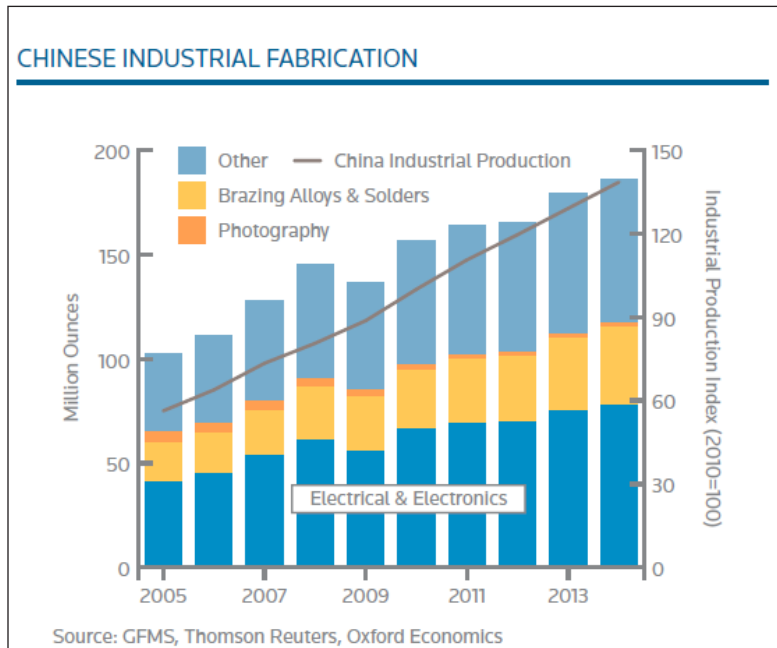


# Silver News

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## Key Components of Global Silver Demand Rose in 2014



China experienced its fifth consecutive year of industrial demand growth.

Global silver jewelry demand posted a record high last year, and silverware offtake rose to its highest level since 2006, according to the *World Silver Survey 2015*, released this May by the Silver Institute. Silver increased its popularity in the jewelry and silverware markets as fashions continued to target bigger and heavier pieces. The trend away from plated material towards sterling silver also continued, the survey stated.

Globally, silver jewelry fabrication had a second consecutive year of growth, increasing 1.5 percent. This was a reflection of high levels of restocking and a strong performance from India, which surged 47 percent from 2013 levels. Gains were also noted in Europe, up 9.3 percent, and North America, up 2.2 percent. Total silverware fabrication rose 3 percent, primarily due to a 20 percent increase in demand from the Indian Subcontinent.

Total physical silver demand was 1.07 billion ounces in 2014. This was the fourth highest level recorded since 1990, but a 4 percent decline from 2013 levels largely due to a fall in coin and bar demand from 2013, which had been a record year.

Industrial applications accounted for 56 percent of all silver demand in 2014. On a regional basis, a modest increase in industrial demand in developing countries, led by 4 percent growth in China and Taiwan, was offset by weaker demand in advanced countries in 2014. This marks the fifth consecutive year of Chinese industrial demand growth. Last year’s industrial demand total for Taiwan was 23 percent above their 2009 figure.

Last year also saw notable growth in key silver industrial end uses, including ethylene oxide, photovoltaics, and brazing and alloys. About 128.6 million ounces of silver resided in global ethylene oxide plants, which was equivalent to 15 percent of last year’s total mine production. “Silver consumed

*continued on page 2*

in ethylene oxide (EO) production was up 6 percent year-on-year. Much of this was due to gains in China, the largest source of silver demand in the EO industry, adding 4.4 million ounces to its production capacity thanks to newly-commissioned plants,” the survey stated. “Industrial demand held broadly flat over the year with notable increases from the photovoltaic sector (the first in three years) and the brazing alloys sector.” Brazing alloy and soldering demand increased by 3 million ounces in 2014. This increase was offset by modest declines in the electronics and photographic sectors, and overall industrial fabrication was 594.9 million ounces, the survey stated.

Silver demand for photovoltaic applications rose. “Photovoltaic (PV) demand for silver totaled 59.9 million ounces in 2014, up 7 percent from the previous year,” the survey noted. “This was the first increase in two years and was driven by a combination of less aggressive thriftiness of silver content per solar cell and an 11 percent rise in solar panel installations.”

