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[PressPac Archives](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443691&m=1739235&u=ACS&j=8970916&s=http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_PRESSPACS&node_id=223&use_sec=false&sec_url_var=region1&__uuid=a0c923e3-c385-4d96-bdc8-eadaa07eb02f)      | **ACS NEWS SERVICEWeekly Press Package - February 8, 2012 ALL CONTENT IS FOR IMMEDIATE RELEASE  Please credit the individual journal or the American Chemical Society as the source for this information.**Here is the latest American Chemical Society (ACS) Weekly PressPac from the Office of Public Affairs. It has news from ACS’ 41 peer-reviewed journals and Chemical & Engineering News.Science Inquiries: Michael Woods, editorm\_woods@acs.org202-872-6293General Inquiries: Michael Bernsteinm\_bernstein@acs.org 202-872-6042  ARTICLE #1 **FOR IMMEDIATE RELEASE****Will bubble-powered microrockets zoom through the human stomach?**Journal of the American Chemical Society

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| http://images.magnetmail.net/images/clients/ACS/020812RocketsACS_thumb.gifWill bubble-powered microrockets zoom through the human stomach?Credit: American Chemical Society |

Scientists have developed a new kind of tiny motor — which they term a “microrocket” — that can propel itself through acidic environments, such as the human stomach, without any external energy source, opening the way to a variety of medical and industrial applications. Their report in the Journal of the American Chemical Society describes the microrockets traveling at virtual warp speed for such devices. A human moving at the same speed would have to run at a clip of 400 miles per hour.Joseph Wang and colleagues explain that self-propelled nano- or microscale motors could have applications in targeted drug delivery or imaging in humans or as a way to monitor industrial applications, such as semiconductor processing. However, some versions of these small-scale motors are not self-propelled and require the addition of a fuel (commonly hydrogen peroxide). Other versions cannot withstand extreme environments such as the stomach, which is very acidic. That’s why the researchers developed a new, tubular microrocket that can move itself without added fuels in very acidic conditions.They tested the new microrocket in various acids and in acidified human blood serum. In such environments, a microrocket spontaneously produces bubbles of hydrogen gas, which propels it like the gases spewing out of a rocket’s motor nozzle. The microrocket is ultrafast — it can move farther than 100 times its 0.0004-inch length in just one second. In contrast to current devices of this kind, the microrocket’s interior is lined with zinc, which is more biocompatible and “greener” than other materials and leads to the generation of the hydrogen bubbles. Wang’s team also developed a version with a magnetic layer, which enabled them to guide the microrockets toward cargo for pick-up, transport and release. The researchers acknowledge funding from the [National Science Foundation](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443692&m=1739235&u=ACS&j=8970916&s=http://www.nsf.gov/) and the [Fulbright Scholarship Program](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443693&m=1739235&u=ACS&j=8970916&s=http://fulbright.state.gov/).

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| http://images.magnetmail.net/images/clients/ACS/020812JACS_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443694&m=1739235&u=ACS&j=8970916&s=http://web.1.c2.audiovideoweb.com/1c2web3536/020812jacs.jpg) for high-resolution image |

ARTICLE #1 **FOR IMMEDIATE RELEASE**“Hydrogen-Bubble-Propelled Zinc-Based Microrockets in Strongly Acidic Media”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443695&m=1739235&u=ACS&j=8970916&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/ja210874s) CONTACT:Joseph Wang, D.Sc.Department of NanoengineeringUniversity of California, San DiegoLa Jolla, Calif. 92093Phone: 858-246-0128Email: josephwang@ucsd.edu[To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #2 **FOR IMMEDIATE RELEASE****“Shish kebab” structure provides improved form of “buckypaper”** ACS Nano

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| http://images.magnetmail.net/images/clients/ACS/020812BuckypaperACS_thumb.jpg“Shish kebab” structure provides improved form of “buckypaper”Credit: American Chemical Society |

