Kimberly-Clark, Natureworks and Schlumberger, which make up the center's Industrial Advisory Board. Coca-Cola has been one of the big-business leaders in bioplastics development, with a recyclable "PlantBottle" that is made partially from PET (polyethylene terephthalate) derived from sugarcane. PlantBottle packaging accounts for 30 percent of the company's packaging in North America and 7 percent globally, "making Coke the world's largest bioplastics end user," the company has said. The company has also said it wants its bottles to be 100 percent made of plant-

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based plastic by 2020.

Alternative plastics also show up in niche products. For example, last year, wine cork maker Nomacorc released a recyclable cork made of renewable plant-based polyethylene, and a Finnish company called Ahlstrom sells tea bags made of polylactic acid (PLA), which is derived from resources such as corn starch and sugarcane, and is one of the most commonly used bioplastics.

Researchers working with businesses are challenged to make a material that will not only be biodegradable and nontoxic, but also cost-effective. "Many people, including us, are very good at making expensive polymers that help us advance basic science but that are not economically all that viable," Hillmyer said. "And so, what we're really trying to emphasize in the center, again with industrial input, is how do we do it economically?"

To date, Hillmyer and his colleagues have had several success stories:

The center developed a biodegradable adhesive, made from PLA and a menthol-based polymer, which could one day make stickynote recycling more efficient and environmentally friendly. (Most sticky notes are petroleum-based and tend to gum up recycling equipment.)

The center has identified a way to use additives to improve the toughness of PLA by a factor of more than 10.

They've discovered a new high-performance bio-based elastomer (an elastic polymer resembling rubber) that could be an economic, drop-in replacement for current petroleum-based materials.

There are many other challenges in developing new materials and

getting them from the lab to the market. "Our undergraduates, graduate students and postdocs all regularly hear from industry about the challenges that [companies] face when trying to introduce a new material into the marketplace," said CSP Managing Director Laura Seifert. "Can it be scaled up to an industrial process in an economically viable way? Can the material be used in existing infrastructure, or do we have to build an entirely new plant in order to adopt this new technology? And at the end of life ... is it going to cause more harm than good to introduce this into our recycling stream?"

"These are hard problems," said Hillmyer. "If it was easy, somebody would have done it." While the polymer industry is not going to shift overnight, in the long run change is inevitable, he added. "The graduate students and postdoctoral researchers and undergraduates...in the center, they're driven by these principles. So we are not having a hard time convincing them that this is something they should do. They're growing up in this world [asking] 'How do we make our world more sustainable?'"

Investigator Marc Hillmyer

Jacqueline Conciatore National Science Foundation jconciat@associates.nsf.gov





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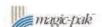
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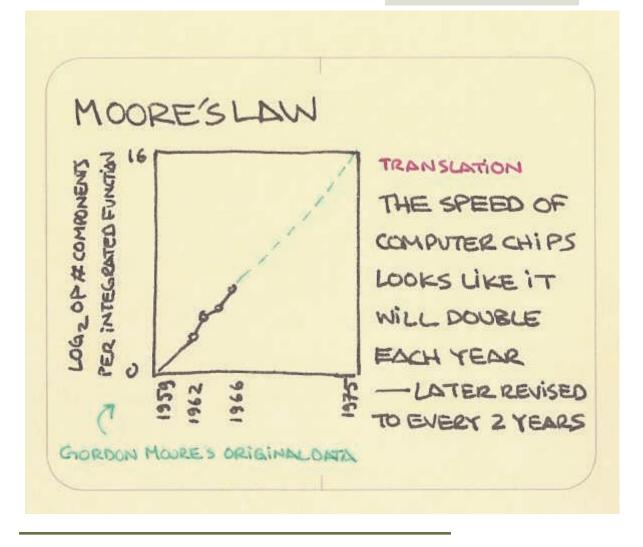






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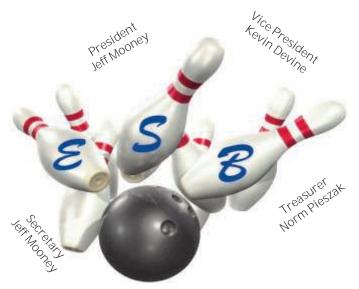


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Bowling is an anaerobic type of physical exercise, similar to walking with free weights. Bowling helps in burning calories and works muscle groups not usually exercised. The flexing and stretching in bowling works tendons, joints, ligaments, and muscles in the arms. It also promotes weight loss. While most sports are not suitable for elderly people, it is possible to practice bowling very well at advanced ages.

Apart from the physical benefits, bowling also has psychosocial benefits, strengthening friendships or creating new ones in groups.

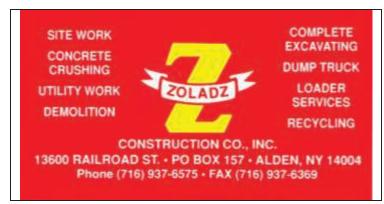
The IKAN Bowler, a device designed by a quadriplegic engineer named Bill Miller, attaches to a wheelchair and allows the user to control the speed, direction, and timing of the ten pin bowling ball's release. The name comes from the Greek work "ikano" which means "enable".

In The Flintstones, "bronto" crane operator Fred Flintstone and his next door neighbor and sidekick, Barney Rubble, often bowl. Fred is an avid bowler who has won championships based on his incredible bowling skills.

The Simpsons episode 89-1.9 has Marge Simpson taking up the sport in a fit of pique when her husband, Homer, thoughtlessly gave her a bowling ball engraved in his own name for a birthday present. In doing so, she finds herself attracted to an amorous player and finds her marriage in jeopardy.

Need more bowling but don't want to leave your seat? Go watch the movies Alley Cats Strike, Blackball, Crackerjack, Dreamer, Kingpin, or Strikes and Spares.





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The Engineering Society of Buffalo contemplates publishing biographical sketches of members in the monthly newsletter "The Western New York Engineer". For this purpose we would like the following information:

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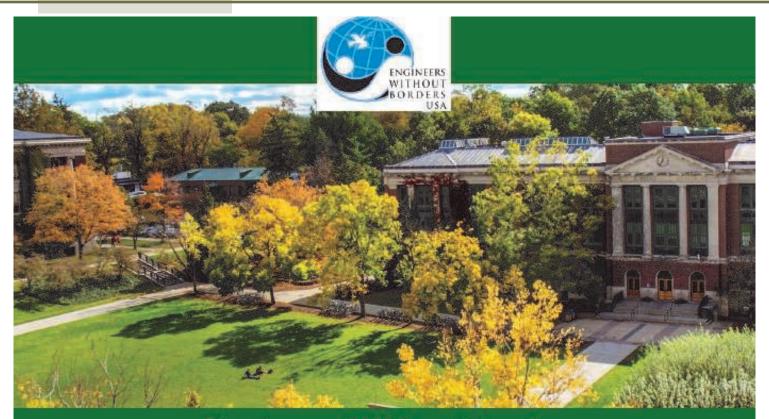
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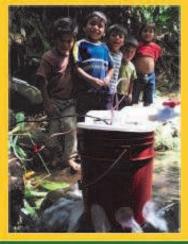
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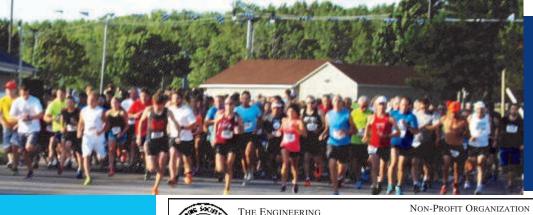


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