

## Ode to E Pluribus Unum for Sunday May 28 2023

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### Sunspot with Light Bridge

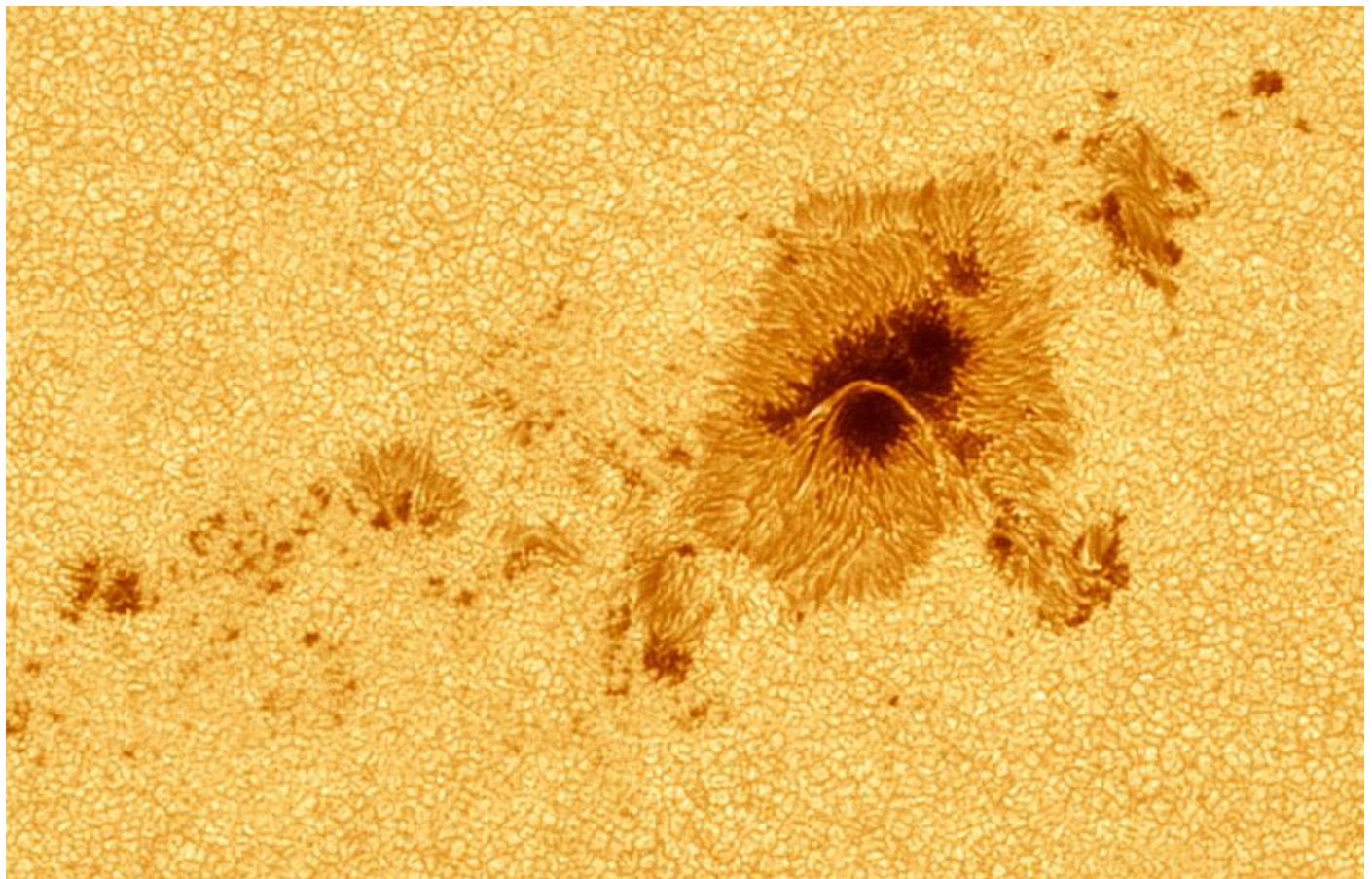


Image Credit & Copyright: Mark Johnston

Why would a small part of the Sun appear slightly dark?

