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

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| [New materials remove CO2 from smokestacks, tailpipes and even the air](#1) [Older, cheaper vacuum cleaners release more bacteria and dust](#ARTICLE_2) [Dried licorice root fights the bacteria that cause tooth decay and gum disease](#3)[“Magnetic tongue” ready to help produce tastier processed foods](#4) [Star Trek Tricorder revisited: Toward a genre of medical scanners](#5)  |

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| http://images.magnetmail.net/images/clients/ACS/010412SmokestackIstock_thumb.jpgNew materials remove CO2 from smokestacks, tailpipes and even the airCredit: iStock |

Scientists are reporting discovery of an improved way to remove carbon dioxide — the major greenhouse gas that contributes to global warming — from smokestacks and other sources, including the atmosphere. Their report on the process, which achieves some of the highest carbon dioxide removal capacity ever reported for real-world conditions where the air contains moisture, appears in the Journal of the American Chemical Society.Alain Goeppert, G. K. Surya Prakash, chemistry Nobel Laureate George A. Olah and colleagues explain that controlling emissions of carbon dioxide (CO2) is one of the biggest challenges facing humanity in the 21st century. They point out that existing methods for removing carbon dioxide from smokestacks and other sources, including the atmosphere, are energy intensive, don't work well and have other drawbacks. In an effort to overcome such obstacles, the group turned to solid materials based on polyethylenimine, a readily available and inexpensive polymeric material.Their tests showed that these inexpensive materials achieved some of the highest carbon dioxide removal rates ever reported for humid air, under conditions that stymie other related materials. After capturing carbon dioxide, the materials give it up easily so that the CO2 can be used in making other substances, or permanently isolated from the environment. The capture material then can be recycled and reused many times over without losing efficiency. The researchers suggest the materials may be useful on submarines, in smokestacks or out in the open atmosphere, where they could clean up carbon dioxide pollution that comes from small point sources like cars or home heaters, representing about half of the total CO2 emissions related to human activity.The authors acknowledge the [Loker Hydrocarbon Research Institute](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011436&m=1692384&u=ACS&j=8467261&s=http://www.usc.edu/dept/chemistry/loker/) and the [U.S. Department of Energy](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011437&m=1692384&u=ACS&j=8467261&s=http://energy.gov/).

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| http://images.magnetmail.net/images/clients/ACS/010412JACS_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011438&m=1692384&u=ACS&j=8467261&s=http://web.1.c2.audiovideoweb.com/1c2web3536/010412jacs.jpg) for high-resolution image |

ARTICLE #1 **FOR IMMEDIATE RELEASE**"Carbon Dioxide Capture from the Air Using a Polyamine Based Regenerable Solid Adsorbent"[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011439&m=1692384&u=ACS&j=8467261&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/ja2100005) CONTACT:G. K. Surya Prakash, Ph.D.University of Southern CaliforniaLos Angeles, Calif. 90089Phone: 213-740-5984Fax: 213-740-5087Email: gprakash@usc.eduorAlain Goeppert, Ph.D.University of Southern CaliforniaLos Angeles, Calif. 90089Phone: 213-740-5978Email: goeppert@usc.eduorGeorge A. Olah, Ph.D.Loker Hydrocarbon Research InstituteUniversity of Southern CaliforniaLos Angeles, Calif. 90089Phone: 213-740-5976Email: olah@usc.edu[To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #2 **FOR IMMEDIATE RELEASE****Older, cheaper vacuum cleaners release more bacteria and dust**Environmental Science & Technology

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| http://images.magnetmail.net/images/clients/ACS/010412VacuumIstock_thumb.jpgOlder, cheaper vacuum cleaners release more bacteria and dustCredit: iStock |

Some vacuum cleaners — those basic tools for maintaining a clean indoor environment in homes and offices — actually contribute to indoor air pollution by releasing into the air bacteria and dust that can spread infections and trigger allergies, researchers report in a new study. It appears in ACS’ journal Environmental Science & Technology.Lidia Morawska and colleagues explain that previous studies showed that vacuum cleaners can increase levels of very small dust particles and bacteria in indoor spaces, where people spend about 90 percent of their time. In an effort to provide more information about emission rates of bacteria and small dust particles, the scientists tested 21 vacuum cleaners sold in Australia. The vacuums came from 11 manufacturers, included those marketed for household and commercial use, ranged in age from six months to 22 years and cost from less than $100 to almost $800. They looked at the effects that age, brand and other factors had on the amount of small particles and bacteria released into air.All of the vacuums released some fine dust and bacteria into the air. Surprisingly, vacuums with so-called High-Efficiency Particulate Air (HEPA) filters in some cases released only slightly lower levels of dust and bacteria. Newer and more expensive vacuum cleaners were generally less polluting than older or less expensive models.

