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| http://images.magnetmail.net/images/clients/ACS/091912DeadZone_thumbs.jpgThe notorious “Dead Zone” in the Gulf of Mexico is one area where carbon dioxide from water pollution may have especially severe impacts.[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=20621842&m=2264255&u=ACS&j=11394824&s=http://web.1.c2.audiovideoweb.com/1c2web3536/091912deadzone.jpg) for a larger image.Credit: National Oceanic and Atmospheric Administration |

Carbon dioxide (CO2) released into the oceans as a result of water pollution by nutrients — a major source of this greenhouse gas that gets little public attention — is enhancing the unwanted changes in ocean acidity due to atmospheric increases in CO2. The changes may already be impacting commercial fish and shellfish populations, according to new data and model predictions published today in ACS’s journal, Environmental Science & Technology.William G. Sunda and Wei-Jun Cai point out that atmospheric levels of CO2, the main greenhouse gas, have increased by about 40 percent since the Industrial Revolution due to the burning of fossil fuels and land-use changes. The oceans absorb about one-third of that CO2, which results in acidification from the formation of carbonic acid. However, pollution of ocean water with nutrient runoff from fertilizer, human and animal waste, and other sources also is adding CO2 via the biological breakdown of organic matter formed during algal blooms, which also depletes oxygen from the water. Sunda and Cai developed a computer model to project the likely consequences of ocean acidification from this process both currently and with future increases in atmospheric CO2. The model predicted that this process will interact synergistically with the acidification of seawater from rising atmospheric CO2 in seawater at intermediate to higher temperatures. Together, the two ocean processes are predicted to substantially increase the acidity of ocean waters, enough to potentially impact commercial fisheries in coastal regions receiving nutrient inputs, such as the northern Gulf of Mexico and Baltic Sea. Clams, oysters, scallops and mussels could be the most heavily impacted, the report indicates.The authors acknowledge funding from the [National Science Foundation](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486026&m=2264255&u=ACS&j=11394824&s=http://www.nsf.gov/), the [National Aeronautics and Space Administration](http://www.mmsend88.com/link.cfm?r=800557068&sid=20596780&m=2264255&u=ACS&j=11394824&s=http://www.nasa.gov/) and the [National Oceanic and Atmospheric Administration](http://www.mmsend88.com/link.cfm?r=800557068&sid=20614995&m=2264255&u=ACS&j=11394824&s=http://www.noaa.gov/).

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| http://images.magnetmail.net/images/clients/ACS/091912EST_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=20614996&m=2264255&u=ACS&j=11394824&s=http://web.1.c2.audiovideoweb.com/1c2web3536/091912est.jpg) for high-resolution image |

ARTICLE #1 **FOR IMMEDIATE RELEASE**“Eutrophication Induced CO2 Acidification of Subsurface Coastal Waters: Interactive Effects of Temperature, Salinity, and Atmospheric PCO2”For the full text, contact newsroom@acs.org. CONTACT:William G. Sunda, Ph.D.CCFHR, National Ocean ServiceNational Oceanic and Atmospheric Administration101 Pivers Island Road, Beaufort, N.C. 28516Phone: 252-728-8754Fax: 252-728-8784Email: bill.sunda@noaa.gov [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #2 **FOR IMMEDIATE RELEASE****Revolutionary ultrathin, flat lens: Smart phones as thin as a credit card?**Nano Letters

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| http://images.magnetmail.net/images/clients/ACS/091912Phone_thumb.jpgRevolutionary ultrathin, flat lens: Smart phones as thin as a credit card?Credit: iStockphoto/Thinkstock |

Scientists are reporting development of a revolutionary new lens — flat, distortion-free, so small that more than 1,500 would fit across the width of a human hair — capable in the future of replacing lenses in applications ranging from cell phones to cameras to fiber-optic communication systems. The advance, which could lead to smart phones as thin as a credit card, appears in ACS’ journal Nano Letters.Federico Capasso and colleagues explain that the lenses used to focus light in eyeglasses, microscopes and other products use the same basic technology dating to the late 1200s, when spectacle lenses were introduced in Europe. Existing lenses are not thin or flat enough to remove distortions, such as spherical aberration, astigmatism and coma, which prevent the creation of a sharp image. Correction of those distortions requires complex solutions, such as multiple lenses that increase weight and take up space. To overcome these challenges, the scientists sought to develop a new superthin, flat lens.Although the new lens is ultra-thin, it has a resolving power that actually approaches the theoretical limits set by the laws of optics. The lens surface is patterned with tiny metallic stripes which bend light differently as one moves away from the center, causing the beam to sharply focus without distorting the images. The current version of the lens works at a specific design wavelength, but the scientists say it can be redesigned for use with broad-band light.The authors acknowledge funding from the [National Science Foundation](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486028&m=2264255&u=ACS&j=11394824&s=http://www.nsf.gov/), the [Robert A. Welch Foundation](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486029&m=2264255&u=ACS&j=11394824&s=http://www.welch1.org/) and the [European Communities Seventh Framework Programme](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486030&m=2264255&u=ACS&j=11394824&s=http://europa.eu/legislation_summaries/energy/european_energy_policy/i23022_en.htm), as well as support from the [Center for Nanoscale Systems at Harvard University](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486031&m=2264255&u=ACS&j=11394824&s=http://www.cns.fas.harvard.edu/).