Visible is a close-up picture of sunspots, depressions on the Sun's surface that are slightly cooler and less bright than the rest of the Sun. The Sun's complex magnetic field creates these cool regions by inhibiting hot material from entering the spots.

Sunspots can be larger than the Earth and typically last for about a week. Part of active region AR 3297 crossing the Sun in early May, the large lower sunspot is spanned by an impressive light bridge of hot and suspended solar gas.

This high-resolution picture also shows clearly that the Sun's surface is a bubbling carpet of separate cells of hot gas. These cells are known as granules. A solar granule is about 1000 kilometers across and lasts for only about 15 minutes.

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## **David Maslanka (1943-2017)**



David Maslanka was an American classical music composer who wrote for a variety of genres, including works for choir, wind ensemble, chamber music, and symphony orchestra. He was born in New Bedford, Massachusetts in 1943 and attended the Oberlin College Conservatory where he studied composition with Joseph Wood. He spent a year at the Mozarteum in Salzburg, Austria, and did masters and doctoral study in composition at Michigan State University where his principal teacher was H. Owen Reed.

Maslanka's music for winds has become especially well known. Among his more than 150 works are over 50 pieces for wind ensemble, including eight symphonies, seventeen concertos, a Mass, and many concert pieces. His chamber music includes four wind quintets, five saxophone quartets, and many works for solo instrument and piano. In addition, he has written a variety of orchestral and choral pieces.

In the last two decades of the Twentieth Century, the wind band music of David Maslanka has become well known and widely performed. A number of his compositions

are becoming increasingly recognized as new additions to the standard wind band repertoire. The Symphony No. 4 is becoming such a work.

As a composer, Maslanka's approach to writing began with meditation. Maslanka utilized several outside influences to drive his work, using his music as a outlet for unique expression.

Maslanka composed Symphony no. 4 (1994) after meditating on Bach chorales and specific hymn tunes such as "Old Hundred," "Only Trust in God to Guide You," and "Christ Who Makes Us Holy." These reverent melodies set the tone and mood for the symphony. The calm introduction of the symphony is meant to depict these meditative hymns.

As the piece unfolds, the mood becomes increasingly chaotic, but the underlying reverent melodies remain underneath. This piece is divided into two separate movements, approximately 27 minutes in length.

Symphony Number 4 <https://youtu.be/ePNJZttpAx0>

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## **Artificial Wombs Will Change Abortion Rights Forever**



Ectogenesis—gestation using an artificial womb—is fast approaching reality. Yet without legislation, this innovation also has the potential to cause harm.

<http://bit.ly/3nMJ5W8>

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## **String Theory Explained – What is The True Nature of Reality?**

Is String Theory the final solution for all of physics's questions or an overhyped dead end?



*fineartamerica.com*

This video was realized with the help of Dr. Alessandro Sfondrini and it was funded by SNSF under Agora Grant n. 171622 and through the NCCR SwissMAP: The Mathematics of Physics.

<https://youtu.be/Da-2h2B4faU>

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## **24-Eyed Jellyfish Related to the Most Venomous Marine Creature**

Researchers named the newfound species *Tripedalia maipoensis*, after Mai Po Nature Reserve in Hong Kong, where they discovered the transparent critter. World's Most Venomous Marine Creature



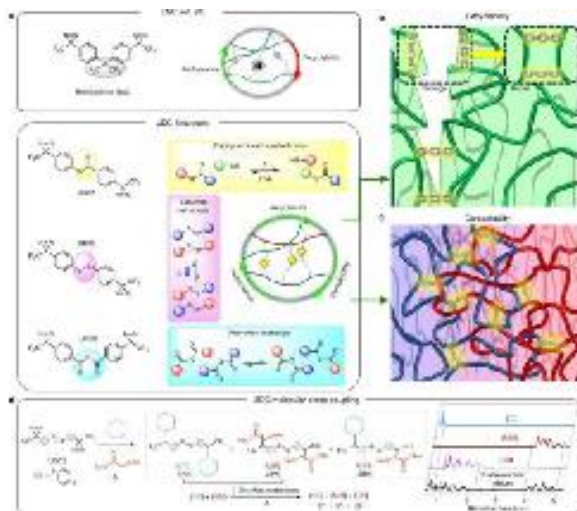
*The newfound species has 24 eyes arranged in clusters of six around its cubic body. (Image credit: Hong Kong Baptist University (screenshot from hongkongbaptistu on YouTube))*

