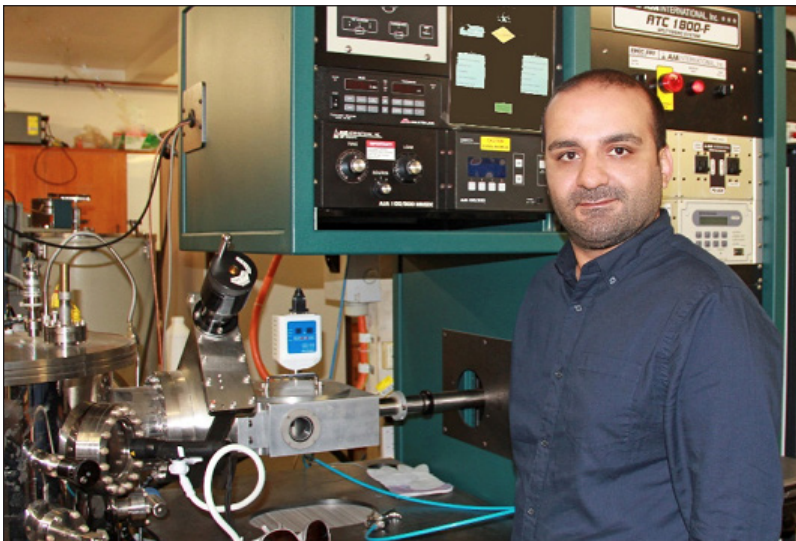


Silver News

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Silver Could Replace Expensive Rare-Earth Metal in Touchscreens and Other Consumer Electronics



UNIVERSITY OF SYDNEY

University of Sydney's Behnam Akhavan and his team have found a silver alloy replacement for rare and expensive indium in touch screens.

Modern consumer electronics often require rare and expensive metals to function properly. To manage costs, design engineers are always seeking ways to replace these rare metals, and in the case of touch screens they may have found a substitute.

The composite material indium tin oxide (ITO) is made of indium, tin and oxygen, but indium is a scarce and expensive resource. However, ITO is a crucial part of touchscreens and other products because of its ability to be visually transparent while still electrically conductive, an uncommon trait.

“A very small amount of it [indium] is available,” said Behnam Akhavan, PhD, a senior lecturer in engineering at the University of Sydney, Australia, in a prepared statement. “Demand is growing for indium because of increasing production of touchscreen devices, but, even though only tiny amounts are needed, there are fears supply can’t keep up.” He added: “It’s also very hard to mine, because we don’t have any indium-specific mines.”

Akhavan and his team have spent many years trying to find a replacement for ITO and have found it in layers of tungsten oxide, silver, and silver/tungsten oxide on glass. The researchers covered glass with a 30-nanometer layer of tungsten oxide, followed by 10 nanometers of pure silver and another layer of 50 nanometers of a composite of tungsten oxide and silver. The end product was a clear 90-nanometer coating on the glass that was both conductive and transparent.

Akhavan noted that while neither tungsten or silver is considered overly abundant, they are much less rare than indium.

Other applications beyond touchscreens include anti-reflection coatings for mirrors and ‘smart windows’ that become dimmer in sunlight.

Ohio Latest State to Remove Sales Taxes on Silver Bullion

Nine States and the District of Columbia Still Keep Tax

In July, the State of Ohio became the 41st state to remove sales taxes from purchases of silver and gold bullion, leaving only nine states and the District of Columbia as jurisdictions that continue to levy taxes on such transactions.

“These efforts are common sense. We should not be taxing money,” said Ohio State Representative Kris Jordan in a public statement. “This form of double taxation discourages Ohioans from buying precious metals in the state and drives their business elsewhere. Ohio precious metal dealers [can now] better compete with our neighboring states as well as the online marketplace. This exemption will also allow Ohio to attract coin shows, which generate significant amounts of economic activity,” he added.

In May, Arkansas removed its sales tax requirement on the precious metals to become effective October 1. The ten remaining jurisdictions still taxing silver and gold bullion sales: District of Columbia, Hawaii, Kentucky, New Jersey, New Mexico, Maine, Mississippi, Tennessee, Wisconsin, and Vermont.

On the national level, in March, the [Monetary Metals Tax Neutrality Act \(H.R. 2284\)](#) bill was introduced in the U.S. House of Representatives by Alex Mooney (R-WV). The bill goes beyond silver and gold and “exempts gains or losses from the sale or exchange of certain coins or bullion from recognition for income tax purposes.” Should the legislation become law, the exemption would apply to gains or losses from the sale or exchange of (1) gold, silver, platinum, or palladium coins minted and issued by the U.S. Department of the Treasury; or (2) refined gold or silver bullion, coins, bars, rounds, or ingots which are valued primarily based on their metal content and not their form. The legislation is pending in the U.S. House of Representatives.

