

Silver News

- Silver and Bee Venom Combine to Save Bee Colonies
- Ava Global Logistics and San Cristobal Mining Join the Silver Institute
- Clothing with Silver Nanoparticles Could Keep Wearers Cooler
- Surprise! The Olympic Gold Medals are Mostly Silver
- New Silver Paint Introduced for Projection Surfaces that Display 3D Images
- Silver Helps Produce Green Fuels from Greenhouse Gas
- Houdini's Famous Water Escape is Depicted in a Silver Coin

Silver and Bee Venom Combine to Save Bee Colonies



EARTH.COM

Nanosilver is helping to rid bee hives of deadly bacteria.

Beekeepers continue to battle the worldwide collapse of hives and loss of bees despite the fact that there are indications that losses may be leveling off in some areas. Still, in the United States alone beekeepers lost hundreds of thousands of bee colonies each quarter in 2023, according to a [survey](#) of beekeepers by the United States Department of Agriculture.

Honeybees are not only valued for their products but also are vital to crop production as they pollinate fruits, vegetables and flowers. The loss of honeybees means the potential loss of food for people and animals.

One of the main threats to hive health appears to be a bacteria commonly known as American Foulbrood (AFB), which has become resistant to antibiotic drugs.

A promising solution, tested by researchers in Egypt and Saudi Arabia, may be a combination of bee venom and silver nanoparticles, which has been found to lengthen the life span of bees when administered to hives through a sugary syrup. Indeed, this concoction has prolonged the life span of tested bees from 27 to 40 days compared to a control group.

While antibiotic drugs are not only becoming less effective against bacteria like those from American Foulbrood, their presence also contaminates honeybee products, lowers their quality, and can injure honeybee overall health. Some countries have even banned the use of antibiotics such as commonly used Tylosin because they do more harm than good.

To stop the spread of AFB, hives have often been destroyed by burning, thus killing even healthy bees.

In their tests, the scientists found no detrimental effects from the application of bee venom and silver nanoparticles to

continued on page 2

hive colonies or to the bees themselves. Both of these substances have antibacterial properties, although they work in different ways.

“By harnessing the unique properties of bee venom and incorporating nanotechnology, we can potentially develop novel strategies to combat honeybee diseases and mitigate the environmental challenges they face, safeguarding their vital role in agriculture and ecological balance,” the researchers wrote in [Nature](#). They added: “Bee venom and silver nanoparticles show promise as alternative treatments for AFB, without detrimental effects on honeybee life span. Future research could explore the application of BV/Ag NPs in beekeeping practices for combating honeybee diseases and promoting their overall well-being.”

Ava Global Logistics and San Cristobal Mining Join the Silver Institute

The Silver Institute welcomes two new members: Ava Global Logistics and San Cristobal Mining, making seven new members who have joined the Institute in 2024.

[Ava Global Logistics](#) is headquartered in the United Kingdom and has regional offices in New York, Miami, Buenos Aires, London, Frankfurt, Dubai, and Hong Kong. The company specializes in handling precious metals and banknotes, solving operational issues, breaking down barriers, and opening new markets for its clients.

[San Cristobal Mining](#) is a private company headquartered in Vancouver, British Columbia, and in February 2023, it acquired 100% interest in Minera San Cristobal (MSC) from Sumitomo Corporation. MSC produced an average of 11.3 million ounces of silver annually over the last three years.

These companies join the following new members that signed on earlier this year: [The Australian Bullion Company](#), [Bunker Hill Mining Corp.](#), [Glencore](#), [Silver Bullion Pte Ltd](#), and [Sunshine Minting](#).

Clothing with Silver Nanoparticles Could Keep Wearers Cooler

Textiles imbedded with silver nanoparticles can reflect body heat, keeping the wearer warm, but can metal-infused clothing keep them cooler?

[University of Chicago](#) researchers say they have developed a textile whose top layer allows heat to escape while a middle layer of silver nanowires blocks heat from the environment. At the same time, an inner woolen layer moves heat from the skin to the middle layer. This configuration keeps the wearer cooler than everyday clothing, they claim.

According to Po-Chun Hsu, leader of the development team, current cooling fabrics, such as those that wick sweat from the wearer’s skin or those that block the sun’s infrared radiation, do not block heat coming off buildings and pavements. In some ways, deflecting heat rays from the sun is straightforward because the wavelengths are known, but heat waves reflecting off objects are not predicable and may be composed of different wavelengths.

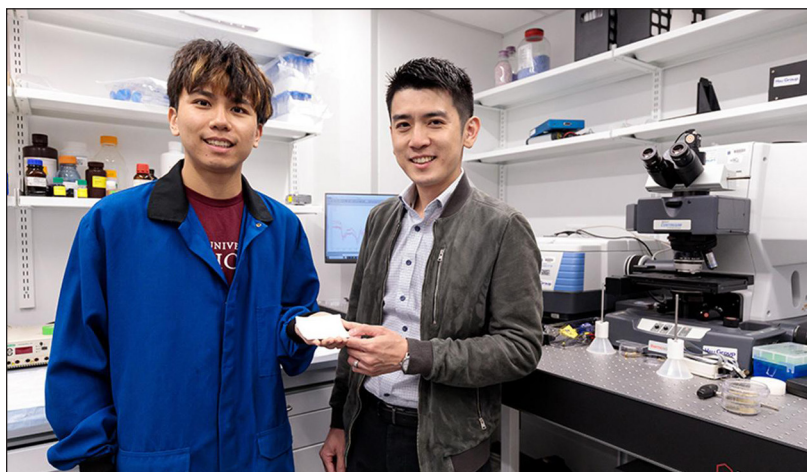
These varying heat source areas are commonly referred to as ‘heat islands’ or ‘urban islands.’