<https://bit.ly/3L7O7oq>

*By Sascha Pare for Live Science*

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## Chemists Tackle the Tough Challenge of Recycling Mixed Plastics



*Design of UDCs and their molecular and macromolecular features.*

*Credit: Nature (2023). DOI: 10.1038/s41586-023-05858-3*

Plastics are everywhere in our daily lives, but not all plastics are created equal—far from it.

Take, for instance, polyethylene terephthalate, a plastic used to make soda bottles and clothing fibers. Then there's high-density polyethylene, from which shampoo bottles,

milk jugs and cutting boards are derived. Don't forget polystyrene for packaging, or low-density polyethylene, which gives us cling wrap and grocery bags.

All of these are plastics, which are the most widely used types of polymers—macromolecules made of repeating units of small molecules called monomers. Post-consumer plastics are almost always collected as a mixed stream of waste, and products are often manufactured from two or more types of plastics.

The bad news is that these items, though all "plastics," are chemically and physically incompatible, and there's no good industrial method for reusing or re-processing them into other useful products. That's why most of those "recyclables" you're throwing into bins every week are going to a landfill. Even after careful sorting and separation into individual plastics, mechanical recycling usually yields inferior products, termed down-cycling.

Polymer chemists at Colorado State University have long been leaders in finding ways to tackle the environmental problems humans have created with plastics waste. Now, they've come up with fundamental new chemistry that seeds a creative solution to the challenge of recycling mixed-use plastics.

Led by University Distinguished Professor Eugene Chen in the Department of Chemistry, and Tomislav Rovis and Sanat Kumar, professors at Columbia University (Rovis was formerly a faculty member at CSU), the team has devised a new chemical strategy that delivers specifically designed small molecules called universal dynamic crosslinkers into mixed plastic streams.

These crosslinkers transform a former muck of unmixable materials into a viable new set of polymers, which can be turned into new, higher-value, re-processable materials, a process known as upcycling. The work is published in the journal *Nature*.

### **Dynamic crosslinkers**

When heated and processed together with the dynamic crosslinkers added in small amounts, the mixed plastics are made compatible with each other through in-situ formation of a new material, called a multiblock copolymer.

Kumar likened the block copolymers to soap molecules, which make water compatible with oily dirt molecules. "In a similar way, these new types of dynamically formed 'soaps,' i.e. the block copolymers, compatibilize mixed plastics and make them usable as a new kind of material with useful properties."

This new method of upcycling, which does not involve deconstructing or reconstructing any of the original polymers, introduces a potential solution for recapturing materials and energy endowed in post-consumer mixed plastics that typically end up in landfills.

The team designed their crosslinkers and tested them on a variety of plastics, including samples of mixed polyethylene Ziploc bags and polylactide cups without prior purification or removal of additives or dyes, which are typically present in post-consumer plastic products. They combined their experiments with modeling studies to verify that the crosslinkers induce the formation of new multiblock copolymers.

"The system is so efficient, it compatibilizes three different polymers into a single new material," Rovis said.

### **Multiple use cycles**

The researchers posit that their new strategy could help achieve the ultimate goal of reusing mixed plastic waste over multiple use cycles, Chen said.

"A key barrier is cost; we are talking about millions of tons of plastic waste, and you have to consider how many of these dynamic crosslinkers you need, although we currently need only less than 5% of the weight of the plastics in our upcycling process. Like many fundamental discoveries made in history, practical obstacles exist at the very beginning, but we are very excited about future potential."