Scientists are reporting development of a new form of buckypaper, which eliminates a major drawback of these sheets of carbon nanotubes — 50,000 times thinner than a human hair, 10 times lighter than steel, but up to 250 times stronger — with potential uses ranging from body armor to next-generation batteries. Their report appears in the journal ACS Nano.In the study, Christopher Y. Li, Ph.D., and colleagues explain that there are several ways of making buckypaper, named for Buckminsterfullerene, or carbon 60, which was the basis for the 1996 Nobel Prize in Chemistry and helped spawn the emerging field of nanotechnology. In addition to being extremely strong, buckypaper conducts heat and electricity better than most known materials. Made from the same element as diamonds, the space-age material is formed by depositing a very thin layer of entangled carbon nanotubes to create a fiber mat akin to office paper. Li and colleagues note that no existing post-processing method allows researchers to increase the size of the tiny holes, or pores, between the carbon nanotubes after they form the buckypaper. Li’s group looked for a way to do that and to introduce other substances to buckypapers that could make them more useful in electronics or as sensors. To control pore size, the team grew single crystals of polymers around the nanotubes. The group describes it as a “shish kebab” structure, where the nanotubes are the skewers and the flat crystals serve as kebabs. After the researchers formed the buckypaper, these crystals held the nanotubes apart. Li demonstrated that the crystals allow researchers to control the pores’ sizes and change the buckypapers’ conductivities, surface roughness and abilities to shed water.The authors acknowledge funding from the [National Science Foundation](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443696&m=1739235&u=ACS&j=8970916&s=http://www.nsf.gov/).

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| http://images.magnetmail.net/images/clients/ACS/020812Nano_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443697&m=1739235&u=ACS&j=8970916&s=http://web.1.c2.audiovideoweb.com/1c2web3536/020812nano.jpg) for high-resolution image |

ARTICLE #2 **FOR IMMEDIATE RELEASE**“Polymer Single Crystal-Decorated Superhydrophobic Buckypaper with Controlled Wetting and Conductivity”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443698&m=1739235&u=ACS&j=8970916&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/nn203861s)CONTACT:Christopher Y. Li, Ph.D.Drexel UniversityPhiladelphia, Pa. 19104Phone: 215-895-2083Fax: 215-895-6760Email: chrisli@drexel.edu[To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #3 **FOR IMMEDIATE RELEASEArsenic criticality poses concern for modern technology**Environmental Science & Technology

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| http://images.magnetmail.net/images/clients/ACS/020812ArsenicIstock.jpgArsenic criticality poses concern for modern technologyCredit: iStock |

Risks related to the critical nature of arsenic — used to make high-speed computer chips that contain gallium arsenide — outstrip those of other substances in a group of critical materials needed to sustain modern technology, a new study has found. Scientists evaluated the relative criticality of arsenic and five related metals in a report in the ACS' journal Environmental Science & Technology.T. E. Graedel, E. M. Harper, N. Nassar and colleagues explain that five metals — gold, silver, arsenic, selenium and tellurium — exist in small amounts within larger deposits of copper. Supplies of all six elements are critically important for modern technology. Copper wires, for instance, conduct electricity; electronics makers rely on gold and silver; solar panels require selenium and tellurium and computer chips contain arsenic. The research group notes that while a shortage of any of these would hurt a range of technology industries, there is no existing standard for assessing the relative supply risk, environmental concerns and vulnerability to supply restriction of the metals.To fill that gap, the team explored the so-called "criticality" of these six metals, a term that takes into account the risk of future scarcity and the potential damage from shortages. They found arsenic to be the most critical, with silver and selenium close behind. The rankings are dynamic and will evolve over time, the scientists note, because the underlying factors that determine criticality for arsenic and the other elements vary with changing economic, technological and social conditions. Using the group's methodology, corporations and nations could identify their unique set of critical materials and take concrete steps to stabilize their supply chains, as well as identify and improve the performance of less critical substitute materials.