In 2014, silver coin and bar purchases remained at historically high levels, mainly due to growth in silver coin demand in several key markets. Growth was seen in the United States, Canada, India and Spain. Silver coins and medals demand was 107.6 million ounces last year.

Holdings by silver-backed exchange traded funds remained sturdy, growing by 1.4 million to record their highest year-end level at 636 million ounces.

Silver mine production grew by 5.0 percent to 877.5 million ounces, mainly the result of stronger output from the primary silver and copper sectors, new projects that came online last year, and significant production gains in Central and South America, the survey reported. Mexico was the world’s leading silver producer, followed by Peru, China, Australia and Chile.

Government sales of silver were essentially nonexistent last year. Scrap supply was down 13 percent, the lowest volume level recorded since 1996 and the third consecutive year of decline. As a proportion of total silver supply, scrap remained just above 15 percent, down from 25 percent in 2011 and 2012.

Copies of *World Silver Survey 2015* are available from the Silver Institute for US\$225. To order please contact the Silver Institute at [www.silverinstitute.org](http://www.silverinstitute.org).

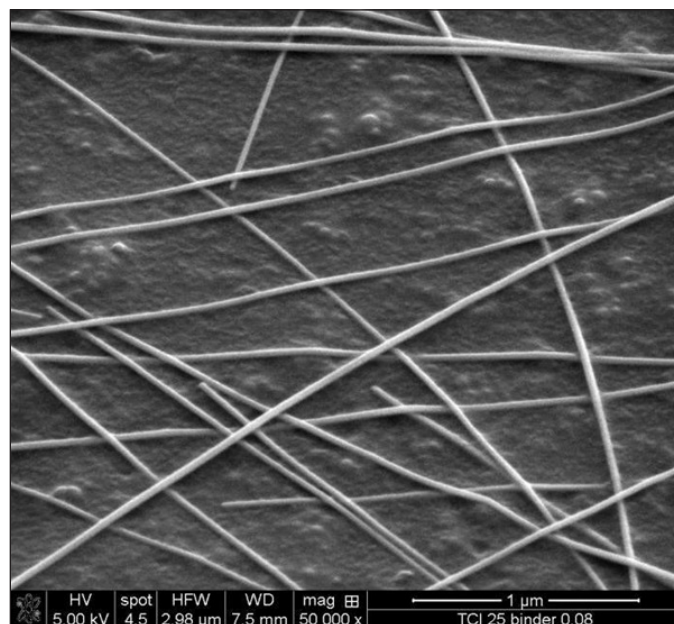
## Apple Exploring Silver Nanowires for New iPad Pro Screen

Apple watchers say that the company’s upcoming iPad Pro could have a flexible display coated with silver nanowires (AgNW) that works with “Force Touch,” a feature that the company first used on its 2015 MacBook notebooks. The feature allows the display to distinguish among different finger pressures allowing, say, a video to play faster when pressed harder.

Apple has reportedly contacted several display makers including LG Display, Samsung Display, and Japan Display for AgNW displays, which are more flexible than current film displays using indium tin oxide, according to [Electronic Times](#), a South Korean media company.

AgNW is more sensitive to touch pressure than current display technologies which means that an increased level of sensitivity could offer new applications and uses for the 12.9-inch displays on the iPad Pro. For example, *Electronic Times* noted, “It will be very easy for a user to change the thickness of a line depending on pressure from a fingertip, which can enable a person to draw a picture more delicately. Apple will apply resistive-touch function onto their new AgNW film by coating silver wire with constant length and thickness, which can be made by applying a silver salt onto a PET (polyethylene terephthalate) film.”

Another benefit of using AgNW is that it will save Apple money because indium is scarce and expensive, *Electronic Times* said.



This silver nanowire was produced by Korean company Nanopyxis.

## Silver Institute Elects New Leadership

Mitchell J. Krebs, President, CEO and Director of Coeur Mining, Inc. (CDE: NYSE), has been elected President of the Silver Institute by its membership. Coeur Mining is one of the world’s largest primary silver producers, with assets in the United States, Mexico, Bolivia, Argentina and Australia. He succeeds Fernando Alanis, CEO of Industrias Peñoles, S.A.B. de C.V. (PE&OLES: MX), whose term as President ended May 31. Octavio Alvidrez, CEO of Fresnillo Plc (FRES: LSE), the world’s largest primary silver producer, was elected Vice President of the Institute, succeeding Mr. Krebs in this role. Both men will serve two-year terms.