*by Colorado State University*

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### **Goldendoodle's Perfect 10 at Hang 8 Dog Surfing Contest**



*Charlie Brown shows how it's done.*

Second annual Flagler Beach event drew more than 50 canine competitors and an estimated 1,000-plus spectators.

<https://bit.ly/3oxnEJx>

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### **One Of America's Strangest Ponzi Schemes**

Carpet cleaning, reputed mobsters, and a woman who refused to be fleeced.

# 'My way or the highway'

*Young tycoon would fire own parents*



The whole thing started because Robin H. Swanson wanted to send flowers.

<https://bit.ly/3nki3ph>

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## **Aaron Copland: Lincoln Portrait**



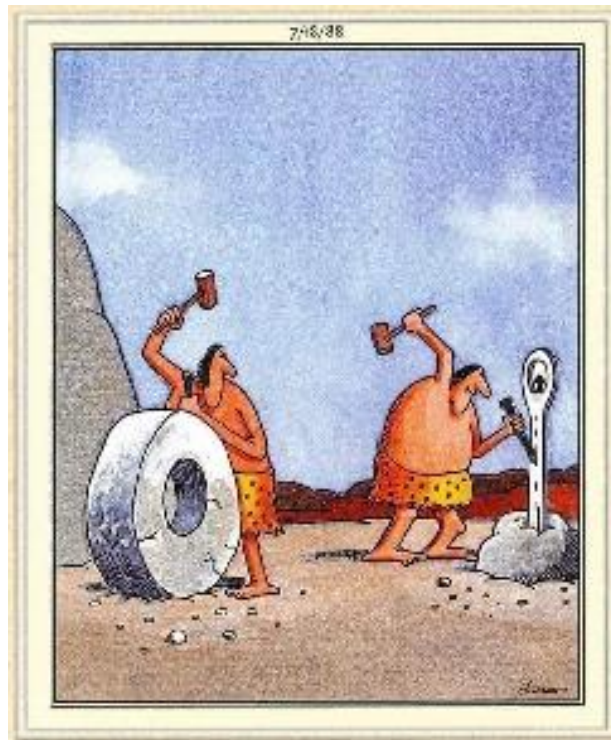
Conductor Andre Kostelanetz commissioned Copland to write a musical portrait of an "eminent American" for the New York Philharmonic.



Copland chose President Abraham Lincoln, and used material from speeches and letters of Lincoln, as well as original folk songs of the period, including "Camptown Races" and "On Springfield Mountain". Copland finished Lincoln Portrait in April 1942.

<https://youtu.be/f7NtNqySz-U>

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## **A Global Guide to the First World War - Interactive Documentary**



Ten historians from 10 countries give a brief history of the first world war through a global lens. Using original news reports, interactive maps and rarely-seen footage, including extraordinary scenes of troops crossing Mesopotamia on camels and Italian soldiers fighting high up in the Alps, the half-hour film explores the war and its effects from many different perspectives. You can watch the documentary in English, French,

German, Italian, Spanish, Arabic or Hindi thanks to our partnership with the British Academy.

<https://bit.ly/3NBgnTj>

*The perspectives here provide a different view of the roots and actions of the conflict.*

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## 40 Maps That Explain World War I

On August 4, 1914, German troops began pouring over the border into Belgium, starting the first major battle of World War I. The Great War killed 10 million people, redrew the map of Europe, and marked the rise of the United States as a global power. Here are 40 maps that explain the conflict — why it started, how the Allies won, and why the world has never been the same.



*European alliances in 1914*

<https://www.vox.com/a/world-war-i-maps>

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## Nobody Knows Exactly How AI Chatbots Work



The AI community is divided on whether that could come to haunt us as the technology improves and proliferates.

Traditional computer programs are coded in exquisite detail to instruct a computer to perform the same task over and over. But neural networks, including those that run large language models (LLMs), program and reprogram themselves and reason in ways that are not comprehensible to humans.

<https://bit.ly/3BFFXiy>

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## Colorized History

ColorizedHistory is dedicated to high quality colorizations of historical black and white images, and discussions of a historical nature.