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| http://images.magnetmail.net/images/clients/ACS/020812EST_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443699&m=1739235&u=ACS&j=8970916&s=http://web.1.c2.audiovideoweb.com/1c2web3536/020812est.jpg) for high-resolution image |

ARTICLE #3 **FOR IMMEDIATE RELEASE**"Criticality of the Geological Copper Family"[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443700&m=1739235&u=ACS&j=8970916&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/es203535w)CONTACT:E. M. Harper, Ph.D.Yale UniversityNew Haven, Conn. 06511Fax: 203-452-5556Email: ermelinda.harper@yale.eduorT. E. Graedel, Ph.D.Yale UniversityNew Haven, Conn. 06511Phone: 203-432-9733 [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif ARTICLE #4 **FOR IMMEDIATE RELEASE: A PressPac Instant Replay\*New process could advance use of healthy cells or stem cells to treat disease**Langmuir

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| http://images.magnetmail.net/images/clients/ACS/020812StemCellIstock_thumb.jpgNew process could advance use of healthy cells or stem cells to treat diseaseCredit: iStock |

In a discovery that may help speed use of “cell therapy” — with normal cells or stem cells infused into the body to treat disease — scientists are reporting development of a way to deliver therapeutic human cells to diseased areas within the body using a simple magnetic effect. Their report appears in ACS’ journal Langmuir.Rawil Fakhrullin and colleagues explain that cell therapy aims to replace damaged or diseased cells in the human body with normal cells or stem cells. To do so, medical personnel need a way to target these cells to diseased organs or tissues. So-called superparamagnetic iron oxide nanoparticles (SPIONs), attached to therapeutic cells, show promise. Magnetic devices could be used to move such cells to diseased areas of the body. But current ways of attaching SPIONs to therapeutic cells are difficult to use and may damage the therapeutic cells. So the researchers set out to develop a better process for attaching SPIONs to human cells.They describe a new process for making “stabilized” SPIONs in the laboratory and successful attachment of these magnetic nanoparticles to the outside of human cells. They found that the SPIONs were not toxic to cells, and they moved in response to a magnet. “Our current results, as we believe, will inspire scientists to apply the simple and direct technique reported here in tissue engineering and cell-based therapies,” say the researchers.

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| http://images.magnetmail.net/images/clients/ACS/020812Langmuir_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443701&m=1739235&u=ACS&j=8970916&s=http://web.1.c2.audiovideoweb.com/1c2web3536/020812langmuir.jpg) for high-resolution image |

ARTICLE #4 **FOR IMMEDIATE RELEASE**“A Direct Technique for Magnetic Functionalization of Living Human Cells”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443702&m=1739235&u=ACS&j=8970916&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/la203839v)CONTACT:Rawil Fakhrullin, Ph.D.Kazan (Idel buye/Volga region) Federal UniversityKreml urami 18Kazan, Republic of TatarstanPhone: +7-843-233-78-33Email: kazanbio@gmail.com**\* A previous PressPac item that you may have missed**   [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #5 **FOR IMMEDIATE RELEASE****New crime-fighting tools aim to deter and nab terrorists**Chemical & Engineering News

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| http://images.magnetmail.net/images/clients/ACS/FEB%208-12-coverSM.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443703&m=1739235&u=ACS&j=8970916&s=http://web.1.c2.audiovideoweb.com/1c2web3536/FEB%208-12-cover.jpg) for high-resolution image. |