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| http://images.magnetmail.net/images/clients/ACS/091912Nano_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=20614997&m=2264255&u=ACS&j=11394824&s=http://web.1.c2.audiovideoweb.com/1c2web3536/091912nano.jpg) for high-resolution image |

ARTICLE #2 **FOR IMMEDIATE RELEASE**“Aberration-Free Ultrathin Flat Lenses and Axicons at Telecom Wavelengths Based on Plasmonic Metasurfaces”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=20526595&m=2264255&u=ACS&j=11394824&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/nl302516v)CONTACT:Federico Capasso, Ph.D.School of Engineering and Applied Sciences, Harvard UniversityCambridge, Mass. 02138Email: capasso@seas.harvard.edu [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #3 **FOR IMMEDIATE RELEASEToward a better material for hip replacement and other joint implants**ACS Applied Material & Interfaces

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| http://images.magnetmail.net/images/clients/ACS/091912Hip_thumb.jpgToward a better material for hip replacement and other joint implantsCredit: Photodisc/Thinkstock |

In an advance toward a new generation of improved hip and other joint replacements, scientists are describing development of a potential implant material that flexes more like natural bone, fosters the growth of bone that keeps implants firmly in place and is less likely to fail and require repeat surgery. Their study on these so-called tantalum nanotube materials appears in ACS Applied Material & Interfaces.Hongyi Li, Jinshu Wang and Zhenting Zhang explain that the metal tantalum has advantages over titanium, stainless steel and other metals used in the current generation of bone implants. For example, tantalum implants are more porous than titanium, encouraging bone growth and making the implants rougher and more elastic, like natural bone. So far, however, tantalum has found use mainly in devices that bridge fractures and other defects in bone, rather than in hip joint replacements and other joint implants. The scientists set out to find a new coating for tantalum to make better implants.The results suggest that a film of tantalum oxide nanotubes — each more than 1,000 times thinner than a human hair — can help tantalum joint replacements integrate better with existing bone. The coating improves the anticorrosion, biocompatibility and other beneficial aspects of pure tantalum. The films also helped spur bone growth in tests with animal bone cells used as stand-ins for human bone.The authors acknowledge funding from the [National Natural Science Foundation of China](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486033&m=2264255&u=ACS&j=11394824&s=http://www.nsfc.gov.cn/e_nsfc/desktop/zn/0101.htm), the [Beijing Municipal Commission of Education Foundation](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486034&m=2264255&u=ACS&j=11394824&s=http://english.bjedu.gov.cn/publish/portal1/), the Guangxi Natural Science Foundation, the State Key Laboratory of Electronic Thin Films and Integrated Devices, and the City Board of Education Technology Innovation Platform.

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ARTICLE #3 **FOR IMMEDIATE RELEASE**“Study on the Anticorrosion, Biocompatibility, and Osteoinductivity of Tantalum Decorated with Tantalum Oxide Nanotube Array Films”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=20526596&m=2264255&u=ACS&j=11394824&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/am300727v)CONTACT:Hongyi Li, Ph.D. Beijing University of TechnologyBeijing 100124 ChinaPhone: +86 10 67391101Fax: +86 10 67391101Email: lhy06@bjut.edu.cnorJinshu Wang, Ph.D.Beijing University of TechnologyBeijing 100124ChinaPhone: +86 10 67391101Fax: +86 10 67391101Email: wangjsh@bjut.edu.cn orZhenting Zhang, Ph.D.Capital Medical UniversityBeijing 100050ChinaPhone: +86 10 67099279Fax: +86 10 67391101Email: zztttxl@hotmail.com [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif ARTICLE #4 **FOR IMMEDIATE RELEASE: A PressPac Instant Replay\*****New antibacterial coating for sutures could reduce infections after surgery**Langmuir

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| http://images.magnetmail.net/images/clients/ACS/082912Sutures_thumb.jpgNew antibacterial coating for sutures could reduce infections after surgeryCredit: iStockphoto/Thinkstock |