*Deck of a gunboat ( probably "Mendota") during the US Civil war - ca 1865*

<https://www.reddit.com/r/ColorizedHistory/top/?t=all>

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**Parking lot in front of the  
Laser Eye Surgery Center.**



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### **New Ultrasound Device Helps Chemo Reach Deadly Brain Cancers**

An implanted ultrasound-emitting device helped chemotherapy drugs safely pass into the brains of cancer patients



*An ultrasound device implanted in the skull can help chemotherapies reach tumors in the brain.  
(Image credit: Courtesy of Carthera)*

<https://bit.ly/3M4VQFs>

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### **Parrots Taught to Video Call Each Other Become Less Lonely**

US study got owners to train their pets to contact other birds using a touchscreen tablet



*Parrots in the wild often live in large flocks, so can become bored and stressed if isolated, as they often are when kept as pets.*

*Photograph: Dicky Bisingslasi/Zuma Press Wire/Rex/Shutterstock*

Pet parrots that are allowed to make video calls to other birds show signs of feeling less isolated, according to scientists.

The study, which involved giving the birds a tablet that they could use to make video calls, found that they began to engage in more social behaviour including preening, singing and play. The birds were given a choice of which “friend” to call on a touchscreen tablet and the study revealed that the parrots that called other birds most often were the most popular choices.

Dr Ilyena Hirskyj-Douglas, of the University of Glasgow and a co-author of the research, said that video calls had helped many people feel less isolated in the pandemic. She added: “There are 20 million parrots living in people’s homes in the USA, and we wanted to explore whether those birds might benefit from video calling too. If we gave them the opportunity to call other parrots, would they choose to do so, and would the experience benefit the parrots and their caregivers?”

Their analysis, based on more than 1,000 hours of footage of 18 pet parrots, suggested that there were, indeed, benefits for the birds. In the wild, many species of parrots live in large flocks, but as pets tend to be kept alone or in a small group. Isolation and boredom can cause birds to develop psychological problems, which can manifest as rocking, pacing back and forth, or self-harming behaviours such as feather-plucking.

Video calling could reproduce some of the social benefits of living in a flock, according to Dr Rébecca Kleinberger, of Northeastern University and first author of the study.

The parrots were recruited from users of Parrot Kindergarten, an online coaching and educational programme for parrots and their owners. The birds first learned to ring a

bell and then touch a photo of another bird on the screen of a tablet device to trigger a call to that bird, with the assistance of their owners. In total the birds made 147 deliberate calls to each other during the study, while owners took detailed notes on the birds' behaviour and the researchers later reviewed the video footage.

Dr Jennifer Cunha, of Northeastern University and co-founder of Parrot Kindergarten, said that the parrots "seemed to grasp" that they were engaging with other birds because their behaviour mirrored that seen during real-life interactions. "All the participants in the study said they valued the experience, and would want to continue using the system with their parrots in the future," she said.

"I was quite surprised at the range of different behaviours," said Hirschy-Douglas. "Some would sing, some would play around and go upside down, others would want to show another bird their toys."

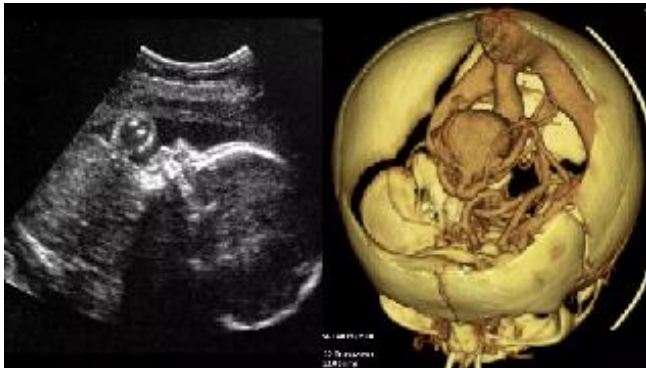
The team's paper is published in Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems.

*Hannah Devlin Science correspondent*

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## **Doctors Perform Brain Surgery on a Fetus in the Womb**

Doctors performed a first-of-its-kind brain surgery on a fetus in the womb to repair a malformed blood vessel.