Fingerprints, ballistics, DNA analysis and other mainstays of the forensic science toolkit may get a powerful new crime-solving companion as scientists strive to develop technology for “fingerprinting” and tracing the origins of chemical substances that could be used in terrorist attacks and other criminal acts. That’s the topic of the cover story in the current issue of Chemical & Engineering News (C&EN), the weekly newsmagazine of the American Chemical Society, the world’s largest scientific society.? ?Bethany Halford, C&EN senior editor, focuses on an emerging field known as chemical forensics, where the goal is to use the technology of chemistry to trace weaponized toxic substances and related materials back to their source. A chemical forensic analysis could, for instance, show that ingredients in a terrorist’s weapon were produced in a specific factory. Criminal investigators then could check sales records to determine exactly who purchased those ingredients.? ?The article explains that the research in the field has expanded substantially during the last few years due mainly to funding from the U.S. Department of Homeland Security (DHS) Chemical Forensics Program. With this research, DHS and chemical forensic scientists are sending messages to the public and to would-be terrorists, the article notes. DHS wants the public to know that the agency is preparing for future attacks, and terrorists to be aware that science is preparing to nab them if they do attack.ARTICLE #5 **FOR IMMEDIATE RELEASE**“Tracing a Threat”This story is available at: [http://cenm.ag/forensics](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443705&m=1739235&u=ACS&j=8970916&s=http://cenm.ag/forensics)  [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif **Journalists’ Resources** **News media registration for ACS’ 243rd National Meeting & Exposition in San Diego**News media [registration](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443706&m=1739235&u=ACS&j=8970916&s=https://www.xpressreg.net/register/acsa032/media/start.asp) is now open for the American Chemical Society’s (ACS) 243rd National Meeting & Exposition in San Diego, March 25-29, 2012. The event will include more than 11,500 reports on new discoveries in medicine and health, food and nutrition, energy, the environment and other fields where chemistry plays a central role. One of the largest scientific conferences of 2012, the meeting will take place at the San Diego Convention Center and area hotels. To view full news release about meeting registration, click [here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443707&m=1739235&u=ACS&j=8970916&s=http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=222&content_id=CNBP_028895&use_sec=true&sec_url_var=region1&__uuid=077ccb29-4a64-4924-98b7-ed219e050a6d). **Press releases, briefings, and more from ACS’ 242nd National Meeting**[www.eurekalert.org/acsmeet.php](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443708&m=1739235&u=ACS&j=8970916&s=http://www.eurekalert.org/acsmeet.php) [http://www.ustream.tv/channel/acslive](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443709&m=1739235&u=ACS&j=8970916&s=http://www.ustream.tv/channel/acslive%20) **Inside Science News Service**For thoroughly enjoyable multimedia coverage of the science behind the news — a valuable resource for journalists and news media organizations everywhere. [Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443710&m=1739235&u=ACS&j=8970916&s=http://www.insidescience.org/) to visit the Inside Science News website.**Must-reads from C&EN: Metals industry now main source of dioxin toxicity in U.S.**Facilities that produce metal products from metal ore and scrap metal – which comprise the so-called primary metals industry – have become the No. 1 source of dioxin toxicity, according to a new analysis that combines the amount and potency of these potentially hazardous substances. For the full story, contact Michael Bernstein at m\_bernstein@acs.org.**ACS Pressroom Blog** The ACS Office of Public Affairs' [pressroom blog](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443711&m=1739235&u=ACS&j=8970916&s=http://www.acspressblog.com) highlights research from ACS’ 43 peer-reviewed journals and National Meetings. **Bytesize Science Blog** Educators and kids, put on your thinking caps: The American Chemical Society has [a blog for Bytesize Science](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443712&m=1739235&u=ACS&j=8970916&s=http://www.bytesizescience.com), a science podcast for kids of all ages.  **ACS Satellite Pressroom: Daily news blasts on Twitter** The satellite press room has become one of the most popular science news sites on Twitter. To get our news blasts and updates, create a free account at [https://twitter.com/signup](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443713&m=1739235&u=ACS&j=8970916&s=https://twitter.com/signup). Then visit [http://twitter.com/ACSpressroom](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443714&m=1739235&u=ACS&j=8970916&s=http://twitter.com/ACSpressroom) and click the ‘join’ button beneath the press room logo. **C&EN on Twitter**Follow @cenmag <[http://twitter.com/cenmag](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443715&m=1739235&u=ACS&j=8970916&s=http://twitter.com/cenmag)> for the latest news in chemistry and dispatches from our blog, C&ENtral Science <[http://centralscience.org](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443716&m=1739235&u=ACS&j=8970916&s=http://centralscience.org)>.**ACS Press Releases** [Press releases](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443717&m=1739235&u=ACS&j=8970916&s=http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_NEWSRELEASES&node_id=222&use_sec=false&sec_url_var=region1&__uuid=50b5ab93-801d-4d0d-868f-b9507ff9d709) on a variety of chemistry-related topics.[To Top](#top)http://images.magnetmail.net/images/clients/acs/goldline.gif**ACS Videos**The American Chemical Society encourages news organizations, museums, educational organizations, and other web sites to embed links to these videos.**Spellbound: How Kids Became Scientists**