Responding to an urgent need for better antibacterial coatings on surgical sutures, scientists are reporting the discovery of a new coating that is almost 1,000 times more effective than the most widely used commercial coating. Their report appears in ACS’ journal Langmuir.Professor Gregory Tew, who is from UMass-Amherst, and colleagues explain that infection at the site of surgical incisions is one of the most common post-surgical complications that keep patients hospitalized longer and boost hospital bills. The most common antibiotic coating contains triclosan, but its use in many consumer products over the years has led to the emergence of strains of bacteria that shrug off its effects. Triclosan also can be absorbed into the body, raising concerns about possible adverse health effects. Another downside to triclosan: It slows the growth of bacteria, but does not actually kill those already present. That’s why the scientists turned to PAMBM, a new substance designed from naturally occurring antimicrobial peptides that can kill a wide range of bacteria. And because of the way it works, PAMBM has a very low chance of causing bacterial resistance and the emergence of so-called superbugs.The report described laboratory tests in which PAMBM greatly reduced the amount of bacteria compared to triclosan. In a head-to-head test with triclosan-coated sutures, those coated with PAMBM were much more effective against bacteria. “As bacterial resistance to current agents continues to increase and with resistance to triclosan now documented, the discovery of new antimicrobial agents that remain active in biomedical device coatings is essential,” say the researchers.The authors acknowledge funding from the [National Science Foundation](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486035&m=2264255&u=ACS&j=11394824&s=http://www.nsf.gov).

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| http://images.magnetmail.net/images/clients/ACS/091912Lang_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=20614999&m=2264255&u=ACS&j=11394824&s=http://web.1.c2.audiovideoweb.com/1c2web3536/091912lang.jpg) for high-resolution image |

ARTICLE #4 **FOR IMMEDIATE RELEASE**“New Bactericidal Surgical Suture Coating”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=20526597&m=2264255&u=ACS&j=11394824&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/la302732w)CONTACT:Gregory N. Tew, Ph.D.Department of Polymer Science & EngineeringDepartment of Veterinary & Animal ScienceMolecular & Cellular Biology ProgramUniversity of Massachusetts, AmherstAmherst, Mass. 01003Email: tew@mail.pse.umass.edu**\* 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****“Sweet” chemicals from a “green” raw material**Chemical & Engineering News

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| http://images.magnetmail.net/images/clients/ACS/091212CEN_thumb(1).jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=20596781&m=2264255&u=ACS&j=11394824&s=http://web.1.c2.audiovideoweb.com/1c2web3536/091912cen.jpg) for high-resolution image. |