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| http://images.magnetmail.net/images/clients/ACS/010412EST_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011440&m=1692384&u=ACS&j=8467261&s=http://web.1.c2.audiovideoweb.com/1c2web3536/010412est.jpg) for high-resolution image |

ARTICLE #2 **FOR IMMEDIATE RELEASE**“Vacuum Cleaner Emissions as a Source of Indoor Exposure to Airborne Particles and Bacteria”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011441&m=1692384&u=ACS&j=8467261&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/es202946w) CONTACT:Lidia Morawska, Ph.D.Queensland University of TechnologyBrisbane, AustraliaPhone: +617-3138-2616Email: l.morawska@qut.edu.au[To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #3 **FOR IMMEDIATE RELEASEDried licorice root fights the bacteria that cause tooth decay and gum disease** Journal of Natural Products

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| http://images.magnetmail.net/images/clients/ACS/010412LicoriceIstock_thumb.jpgDried licorice root fights the bacteria that cause tooth decay and gum diseaseCredit: iStock |

Scientists are reporting identification of two substances in licorice — used extensively in Chinese traditional medicine — that kill the major bacteria responsible for tooth decay and gum disease, the leading causes of tooth loss in children and adults. In a study in ACS’ Journal of Natural Products, they say that these substances could have a role in treating and preventing tooth decay and gum disease. Stefan Gafner and colleagues explain that the dried root of the licorice plant is a common treatment in Chinese traditional medicine, especially as a way to enhance the activity of other herbal ingredients or as a flavoring. Despite the popularity of licorice candy in the U.S., licorice root has been replaced in domestic candy with anise oil, which has a similar flavor. Traditional medical practitioners use dried licorice root to treat various ailments, such as respiratory and digestive problems, but few modern scientific studies address whether licorice really works. (Consumers should check with their health care provider before taking licorice root because it can have undesirable effects and interactions with prescription drugs.) To test whether the sweet root could combat the bacteria that cause gum disease and cavities, the researchers took a closer look at various substances in licorice. They found that two of the licorice compounds, licoricidin and licorisoflavan A, were the most effective antibacterial substances. These substances killed two of the major bacteria responsible for dental cavities and two of the bacteria that promote gum disease. One of the compounds — licoricidin — also killed a third gum disease bacterium. The researchers say that these substances could treat or even prevent oral infections.

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| http://images.magnetmail.net/images/clients/ACS/010412JNP_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011442&m=1692384&u=ACS&j=8467261&s=http://web.1.c2.audiovideoweb.com/1c2web3536/010412JNP.jpg) for high-resolution image |

ARTICLE #3 **FOR IMMEDIATE RELEASE**“Isoflavonoids and Coumarins from Glycyrrhiza uralensis: Antibacterial Activity against Oral Pathogens and Conversion of Isoflavans into Isoflavan-Quinones during Purification” [DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011443&m=1692384&u=ACS&j=8467261&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/np2004775) CONTACT:Stefan Gafner, Ph.D. Tom’s of Maine Kennebunk, Maine 04043Phone: 207-467-2227 Fax: 207-985-2196 Email: stefang@tomsofmaine.com [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif ARTICLE #4 **FOR IMMEDIATE RELEASE: A PressPac Instant Replay\*“Magnetic tongue” ready to help produce tastier processed foods**Journal of Agricultural and Food Chemistry

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| http://images.magnetmail.net/images/clients/ACS/TomatoIstock_thumb.jpg“Magnetic tongue” ready to help produce tastier processed foodsCredit: iStock |

The "electronic nose," which detects odors, has a companion among emerging futuristic "e-sensing" devices intended to replace abilities that once were strictly human-and-animal-only. It is a "magnetic tongue" — a method used to "taste" food and identify ingredients that people describe as sweet, bitter, sour, etc. A report on use of the method to taste canned tomatoes appears in ACS' Journal of Agricultural and Food Chemistry.Antonio Randazzo, Anders Malmendal, Ettore Novellino and colleagues explain that sensing the odor and flavor of food is a very complex process. It depends not only on the combination of ingredients in the food, but also on the taster’s emotional state. Trained taste testers eliminate some of the variation, but food processors need more objective ways to measure the sensory descriptor of their products. That’s where electronic sensing technologies, like E-noses, come into play. However, current instruments can only analyze certain food components and require very specific sample preparation. To overcome these shortcomings, Randazzo and Malmendal's team turned to nuclear magnetic resonance spectroscopy (NMR) to test its abilities as "a magnetic tongue."The researchers analyzed 18 canned tomato products from various markets with NMR and found that the instrument could estimate most of the tastes assessed by the human taste testers. But the NMR instrument went even farther. By determining the chemical composition, it showed which compound is related to which sensory descriptor. The researchers say that the "magnetic tongue" has good potential as a rapid, sensitive and relatively inexpensive approach for food processing companies to use.

