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| http://images.magnetmail.net/images/template/acs/gold.gifIn This Edition

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| [A step toward minute factories that produce medicine inside the body](#1)[Summer science reading](#ARTICLE_2)[Most new pesticides have roots in natural substances](#3)[A new “Achilles’ heel” in fungus that causes dandruff](#4)  [Efforts to develop new drugs that hopefully will never be used](#5) |

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| [**Journalists’ Resources:**](#Resources)[About the PressPac](#About) [News media registration for ACS’ 244th National Meeting & Exposition in Philadelphia](#Registration)[Press releases, briefings and more from ACS’ 243rd National Meeting](#243rd)[Inside Science News Service](#InsideScience)[C&EN Video Spotlight: Why the Peacock Mantis Shrimp Can Take a Beating](#VideoSpotlight)[Must-reads from C&EN: Supplies of What Mineral Could Limit Earth’s Ability to Support Human Life?](#mustread)[ACS Pressroom Blog](#pressroomblog) [Bytesize ScienceBlog](#bytesizeblog)[ACS Satellite Pressroom: Daily news blasts on Twitter](#twitter)[C&EN on Twitter](#CENTwitter)[ACS Press Releases](#releases) |

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| [**ACS Videos:**](#Videos)[Spellbound: A video series on how kids became scientists](#Spellbound)[Prized Science video series](#Dance) [First Living, Dancing Periodic Table of the Elements](#Mars)[A Day Without Chemistry](#daywithoutchemistry) [The Chemistry of Sourdough Bread](#sourdough)[The Chemistry of Fireworks](#fireworks)[The Chemistry of Grilling and Barbecuing](#barbecue) |

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| [**And Don't Miss:**](#dontmiss)[Chemistry Glossary](#glossary)[Chemical Abstracts Service (CAS) Web site on everyday chemicals](#CAS)  |

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| http://images.magnetmail.net/images/clients/ACS/062712PillIstock_thumb.jpgFamiliar capsules of medicine taken by mouth could have a counterpart in minute capsules that enable production of medicine inside the bodyCredit: iStock |

Scientists are reporting an advance toward treating disease with minute capsules containing not drugs — but the DNA and other biological machinery for making the drug. In an article in ACS’ journal Nano Letters, they describe engineering micro- and nano-sized capsules that contain the genetically coded instructions, plus the read-out gear and assembly line for protein synthesis that can be switched on with an external signal.Daniel Anderson and colleagues explain that development of nanoscale production units for protein-based drugs in the human body may provide a new approach for treating disease. These production units could be turned on when needed, producing medicines that cannot be taken orally or are toxic and would harm other parts of the body. Until now, researchers have only done this with live bacteria that were designed to make proteins at disease sites. But unlike bacterial systems, artificial ones are modular, and it is easier to modify them. That’s why Anderson’s group developed an artificial, remotely activated nanoparticle system containing DNA and the other “parts” necessary to make proteins, which are the workhorses of the human cell and are often used as drugs.They describe the nanoscale production units, which are tiny spheres encapsulating protein-making machinery like that found in living cells. The resulting nanoparticles produced active proteins on demand when the researchers shined a laser light on them. The nanoparticles even worked when they were injected into mice, which are stand-ins for humans in the laboratory, producing proteins when a laser was shone onto the animals. This innovation “may find utility in the localized delivery of therapeutics,” say the researchers.The authors acknowledge funding from the Misrock Foundation, the [Life Sciences Research Foundation](http://www.mmsend88.com/link.cfm?r=800557068&sid=19469998&m=2017973&u=ACS&j=10656399&s=http://www.lsrf.org/pages/geninfo.htm), the [National Cancer Institute](http://www.mmsend88.com/link.cfm?r=800557068&sid=19469999&m=2017973&u=ACS&j=10656399&s=http://www.cancer.gov/), the [National Institutes of Health](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470000&m=2017973&u=ACS&j=10656399&s=http://www.nih.gov/) and the Marie D. & Pierre Casimir-Lambert Fund.