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| http://images.magnetmail.net/images/clients/ACS/Spellbound3.jpg |

The road to a Nobel Prize began for one scientist in elementary school when his father placed a sign on his bedroom door proclaiming him to be a “doctor.” This is just one of the many experiences that helped launch the careers of scientists from diverse backgrounds who are featured in a new ACS video series called [Spellbound: How Kids Became Scientists](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443718&m=1739235&u=ACS&j=8970916&s=http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=1355&content_id=CNBP_028033&use_sec=true&sec_url_var=region1&__uuid=e8e6ee76-0abe-4e78-84c4-3717c995c65e). **Prized Science video series**

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Prized Science: How the Science Behind ACS Awards Impacts Your Life video series is new for 2011! In the first episode, see how Ahmed Zewail, Ph.D., developed a technology that's paving the way for new medicines, new fuels and new materials that will give people longer, healthier, happier lives. Zewail is the winner of the 2011 Priestley Medal. The second episode features the work of David Craik, Ph.D., who made advances toward new drugs for treating health problems that affect millions of people around the world, including antibiotic-resistant bacteria and AIDS. Craik is the winner of the ACS 2011 Ralph F. Hirschmann Award in Peptide Chemistry, sponsored by Merck Research Laboratories. More episodes will appear later in the year. The series is available at the [Prized Science](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443719&m=1739235&u=ACS&j=8970916&s=http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=446&content_id=CTD1_018821&use_sec=true&sec_url_var=region1&__uuid=594bce97-0b05-4df7-b759-1a0f9156c5d8) website and on DVD. **First Living, Dancing Periodic Table of the Elements**

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That famous chart displaying the chemical elements that make up everything on Earth — a fixture on the walls of classrooms and labs — literally comes alive in this new video from the American Chemical Society (ACS). [Chemists Can Dance!](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443720&m=1739235&u=ACS&j=8970916&s=http://bytesizescience.com/index.cfm/2011/3/29/The-Chemistry-Dance) features scores of chemists wearing symbols representing the elements, kicking up their heels to the tune of an original rap song. It's all part of ACS's celebration of the International Year of Chemistry. Check out the fun and share the link.**A Day Without Chemistry** Imagine a day without cars, electric lights, TV, telephones, safe food, and water, medicine, clothing, your house, and thousands of other familiar objects that make up modern society. Do it, and you are imagining a day in a world without chemistry. ACS explores that thought-provoking premise in a new high-definition video released as part of the celebration of the International Year of Chemistry. [A Day Without Chemistry](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443721&m=1739235&u=ACS&j=8970916&s=http://www.youtube.com/watch?v=AbfW_CMMe48) follows a person who sees more and more everyday necessities and conveniences disappear before his widening eyes.[The Chemistry of Sourdough Bread](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443722&m=1739235&u=ACS&j=8970916&s=http://www.bytesizescience.com/index.cfm/2010/9/27/Chemistry-of-Sourdough)[The Chemistry of Fireworks](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443723&m=1739235&u=ACS&j=8970916&s=http://www.bytesizescience.com/index.cfm/2010/6/25/Bytesize-Science-Presents-The-Chemistry-of-Fireworks)[The Chemistry of Grilling and Barbecuing](http://www.mmsend88.com/link.cfm?r=800557068&sid=17443724&m=1739235&u=ACS&j=8970916&s=http://www.bytesizescience.com/index.cfm/2010/6/15/Chemistry-of-Barbeque) [To Top](#top)  http://images.magnetmail.net/images/clients/ACS/goldline.gif**ACS Podcasts**

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