New Silver Compound Sticker Test for Cystic Fibrosis Takes Minutes; Offers Greater Accuracy than Current Test Methods

Testing sweat for indications of Cystic Fibrosis (CF) is a well-accepted method for detecting the life-threatening disease. The test involves checking electrical conductivity of the skin, because those with CF have higher concentrations of electrically-conductive chloride ions in their sweat.

The test has drawbacks, though. Testing requires special equipment which is not always available. Also, many patients, especially infants, do not produce enough perspiration for an accurate reading, and doctors must chemically-induce sweating, which can take 30 minutes or more causing anxiety for the patient. Early testing of infants for CF – an inherited disorder that causes severe damage to the lungs, digestive system and other organs – is crucial to patient treatment.

All of these roadblocks may soon disappear, because scientists at the [University of Hawai‘i at Mānoa](#) and [Northwestern University](#), Illinois, have developed a sticker test made of silver chlorinate. When applied to a person’s skin, the sticker changes color when exposed to chloride ions. This test requires no electricity or the need to induce sweat, and results are available within several minutes.

The sticker is applied to the skin using an adhesive. According to lead author of the [study](#), Tyer Ray, the sticker is both comfortable and almost unnoticeable by the wearer. In addition, the sticker absorbs a third more perspiration than the current electrical method, so the higher volume of liquid provides a more accurate test result.

A smartphone camera is used to detect and quantify the sticker’s color change, indicating whether CF is present. “The use of a soft, gentle, skin-safe adhesive allows us to interface with the fragile skin of a newborn without risk of harm,” Ray said in a prepared statement. “The formation of a watertight seal enables collection from the skin with near perfect efficiency, removing the need for repeated testing. We’re very excited about the opportunity to eliminate a delay in diagnosis by analyzing sweat chloride on the device via a smartphone.”

CF affects about 70,000 people worldwide, according to the study’s authors.



Click the image to watch the Cystic Fibrosis sticker in action.

Hospital Study Shows Silver-Impregnated Plastic Foil Stops Spread of Dangerous Germs

Covering high-touch surfaces in hospitals with silver-impregnated plastic foil reduced bacteria count by more than 60 times, according to medical researchers at the University Hospital of Basel, Switzerland.

Polyvinyl chloride (PVC) foil containing 2% silver ions covered high-touch areas such as trays, furniture, and light switches in patient rooms. Similar untreated areas showed 3 times more pathogens than the areas covered by the silver-imbbeded foil.

The study leader, Professor Andreas Widmer at University Hospital, noted in his presentation at the European Congress of Clinical Microbiology & Infectious Diseases in July that the foil could eliminate or reduce regular cleaning with antibacterial chemicals, which is a time-consuming and resource-intensive process.

The team studied one bacterium in particular: *Enterococci*. This microbe is found in the human gut and had previously been dismissed as less dangerous than other pathogens. However, recent studies show the bacteria to be a leading cause of surgical wound and urinary tract infections. The plastic foil significantly reduced *Enterococci* for at least 6 months. The authors concluded: “A foil containing an integrated silver-based agent effectively decreases the load of [this] clinically important disease-causing bacteria over a 6-month study period.”

In a prepared statement Widmer and his team noted: “Auto-disinfectant foils or similar antimicrobially-equipped surfaces might help prevent transmission... many studies confirm rapid recolonization [reinfection] of hospital surfaces even after vigorous disinfection. Therefore, such auto-disinfectant foils could be desirable in certain healthcare areas such as transplant units or also during outbreaks such as the SARS-CoV-2 pandemic [the virus responsible for COVID 19] that we are currently experiencing. Further research should be extended to the antiviral activity of such surfaces, as this silver-impregnated PVC foil has been found to work in experiments against another type of coronavirus: human coronavirus HCov-229E [the common cold].”

Only Silver Olympic Medal is True to its Namesake

Of the three Olympic medals awarded at the recently concluded 2020 games held in Tokyo, Japan, only the silver medal is made purely of what it says it is: silver.

According to [The Tokyo Organizing Committee of the Olympic and Paralympic Games](#), the gold medal, which weighs about 556 grams, contains about 6 grams of gold over pure silver. In other words, the gold Olympic medal is about 1 percent gold clad with the rest composed of pure silver.