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| http://images.magnetmail.net/images/clients/ACS/010412Ag_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011444&m=1692384&u=ACS&j=8467261&s=http://web.1.c2.audiovideoweb.com/1c2web3536/010412Ag.jpg) for high-resolution image |

ARTICLE #4 **FOR IMMEDIATE RELEASE**“NMR Spectrometers as ‘Magnetic Tongues’: Prediction of Sensory Descriptors in Canned Tomatoes”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011445&m=1692384&u=ACS&j=8467261&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/jf203803q)CONTACT:Antonio Randazzo, Ph.D.Universitá degli Stidu di Napoli “Federico II”Napoli, ItalyPhone: +39-081-678514Fax: +39-081-678552Email: antonio.randazzo@unina.itorAnders Malmendal, Ph.D.University of CopenhagenCopenhagen, DenmarkPhone: +45-3532-7753Fax: +45-3535-6310Email: malmendal@sund.ku.dk**\* 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****Star Trek Tricorder revisited: Toward a genre of medical scanners**Chemical & Engineering News

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| http://images.magnetmail.net/images/clients/ACS/010412CEN_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011446&m=1692384&u=ACS&j=8467261&s=http://web.1.c2.audiovideoweb.com/1c2web3536/010412CEN.jpg) for high-resolution image. |

A hand-held scanner, reminiscent of the fictional Star Trek medical Tricorder, images blood vessels through the skin and projects a map onto the skin showing nurses exactly where to insert a needle. A pocket-sized device checks blood sugar levels through the skin of people with diabetes — no pinprick or blood sample needed. Those innovations are among a new genre of medical imaging technology that's giving doctors and scientists noninvasive views into the body to diagnose and study diseases. A report on the topic appears in the current edition of Chemical & Engineering News (C&EN), the weekly newsmagazine of the American Chemical Society, the world’s largest scientific society.In the article, C&EN Contributing Editor Aaron Alexander Rowe focuses on new optical techniques that use laser beams or so-called near-infrared light to peer painlessly below the skin and through muscle and bone to see body structures. Near-infrared light, just beyond the range visible to the human eye, penetrates several inches into the human body. Two devices described in the article project a near-infrared beam into the skull. The light passes through brain tissue and blood vessels, and then scatters back out, where detectors analyze it in ways that promise to reveal whether patients are bleeding from a stroke or have other disorders.The article explains that some of the new light-based medical diagnostic tools — the blood vessel mapper, for instance — already are in use in hospitals and clinics. Others are in various stages of pre-clinical development, including devices intended to spot skin cancer, monitor how breast cancer is responding to treatments and produce 3-D images of blockages in blood vessels. A video accompanying the article appears at: [http://youtu.be/92yznrQEVYM](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011447&m=1692384&u=ACS&j=8467261&s=http://youtu.be/92yznrQEVYM)ARTICLE #5 **FOR IMMEDIATE RELEASE**“Lights and Lasers Invade the Clinic”This story is available at: [http://cen.acs.org/articles/90/i1/Lights-Lasers-Invade-Clinic.html](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011448&m=1692384&u=ACS&j=8467261&s=http://cen.acs.org/articles/90/i1/Lights-Lasers-Invade-Clinic.html)  [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=17011449&m=1692384&u=ACS&j=8467261&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=17011450&m=1692384&u=ACS&j=8467261&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=17011451&m=1692384&u=ACS&j=8467261&s=http://www.eurekalert.org/acsmeet.php) [http://www.ustream.tv/channel/acslive](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011452&m=1692384&u=ACS&j=8467261&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=17011453&m=1692384&u=ACS&j=8467261&s=http://www.insidescience.org/) to visit the Inside Science News website.**Must-reads from C&EN: Cultured Meat**No. Not burgers, chicken nuggets and sausage with a taste for opera, the symphony and ballet. Instead, think meat harvested from animal muscle cells grown in tissue culture vats as a healthier and more environmental friendly alternative to traditional livestock. For a glimpse at what’s ahead in the next few years, 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=17011454&m=1692384&u=ACS&j=8467261&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=17011455&m=1692384&u=ACS&j=8467261&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. 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Then visit [http://twitter.com/ACSpressroom](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011457&m=1692384&u=ACS&j=8467261&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=17011458&m=1692384&u=ACS&j=8467261&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=17011459&m=1692384&u=ACS&j=8467261&s=http://centralscience.org)>.**ACS Press Releases** [Press releases](http://www.mmsend88.com/link.cfm?r=800557068&sid=17011460&m=1692384&u=ACS&j=8467261&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=17011462&m=1692384&u=ACS&j=8467261&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=17011463&m=1692384&u=ACS&j=8467261&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=17011464&m=1692384&u=ACS&j=8467261&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=17011465&m=1692384&u=ACS&j=8467261&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=17011466&m=1692384&u=ACS&j=8467261&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=17011467&m=1692384&u=ACS&j=8467261&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=17011468&m=1692384&u=ACS&j=8467261&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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