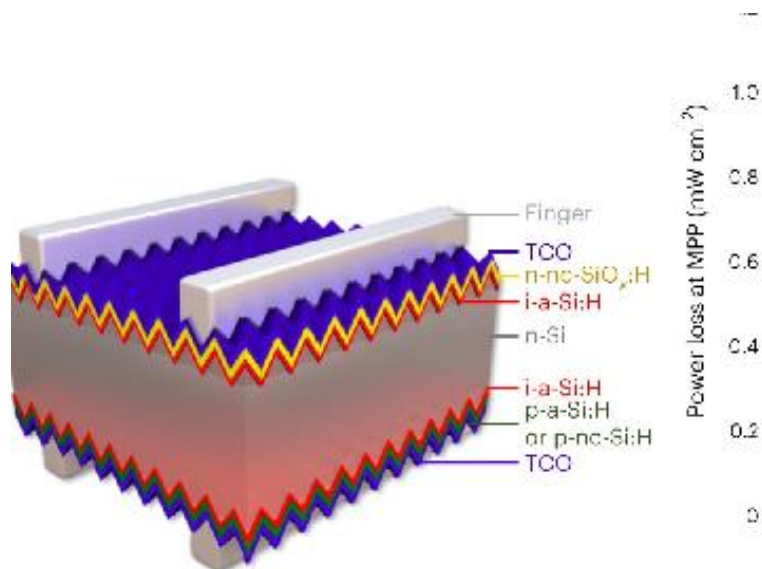


*In fetuses with a rare malformation called "VOGM," certain arteries in the brain connect directly to a major vein, rather than properly connecting to capillaries. VOGM looks like the image shown on the right. (Image credit: Left image: American Heart Association, Right image: Dr Laughlin Dawes, CC BY 3.0 , via Wikimedia Commons)*

<https://bit.ly/42iv0z8>

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## **Silicon Heterojunction Solar Cells with up to 26.81% Efficiency**



Credit: *Nature Energy* (2023). DOI: 10.1038/s41560-023-01255-2

Solar energy is the cheapest and most accessible form of energy. Now, it promises to be more efficient than ever. Scientists from a Chinese solar technology company have developed a new type of solar cell that could be a game-changer in the world's transition towards renewable energy.

Advanced modeling, performed by researchers at TU Delft, played a pivotal role in the deep understanding and engineering of the innovation. The new solar cell is made of the same material as 95% of all current solar cells but performs much better at 26.81% efficiency. The innovation further cements the crucial role of solar cells in the energy transition. The research results were published May 4 in [Nature Energy](#).

The report on this breakthrough is the result of a unique international collaboration between LONGi Green Energy Technology Co., Ltd,—one of the global leading producers of solar cells of the highest quality—together with Sun Yat-Sen University (SYSU) and Delft University of Technology (TU Delft). The team optimized the design of the solar cell by using a much improved "nanocrystalline-silicon hole contact layer." Such a new layer has been known as a theoretical possibility for quite some time, but it was never successfully put into practice.

The new layer can transfer electricity with far less resistance and results in a higher power conversion efficiency than any other type of solar cell made from crystalline silicon. Researchers at LONGi developed this new technology on standard, industry-grade silicon wafers, making the technology almost immediately applicable in the production of solar panels.

The improved performance of a cell is significant when compared to previous technologies, demonstrating an absolute leap forward in conversion efficiency of 1.5%. "This tops performance of all other crystalline silicon solar cell architectures to date,

which accounts for more than 95% solar cells produced worldwide," says Xixiang Xu, vice president of LONGi Central R&D Institute.

### **Beyond surface passivation**

Scientists at SYSU were instrumental in analyzing and studying the exact flow of electricity through the new layers. The team looked at cells that had those layers compared to cells that did not. They found that the cells with the new layers conducted electricity better because they had a low activation energy if they were positioned just right. They revealed that the bulk Auger process will gradually take the leading role as surface recombination recedes in highly passivated silicon heterojunction solar cells. In other words, the achieved quality of the surface passivation is so high, that fill factor and power conversion efficiency can be propelled forward.