Likewise, the 450-gram bronze metal is technically not bronze, which is an alloy of mostly copper, and about 12 to 15% tin with a smattering of zinc or another metal. Instead, the Olympic medal is actually ‘red brass,’ according to Tokyo games’ officials, which is 95% copper and 5% zinc. Red brass is sometimes called ‘gunmetal’ because it was used in early firearms.

Only the 550-gram silver medal is composed of its namesake. It contains pure silver and if melted down, would be worth approximately US\$420

All of the medals are composed of recycled e-waste mainly from discarded smartphones and computers. The Olympic planning committee collected the e-waste by placing collection boxes in over 2,400 NTT Docomo phone stores as well as other places. The effort began in 2017, and over 5 million devices yielded US\$3 million worth of metals. See [2020 Olympic Medals Will be Made from Recycled E-Waste. June, 2019 Silver News](#).



Of the three Olympic medals – gold, silver and bronze – only the silver medal is composed purely of its namesake metal.

Silver Institute Membership Elects New Officers

Bradford Cooke, Executive Chairman of [Endeavour Silver Corp.](#), Vancouver, Canada, has been elected President of the Silver Institute by its membership, succeeding Michael Steinmann, President and CEO of Pan American Silver Corp.

Additionally, Ignacio Bustamante, CEO of [Hochschild Mining Plc.](#), Lima, Peru, was elected Vice President of the Institute.

Each will serve two-year terms.



Bradford Cooke

Bradford Cooke is a professional geologist and entrepreneur with 45 years of experience in the mining industry. He has specialized in the formation, management, and financing of exploration and mining companies, as well as the acquisition, exploration, development, and mining of mineral properties. Cooke founded Endeavour Silver Corp. in 2003, oversaw its growth into a primary silver mining company, and recently stepped down as CEO to assume the role of Executive Chair. He received a B.Sc. Geology degree (Honors) from Queens University in 1976 and a M.Sc. Geology degree from the University of British Columbia in 1984.



Ignacio Bustamante

Ignacio Bustamante is the CEO and a Board Member of Hochschild Mining Plc. He joined Hochschild in 1992 and, prior to his appointment as CEO in April 2010, he served as COO and General Manager of the Peruvian operations from January 2007. Between 1998 and 2003 he worked as CFO of Cementos Pacasmayo, and later became a Board Member. Between 2003 and 2007, he worked for Zemex Corporation, a subsidiary of Cementos Pacasmayo, based in Atlanta, Georgia, serving first as CFO and Vice President of Business Development and later as its President. Bustamante holds a B.Sc. in Business and a B.Sc. in Accounting from Universidad del Pacifico in Peru and an MBA from Stanford University.

Rollout Continues for Redesigned American Eagle Silver Bullion Coin

The world's most popular one-ounce silver bullion coin – the U.S. Mint's American Eagle Silver Bullion Coin – is being offered in uncirculated condition in September with a redesign previously seen in the proof version that came out in mid-July.

The original coin was first introduced in 1986 and has since sold more than a half-billion units in its 35 years of mintage. Each legal tender coin contains .999 silver.

The original obverse design was *Walking Liberty* by Adolph A. Weisman, which was used on the half-dollar coin from 1916 to 1947. Because the design was such a public favorite, then Treasury Secretary James A Baker III chose it for use on the bullion coin. Although, the newly-redesigned coin uses the same *Walking Liberty* image, Mint officials were able to use cutting-edge technology to scan Weisman's official master molds and imprint the image on the new coins. Officials say that this procedure gives the coins more detail and are closer to Weisman's original artwork.

The reverse side has been changed, too. Silver Eagle coins from 1986 through 2020 showed a bald eagle behind a shield holding an olive branch in its right talon and arrows in the left talon. It is similar to the Great Seal of the United States. The 2021 coins replaces the eagle-with-shield image with that of a flying bald eagle. The bird's wings are extended, and it is carrying a small oak branch in its talons as it prepares to land.

Over the years, the Silver Eagle coins have been included in more than a dozen special Mint sets including the 1993 *Philadelphia Set*, issued to commemorate the bicentennial of the striking of the first official United States coins at the Philadelphia Mint in 1793. In 1995, the silver coin was part of the *10th Anniversary American Eagle Five Coin Set*.

One of the more notable sets was the 2019 *Pride of Two Nations* silver coin set containing special versions of the American Silver Eagle and Canadian Silver Maple Leaf coins. Each coin was struck in its respective country and was sold by both mints.

The new coin includes an anti-counterfeit 'reeded edge' in which the gaps are so small as to be difficult to produce without the Mint's special machinery and processes.

The Mint has a "Remind Me" button on its [website](#) that will alert interested buyers of the coin's first sale date of September 9, 2021, which will then be available through retailers.



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