In a prepared statement, Hsu, the Assistant Professor of Molecular Engineering at the University of Chicago Pritzker School of Molecular Engineering said: “We need to reduce carbon emission and make our cities carbon-negative or carbon-neutral. But meanwhile, people are feeling the impact of these high temperatures.”

The team tested their textile under hot conditions in Arizona, and the material stayed 4.1 degrees Fahrenheit (2.3 degrees Celsius) cooler than the fabric used for outdoor sports and 16 degrees Fahrenheit (8.9 degrees Celsius) cooler than the silk used in street clothing.

The team not only hopes to incorporate these cooling textiles into clothing but also to cover buildings, cars, and food storage containers. These applications could lower the electricity used for air conditioning, thus lowering the carbon footprint from electrical generation.

“Our civilization actually uses about 10 to 15% of the energy in total just to make ourselves feel comfortable wherever we go,” Hsu said.



Engineering scientists Chenxi Sui (at left) and Po-Chun Hsu show off a sample of a new fabric using nanosilver that cools the wearer.

Surprise! The Olympic Gold Medals are Mostly Silver

With the 2024 Olympics and Paralympics in the books, winners may wonder what their medals are made of and how much they're worth.

Many people are surprised to learn that the gold and silver medals are both composed of about the same amount of silver. The only difference is that the first-place medals are gold-cladded.

Specifically, the gold medals are 523 grams of silver coated in 6 grams of gold. The silver medals are 525 grams. Both are composed of .925 silver. The bronze medals weigh 455 grams and are made of copper, tin, and zinc.

At current prices the metal content of the gold medal is worth about US\$1,000 and the silver and bronze medals are worth about US\$535 and US\$4.60 respectively, according to [Oxford Economics](#).

However, there is one part of the medals to which no one can ascribe a price. Each medal contains an insert of 18 grams of iron cut from bits and pieces of the Eiffel Tower taken during renovations and held for safekeeping.

The last time that gold medals were pure gold was in 1912, according to the [International Olympic Committee \(IOC\)](#).



IOC

Surprisingly, Gold and Silver Olympic medals contain about the same amount of silver with the top medal being sterling silver with gold cladding.

New Silver Paint Introduced for Projection Surfaces that Display 3D Images

[Smarter Surfaces](#) has joined the ranks of companies that produce silver particle-infused paints to be applied on walls or textile screens with a new product called Silver Screen Paint. Company officials claim that their product allows the metal's properties to enhance a viewer's experience of projected images, especially in 3D.

In a prepared statement, the Dublin, Ireland-based company officials noted: "Unlike traditional screens, Silver Screen Paint offers exceptional performance in various lighting conditions, making it a truly versatile solution for 3D enthusiasts and commercial spaces that demand screens with high-gain value. We believe it will set a new standard for immersive 3D experiences."

Officials claim that the high density of silver particles offers high-light reflectivity, which creates crisp images with high resolution and is a requirement for the best 3D viewing. They add that the paint works well even in low-light environments and needs minimal maintenance such as dusting on a regular basis.

It can be applied to cloth screens or walls. For large surfaces, the paint can be sprayed on, two coats are preferred, and it is ready for viewing in 24 hours.



SMARTER SURFACES

Silver nanoparticles in paint applied to walls or other surfaces offer high resolution images, especially those in 3D.

Silver Helps Produce Green Fuels from Greenhouse Gas

Engineers have devised many ways to convert greenhouse gases such as carbon monoxide and carbon dioxide into environmentally-friendly fuels. One of the latest entries is from researchers at Japan's [Doshisha University](#) who have produced hydrocarbon fuel from carbon dioxide in the air. Carbon dioxide is one of the waste products produced by burning fossil fuels.

In short, they can produce ethylene and propane on a silver electrode that is immersed in a liquid containing mainly water and ammonium tetrafluoroborate, a chemical used in flame retardants and other applications.

In a prepared statement, team leader Professor Takuya Goto said: "Most studies on carbon dioxide electrolysis with room-temperature liquid electrolyte have focused on the electrode's catalytic properties. In this groundbreaking study, we focused on the electrolyte and succeeded in producing valuable hydrocarbon gas even on a simple metal electrode."

The team also found that they could increase the amount of produced fuel by adding additional hydroxide compounds such as sodium hydroxide, the chemical name for common lye and calcium hydroxide, commonly known as lime. By tailoring the amount of added chemicals, the researchers found that they could make fuels with varying characteristics, such as burning longer or hotter.

"The physicochemical knowledge of this new route from carbon dioxide decomposition to synthesizing useful hydrocarbons, as revealed in this study, will be instrumental in advancing carbon dioxide utilization technology and contributing to academic progress in materials science," concluded Goto.

Houdini's Famous Water Escape is Depicted in a Silver Coin

Cameroon has issued a 2024, one-ounce, .999 silver coin in the shape of magician Harry Houdini's famous water torture cell escape.

The showman first dazzled crowds with this feat in 1912 in Berlin, Germany, and continued to perform it until his death in 1926. First, Houdini's feet were locked in heavy stocks. Next, he was suspended in mid-air, upside down, and lowered into a glass tank overflowing with water. The escape artist broke out of the restraints and tank while behind a curtain.

The one-inch by two-inch, colorized 5,000 Franc retails for US\$135; only 1,000 have been minted.



This 1-ounce, pure silver coin from Cameroon shows Houdini's famous water escape trick in color.

Larry Kahaner
Editor

www.silverinstitute.org
[@SilverInstitute on X](#)

THE
SILVERINSTITUTE

1400 I Street, NW, Suite 550
Washington, DC 20005
T 202.835 0185
F 202.835 0155