"Study on silicon hole contact layers with low activation energy is very timely and extremely important, our work represents great advance on exploration of the electrical performance of hole contacts, beneficial for heterojunctions, hybrids and all silicon-based solar cells," says Pingqi Gao, professor at SYSU. The demonstration of this solar cell architecture significantly accelerates the energy transition with the deployment of more efficient photovoltaic modules.

Advanced modeling, performed by researchers at TU Delft, played a pivotal role in realizing the innovation. With new models, the team was able to detail the energy barriers across the interfaces forming the rear-junction of the LONGi solar cell. In this way, the collection path of holes across the interfaces could be analyzed, explaining the outstanding performance of the device.

"It is great to witness in real and large area devices what we theoretically predicted to be the best combination of material properties for hole-contact layers to achieve ideal hole transport in this type of cells," says Paul Procel, postdoctoral researcher at TU Delft. "The mastery achieved by LONGi of ultra-thin layers deposition with fine control of their opto-electrical properties is stunning. Modeling their solar cells pushes the boundary of what we mean with ideal crystalline silicon devices," adds Olindo Isabella, professor at TU Delft.

*by Delft University of Technology*

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### **Miracles and Madness: Israel at 75**

In 1948, a handful of Jews performed an act of political resurrection when they re-established a state in the land of Israel. Daniel Gordis asks: Has it fulfilled its founders' dreams?





*David Ben Gurion, who was to become Israel's first prime minister, reads the country's Declaration of Independence on May 14, 1948.  
(Zoltan Kluger via Getty Images)*

<https://bit.ly/42YFTGq>

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## **OK Art Fans. Now May Be Time to Reach into the Cookie Jar**

2 Rembrandts have been hidden in a private collection for 200 years. Now they're headed to auction.



*The two portraits depict relatives of Rembrandt, Jan Willemsz van der Pluym and Jaapgen Carels, who were an elderly couple, according to a news release from Christie's.  
Christie's Images Ltd. 2023*

Two recently rediscovered Rembrandt paintings will be up for auction at Christie's in London next month, expected together to fetch between about \$6.3 million and \$10 million. They have not been seen in public since they were last auctioned off at Christie's – nearly 200 years ago.

The couple portrayed in the works came from a prominent family in Leiden, Netherlands. Their son, Dominicus van der Pluym, married Cornelia van Suytbroeck, the daughter of Rembrandt's uncle. Dominicus and Corneilia had a son, who is believed to have trained with Rembrandt as an artist.

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The portraits remained in the family until 1760 and were auctioned off. They circulated through several different private collections until a man named James Murray auctioned them at Christie's in 1824.

They have remained in a private collection in the U.K. and were "completely unknown to scholars ever since."

Scholars from the Rijksmuseum in the Netherlands recently analyzed the paintings and in June, they will go on tour in New York and Amsterdam before being auctioned during Christie's Classic Week starting July 1.

Henry Pettifer, international deputy chairman of Old Master Paintings at Christie's called the re-emergence of the portraits one of the most exciting in the field in recent years. "Painted with a deep sense of humanity, these are amongst the smallest and most intimate portraits that we know by Rembrandt, adding something new to our understanding of him as a portraitist of undisputed genius," Pettifer said in a statement.

The Dutch painter, whose full name is Rembrandt Harmenszoon van Rijn, is known for his realism and portraits, such as "Old Man with a Gold Chain." He also painted biblical and historical scenes, such as "Bathsheba at Her Bath."

In 2009, a Christie's auction of another Rembrandt portrait set a world record: "Portrait of a Man with Arms Akimbo" sold for a whopping \$25.3 million.

Christie's also helped the Louvre in Paris and the Rijksmuseum acquire two Rembrandt pieces in 2016, calling it "one of the most important private sales in history."

*By Caitlin O'kane for NBC News*

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**Eric Church**



*Newcountry 999*

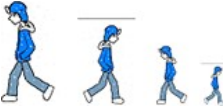
The American country music singer-songwriter has released nine studio albums through Capitol Nashville since 2005. His debut album, 2006's *Sinners Like Me*, produced three singles on the Billboard country charts including the top 20 hits "How 'Bout You", "Two Pink Lines", and "Guys Like Me".