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| http://images.magnetmail.net/images/clients/ACS/062712Nano_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470001&m=2017973&u=ACS&j=10656399&s=http://web.1.c2.audiovideoweb.com/1c2web3536/062712nano.jpg) for high-resolution image |

ARTICLE #1 **FOR IMMEDIATE RELEASE**“Remotely Activated Protein-Producing Nanoparticles”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470002&m=2017973&u=ACS&j=10656399&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/nl2036047) CONTACT:Daniel G. Anderson, Ph.D.David H. Koch Institute for Integrative Cancer ResearchDepartment of Chemical EngineeringHarvard MIT Division of Health Science and TechnologyMassachusetts Institute of TechnologyCambridge, Mass. 02139Phone: 617-258-6843Fax: 617-258-8827Email: dgander@mit.edu  [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #2 **FOR IMMEDIATE RELEASE****Summer science reading**Journal of Chemical Education

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| http://images.magnetmail.net/images/clients/ACS/062712SummerReading_thumb.jpgSummer science reading[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470003&m=2017973&u=ACS&j=10656399&s=http://web.1.c2.audiovideoweb.com/1c2web3536/062712summerreading.jpg) for high-resolution image.Credit: American Chemical Society |

With millions of people stocking up on books — old-fashioned paper and digital — for summertime reading, one of the nation’s leading journals for science educators is publishing its annual list of book and media recommendations that would delight and dazzle readers at any level of science knowledge. It appears in ACS’ Journal of Chemical Education.Cheryl B. Frech, Brian P. Coppola, Hal Harris and C.M. Woodbridge list more than a dozen books and websites they recommend for readers “to enjoy in the summer, either in preparation for fall teaching or for sheer pleasure.” Frech, for instance, tops her list with a book, Four Fish: The Future of the Last Wild Food, that changed her own life. After reading about a new variety of farmed catfish developed from ancestors that once lived in outhouses, Frech contemplated that same variety at the seafood counter in her local grocery store. She bought lentils and cooked vegetarian instead.Among the other recommendations: The Immortal Life of Henrietta Lacks, by Rebecca Skloot; Radioactivity: A History of a Mysterious Science, by Marjorie C. Malley; Better Living through Science, by Mark Frary; Out of Our Minds: Learning To Be Creative, by Ken Robinson; Catching Up or Leading the Way: American Education in the Age of Globalization, by Yong Zhao; The Magic of Reality: How We Know What’s Really True, by Richard Dawkins; A More Perfect Heaven: How Copernicus Revolutionized the Cosmos, by David Sobel; Worm: The First Digital World War, by Mark Bowden; The Believing Brain: From Ghosts and Gods to Politics and Conspiracies –– How We Construct Beliefs and Reinforce Them as Truths, by Michael Shermer; Intuition, by Allegra Goodman; The Fluorine Murder, by Camille Minichino; For the Love of Physics, by Walter Lewin and Denying Science, by John Grant.

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| http://images.magnetmail.net/images/clients/ACS/062712ChemEd_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470004&m=2017973&u=ACS&j=10656399&s=http://web.1.c2.audiovideoweb.com/1c2web3536/062712chemed.jpg) for high-resolution image |

ARTICLE #2 **FOR IMMEDIATE RELEASE**“Summer 2012 Book and Media Recommendations”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470005&m=2017973&u=ACS&j=10656399&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/ed300296j)CONTACT:Cheryl B. Frech, Ph.D.University of Central OklahomaEdmond, Okla. 73034Phone: 405-974-5476Fax: 405-974-3862 Email: cfrech@uco.edu [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #3 **FOR IMMEDIATE RELEASEMost new pesticides have roots in natural substances**Journal of Natural Products

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| http://images.magnetmail.net/images/clients/ACS/062712PlaneIstock_thumb.jpgMost new pesticides have roots in natural substancesCredit: iStock |

Scientists who search for new pesticides for use in humanity’s battle of the bugs and other threats to the food supply have been learning lessons from Mother Nature, according to a new analysis. It concludes that more than two out of every three new pesticide active ingredients approved in recent years had roots in natural substances produced in plants or animals. The article appears in ACS’ Journal of Natural Products.Charles L. Cantrell and colleagues point out that there have been many analyses of the impact of natural products – substances produced by living plants, animals and other organisms – on the production of pesticides. None, however, has ever looked at the impact of natural products and natural product-based pesticides in fostering new active ingredients (NAIs) in pesticides on the U.S. market, based on NAI registrations with the U.S. Environmental Protection Agency. The scientists filled that information gap with results that they say defy conventional wisdom that natural products may not be the best sources for NAIs.The analysis found that between 1997 and 2010, more natural products were registered as NAIs for conventional pesticides and biopesticides than any other type of ingredient. The authors report that when biological ingredients and natural products recreated in labs are included, more than 69 percent of all NAIs registered in that time frame have natural origins.The authors acknowledge funding from the U.S. Department of Defense through the [Armed Forces Pest Management Board](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470007&m=2017973&u=ACS&j=10656399&s=http://www.afpmb.org/).