The biobased world’s traditional focus on producing fuels for cars, trucks and aircraft is quietly undergoing a major transition this summer toward production of chemicals needed for manufacture of hundreds of different consumer products, according to an article in the current edition of Chemical & Engineering News (C&EN). The cover story appears in the weekly newsmagazine of the American Chemical Society, the world’s largest scientific society.Melody M. Bomgardner, C&EN senior business editor, points out that until now, petroleum has been the mainstay raw material for producing ingredients sold to companies that make medicines, detergents, plastics and other products. However, a small group of companies is making the leap this summer to using basic compounds for these products that are made from sugar, a renewable resource. The last few months have been a dynamic time for the rapidly growing sector.Six companies have opened manufacturing plants that are already operating or will go on line soon, and three others plan to open new facilities next year. Bomgardner cites estimates that these and other firms will be making 5.5 million tons of biobased chemicals annually by 2015. Though it will take a few years for production to gain steam, Bomgardner says analysts agree that this summer is a turning point for the industry and production of chemicals from sugar. ARTICLE #5 **FOR IMMEDIATE RELEASE**"Biobased Summer"This story is available at: [http://cenm.ag/biobased](http://www.mmsend88.com/link.cfm?r=800557068&sid=20615000&m=2264255&u=ACS&j=11394824&s=http://cenm.ag/biobased)  [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif **Journalists’ Resources****About the Weekly PressPac**The ACS Weekly PressPac consists of summaries of research published in the American Chemical Society’s more than 40 peer-reviewed journals and its weekly newsmagazine, Chemical & Engineering News. ACS journals publish more than 35,000 articles annually. Although not traditional press releases, PressPac content can be used to prepare news stories, in conjunction with the full-text PDF and an interview with the authors. PressPac stories and the accompanying full-text PDFs also can be an excellent resource for features and background.**Press releases, briefings and more from ACS’ 244th National Meeting**[www.eurekalert.org/acsmeet.php](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486038&m=2264255&u=ACS&j=11394824&s=http://www.eurekalert.org/acsmeet.php) [http://www.ustream.tv/channel/acslive](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486039&m=2264255&u=ACS&j=11394824&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=20486040&m=2264255&u=ACS&j=11394824&s=http://www.insidescience.org/) to visit the Inside Science News website.**C&EN Video Spotlight: How to Teach Chemistry through Mac ‘n’ Cheese**Thanks to the popularity of TV shows like Alton Brown’s “Good Eats” and chefs who embrace the so-called molecular gastronomy movement, kitchen chemistry classes are popping up at colleges and universities around the country. You're a chemist any time you step foot into the kitchen, says Matthew R. Hartings, a professor at American University, in Washington, D.C., who teaches the course “The Chemistry of Cooking.” In this clip, Hartings makes macaroni and cheese and talks about his class, which is meant for undergraduates not majoring in science. He teaches the course with the goal of making chemistry more relevant and interesting to non-science majors.[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=20621843&m=2264255&u=ACS&j=11394824&s=http://www.youtube.com/watch?v=1if8QYtg9Zk&feature=youtu.be) to view the video.**Must-Read from C&EN: Rudy Baum Writes “30”**After nine years as editor-in-chief of the weekly newsmagazine of the world’s largest scientific society, Rudy Baum writes his final editorial, with his own distinctive substitute for the “-30-” journalists have traditionally used to indicate the end of their stories. For a copy of the editorial, contact newsroom@acs.org. **ACS Pressroom Blog** The ACS Office of Public Affairs' [pressroom blog](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486042&m=2264255&u=ACS&j=11394824&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=20486043&m=2264255&u=ACS&j=11394824&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=20486044&m=2264255&u=ACS&j=11394824&s=https://twitter.com/signup). Then visit [http://twitter.com/ACSpressroom](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486045&m=2264255&u=ACS&j=11394824&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=20486046&m=2264255&u=ACS&j=11394824&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=20486047&m=2264255&u=ACS&j=11394824&s=http://centralscience.org)>.**ACS Press Releases** [Press releases](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486048&m=2264255&u=ACS&j=11394824&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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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=20486049&m=2264255&u=ACS&j=11394824&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 2012! The first episode features the research of Dr. Robert Langer, winner of the 2012 ACS Priestley Medal. He is a professor at the Massachusetts Institute of Technology. The Priestley Medal is the highest honor of the ACS, and it recognizes Langer’s pioneering work making body tissues in the lab by growing cells on special pieces of plastic. Langer’s team has used the approach to make skin for burn patients, for instance, with the goal of eventually making whole organs for transplantation. The second episode features Dr. Chad Mirkin, winner of the 2012 ACS Award for Creative Invention. His research has provided patients with faster diagnoses for influenza and other respiratory infections, and new tests that improve care for heart disease. 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=20486050&m=2264255&u=ACS&j=11394824&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. **The Periodic Table Table Featuring Theo Gray**

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Some people collect stamps. Wolfram Research co-founder and author Theo Gray collects elements. Step into his office, and you'll see a silicon disc engraved with Homer Simpson, a jar of mercury, uranium shells and hundreds of other chemical artifacts. But his real DIY masterpiece is the world's first ["periodic table table."](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486051&m=2264255&u=ACS&j=11394824&s=http://www.bytesizescience.com/index.cfm/2012/2/22/The-Periodic-Table-Table-Featuring-Theo-Gray) Within this masterfully constructed table-top lay samples of nearly every element known to man, minus the super-radioactive ones.**Healing the voice: Synthetic vocal cords**

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[Synthetic vocal cords](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486052&m=2264255&u=ACS&j=11394824&s=http://www.bytesizescience.com/index.cfm/2012/5/22/Bytesize-Science-Healing-the-voice-with-synthetic-vocal-cords%20) may someday heal the voices of singers like Julie Andrews -- whose legendary voice was permanently damaged in a 1997 operation. Filmed in the lab of 2012 ACS Priestley Medalist and MIT Institute Professor Robert Langer, our latest video explains how artificial polymer vocal cords may help repair damaged vocal tissue.[The Chemistry of Beer](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486053&m=2264255&u=ACS&j=11394824&s=http://youtu.be/2xKpQ11CpVE)[The Chemistry of Cheese](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486054&m=2264255&u=ACS&j=11394824&s=http://youtu.be/jMAlToEYHJM)[Without a scratch: Self-Healing Materials](http://www.mmsend88.com/link.cfm?r=800557068&sid=20486055&m=2264255&u=ACS&j=11394824&s=http://youtu.be/Bx3WTSSD5f0) [To Top](#top)  http://images.magnetmail.net/images/clients/ACS/goldline.gif**ACS Podcasts**

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