Church's style has been described as country rock, outlaw country, and southern rock. Church's influences include Hank Williams Jr., Merle Haggard, Little Feat, The Band, Kris Kristofferson, The Grateful Dead, Ray Wylie Hubbard and Waylon Jennings. Church has also said that many hard rock and heavy metal bands influenced his music, including Metallica, Pantera, and AC/DC.

Monsters <https://www.youtube.com/watch?v=PrYUK1vzCfY>

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**My Walking Thoughts**



**For Sunday May 28 2023**

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**The Story of the Tomb of the Unknown Soldier**



<https://youtu.be/VH37fvDcqU8>

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## **History of Memorial Day**

We all have family or friends who have died while serving in the country's armed forces and dating back to the aftermath of the American Civil War, Memorial Day has been set aside to honor them.

The origins of Memorial Day can be traced to the years immediately following the Civil War when communities and cities in the United States began holding springtime tributes to honor the fallen soldiers and decorate their graves, thus the name "Decoration Day" was commonly used until after World War II when the term "Memorial Day" began to replace it.

In 1971, Memorial Day was declared a federal holiday by an act of Congress, becoming a day not only to honor the fallen soldiers of the Civil War but also to pay tribute to all military personnel who have made the ultimate sacrifice in service to their country. It is a time for Americans to reflect on the cost of freedom and express gratitude for the sacrifices made by the men and women of the armed forces.

Today, Memorial Day in the United States is a time to honor and remember all military personnel who have died in service, regardless of their allegiance. It is a day that seeks to unite the nation in gratitude and remembrance of the sacrifices made by soldiers from all backgrounds.

Since the United States became a nation, numerous servicemen and women have lost their lives in battle while serving in the country's armed forces, and the following are estimates from the major conflicts:

- American Revolutionary War (1775-1783): Approximately 25,000 American military personnel died.
- War of 1812 (1812-1815): Around 20,000 American military personnel died.
- Mexican-American War (1846-1848): Approximately 13,000 American military personnel died.
- American Civil War (1861-1865): The conflict claimed the lives of an estimated 620,000 to 750,000 Union and Confederate soldiers combined.
- Spanish-American War (1898): Roughly 2,500 American military personnel died.
- World War I (1917-1918): Around 116,500 American military personnel died.
- World War II (1941-1945): Approximately 405,400 American military personnel died.
- Korean War (1950-1953): Roughly 36,500 American military personnel died.
- Vietnam War (1955-1975): The conflict claimed the lives of around 58,200 American military personnel.
- Persian Gulf War (1990-1991): Approximately 382 American military personnel died.
- Global War on Terrorism (2001-present): As of September 2021, more than 7,000 American military personnel have lost their lives in operations related to the Global War on Terrorism (including conflicts in Iraq, Afghanistan, and other regions).

Many regard Memorial Day as the beginning of the summer, a time to hit the road for a three-day jaunt or get ready for a vacation...and that's all right with me just as long as people take time to reflect on the supreme sacrifice of those who in Abraham Lincoln's words, "...gave their last full measure of devotion."

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### **Abraham Lincoln's Gettysburg Address**

Four score and seven years ago our fathers brought forth, on this continent, a new nation, conceived in Liberty, and dedicated to the proposition that all men are created equal.

Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battle-field of that

war. We have come to dedicate a portion of that field, as a final resting place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this.

But, in a larger sense, we can not dedicate—we can not consecrate—we can not hallow—this ground. The brave men, living and dead, who struggled here, have consecrated it, far above our poor power to add or detract. The world will little note, nor long remember what we say here, but it can never forget what they did here. It is for us the living, rather, to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us—that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion—that we here highly resolve that these dead shall not have died in vain—that this nation, under God, shall have a new birth of freedom—and that government of the people, by the people, for the people, shall not perish from the earth.

Abraham Lincoln  
November 19, 1863.

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