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| http://images.magnetmail.net/images/clients/ACS/062712JNP_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470008&m=2017973&u=ACS&j=10656399&s=http://web.1.c2.audiovideoweb.com/1c2web3536/062712jnp.jpg) for high-resolution image |

ARTICLE #3 **FOR IMMEDIATE RELEASE**“Natural Products As Sources for New Pesticides”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470009&m=2017973&u=ACS&j=10656399&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/np300024u)CONTACT:Charles L. Cantrell, Ph.D.Natural Products Utilization Research UnitUSDA-ARSNational Center for Natural Products ResearchUniversity, MS 38677Phone: 662-915-5898Fax: 662-915-1035E-mail: clcantr1@olemiss.edu or charles.cantrell@ars.usda.gov[http://www.ars.usda.gov/pandp/people/people.htm?personid=36215](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470010&m=2017973&u=ACS&j=10656399&s=http://www.ars.usda.gov/pandp/people/people.htm?personid=36215) [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif ARTICLE #4 **FOR IMMEDIATE RELEASE: A PressPac Instant Replay\*****A new “Achilles’ heel” in fungus that causes dandruff**Journal of Medicinal Chemistry

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| http://images.magnetmail.net/images/clients/ACS/042512DandruffIstock_thumb(1).jpgA new “Achilles’ heel” in fungus that causes dandruffCredit: iStock |

Research on the fungus that ranks as one cause of dandruff — the embarrassing nuisance that, by some accounts, afflicts half of humanity — is pointing scientists toward a much-needed new treatment for the condition’s flaking and itching. The advance is the topic of a report in ACS’ Journal of Medicinal Chemistry.Claudiu T. Supuran and colleagues explain that dandruff involves an excessive shedding of dead skin cells from the scalp. In people without dandruff, it takes about 30 days for a crop of new skin cells to mature, die and shed. In people with dandruff, it may take only 2-7 days. Irritation by the scalp-dwelling fungus Malassezia globosa (M. globosa) is one cause of dandruff. Shampoos and other dandruff treatments contain anti-fungal agents, but the authors say new medicines are badly needed since the two existing compounds are not very effective at preventing and treating dandruff.In the quest for a better treatment, Supuran’s group identified an enzyme in M. globosa that is essential for the fungus’s growth. Tests showed that sulfonamides, a family of existing antibiotic medicines, were more effective in preventing the fungus’s growth than ketoconazole, a widely used anti-fungal medicine that is an ingredient in certain dandruff treatments. As a result of the study, the scientists believe that the enzyme is a prime target for developing better anti-dandruff medicines.

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| http://images.magnetmail.net/images/clients/ACS/062712JMC_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470011&m=2017973&u=ACS&j=10656399&s=http://web.1.c2.audiovideoweb.com/1c2web3536/062712jmc.jpg) for high-resolution image |

ARTICLE #4 **FOR IMMEDIATE RELEASE**“Molecular Cloning, Characterization and Inhibition Studies of a β-Carbonic Anhydrase from Malassezia globosa, a Potential Antidandruff Target”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470012&m=2017973&u=ACS&j=10656399&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/jm300203r)CONTACT:Claudiu T. Supuran, Ph.D.Università degli Studi di FirenzeFirenze, Italy, I-50019Phone: +39-055-457-3005Fax: +39-055-457-3385Email: claudiu.supuran@unifi.it**\* 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****Efforts to develop new drugs that hopefully will never be used**Chemical & Engineering News

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| http://images.magnetmail.net/images/clients/ACS/062712CEN_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470013&m=2017973&u=ACS&j=10656399&s=http://web.1.c2.audiovideoweb.com/1c2web3536/062712cen.jpg) for high-resolution image. |

Concerns about terrorist attacks, the prospect of a rogue nation using nuclear weapons and the Fukushima power plant accident in Japan are fostering efforts to develop a new family of drugs that everyone hopes will never be used, according to an article in the current edition of Chemical & Engineering News (C&EN), the weekly newsmagazine of the American Chemical Society, the world’s largest scientific society.Ann M. Thayer, C&EN senior correspondent, explains that the federal government has launched programs to develop medical countermeasures against nuclear threats. Radiation releases can happen under various circumstances, including failure of safety systems at commercial nuclear power plants and terrorist attacks. The article describes programs run by the U.S. Food & Drug Administration (FDA), the U.S. Department of Health and Human Services and the National Institutes of Health that support several small companies as they try to develop drugs to treat acute radiation syndrome (ARS).The article discusses the companies’ approaches. Some seek to adapt existing drugs, including treatments for the side effects of radiation therapy for cancer. Thayer notes that because these drugs are already approved by the FDA, stockpiling them would be easier. Others are looking for new compounds that can treat the symptoms of ARS or remove radioactive particles from the body. ARTICLE #5 **FOR IMMEDIATE RELEASE**"The Drugs That May Never Be Used"This story is available at: [http://cenm.ag/radiation](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470015&m=2017973&u=ACS&j=10656399&s=http://cenm.ag/radiation)  [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif **Journalists’ Resources****About the PressPac**The ACS PressPac consists of alerts to journalists about potentially newsworthy research published in ACS journals and Chemical & Engineering News. These alerts, or news tips, are not traditional press releases that provide comprehensive coverage of the research. Journalists can read the full text of the research provided with each alert and use the contact information for the lead authors to resolve any questions about the research or its newsworthiness.**News media registration for ACS’ 244th National Meeting & Exposition in Philadelphia**News media [registration](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470016&m=2017973&u=ACS&j=10656399&s=https://www.xpressreg.net/register/acsf082/media/reginfo.asp) is now open for the American Chemical Society’s (ACS’) 244th National Meeting & Exposition in Philadelphia, August 19-23, 2012. The event will include more than 8,600 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 Pennsylvania Convention Center and area hotels.To view the full news release about meeting registration, [click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470017&m=2017973&u=ACS&j=10656399&s=http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=222&content_id=CNBP_029922&use_sec=true&sec_url_var=region1&__uuid=3e808d0e-dcbd-4957-9ceb-468b230b8951).**Press releases, briefings and more from ACS’ 243rd National Meeting**[www.eurekalert.org/acsmeet.php](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470018&m=2017973&u=ACS&j=10656399&s=http://www.eurekalert.org/acsmeet.php) [http://www.ustream.tv/channel/acslive](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470019&m=2017973&u=ACS&j=10656399&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=19470020&m=2017973&u=ACS&j=10656399&s=http://www.insidescience.org/) to visit the Inside Science News website.**C&EN Video Spotlight: Why the Peacock Mantis Shrimp Can Take a Beating**The peacock mantis shrimp is one tough crustacean. It has hammer-like claws for smashing the shells of its prey. The claws are so strong, regular glass aquariums can’t hold the critters. But what’s interested researchers for some time is how the claws stand up to all that stress. Now, a team’s figured out why — their molecular structure is set up to resist fractures. That discovery could lead to stronger and lighter car frames or body armor.Click [here](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470021&m=2017973&u=ACS&j=10656399&s=http://www.youtube.com/watch?v=2uIYPHQzmpI&feature=youtu.be) to view the video.**Must-reads from C&EN: Supplies of What Mineral Could Limit Earth’s Ability to Support Human Life?**For fresh insights into concern about “peak phosphate” — a crunch in availability of the scarce mineral that is key to food production — and other resources, 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=19470022&m=2017973&u=ACS&j=10656399&s=https://communities.acs.org/community/science/science_news) highlights research from ACS’ more than 40 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=19470023&m=2017973&u=ACS&j=10656399&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=19470024&m=2017973&u=ACS&j=10656399&s=https://twitter.com/signup). Then visit [http://twitter.com/ACSpressroom](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470025&m=2017973&u=ACS&j=10656399&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=19470026&m=2017973&u=ACS&j=10656399&s=http://twitter.com/cenmag)> for the latest news in chemistry and dispatches from C&EN's blog, CENtral Science <[http://centralscience.org](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470027&m=2017973&u=ACS&j=10656399&s=http://centralscience.org)>.**ACS Press Releases** [Press releases](http://www.mmsend88.com/link.cfm?r=800557068&sid=19470028&m=2017973&u=ACS&j=10656399&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=19470029&m=2017973&u=ACS&j=10656399&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=19470030&m=2017973&u=ACS&j=10656399&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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| http://images.magnetmail.net/images/clients/ACS/Chemists.jpg |

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=19470031&m=2017973&u=ACS&j=10656399&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' 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=19470032&m=2017973&u=ACS&j=10656399&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=19470033&m=2017973&u=ACS&j=10656399&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=19470034&m=2017973&u=ACS&j=10656399&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=19470035&m=2017973&u=ACS&j=10656399&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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