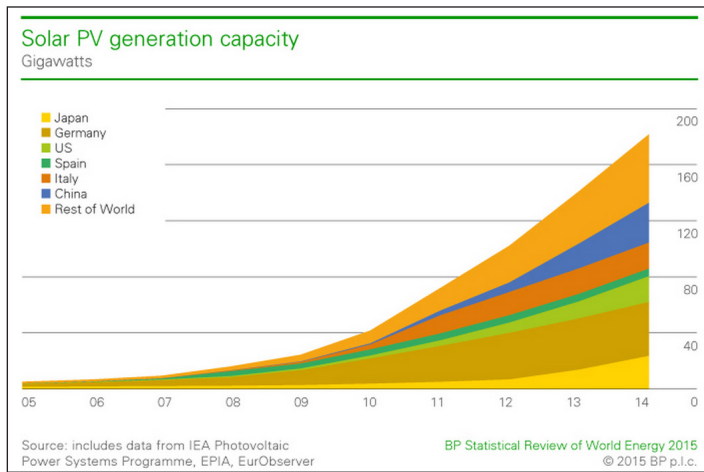
# Solar Power Installations Up 28.7 Percent

New solar power installations totaling 40.2 gigawatts in 2014 raised solar power generating capacity to 180 gigawatts by year-end, a 28.7 percent increase versus the end of 2013. Also, capacity has more than quadrupled in the past four years, according to the [Statistical Review of World Energy 2015](#), published by British Petroleum Group.

Solar power generation of electricity had another year of very rapid growth in 2014, with a 38 percent increase. Its overall share of global power generation remains low at 0.8 percent, but that share has doubled in just two years. “Solar is starting to have a noticeable impact in terms of sources of power generation growth, contributing nearly 15 percent of the growth of global power in 2014,” the report noted.

The largest installation increase was from the Asia Pacific region, where China added 10.6 gigawatts, edging out Japan with 9.7 gigawatts. Together these two nations accounted for more than half of the growth in global solar capacity. The United States provided the third largest addition at 6.2 gigawatts. Germany remains the world leader for cumulative installed solar power capacity with 38.2 gigawatts as China (28.2 gigawatts) and Japan (23.3 gigawatts) have both overtaken Italy to take second and third place.

Independent forecasters Thomson Reuters GFMS predict silver consumption from this sector to report strong growth through 2016, with silver demand from photovoltaic applications expected to hit 66.2 million ounces in 2016, an increase of 11 percent from 2014.



# Silver-Coated Chip Offers Faster Blood Tests

Chinese scientists have developed a silicon chip coated with silver nanoparticles that can detect germs in blood samples more quickly and at lower cost than current testing tools.

The technique, known as Surface Enhanced Raman Scattering (SERS), distinguishes different molecules by analyzing how light particles or photons bounce off an object and the unique ‘fingerprint’ that they produce during the ricocheting process. While this type of analysis is not new, scientists have been developing ways to make it more sensitive to even the tiniest pathogen molecules that may live in blood samples and distinguish them from other germs despite similar structures.

Scientists at Soochow University in China found that by embedding silver nanoparticles into a silicon chip they were able to detect pathogens within about 20 minutes due to the highly reflective nature of silver. Moreover, by adding 4-MPBA, a common bacteria binding agent, they were able to capture four times as many bacteria on the chip’s surface when compared with an unmodified silver surface.

In separate tests, researchers injected *Escherichia coli* or *Staphylococcus aureus* into blood samples and found that the SERS could find both germs down to concentrations of a few hundred colony-forming units per milliliter. As a bonus, the silver in the chip killed both bacteria as silver ions were slowly released onto the surface.

The next step is for researchers to test the SERS on clinical samples taken from ill patients.

# Silver Jewelry Inspired by Fossils

The George C. Page Museum next to the La Brea Tar Pits in Los Angeles, California, is famous for exhibiting bones from dinosaurs that fell into the nearby pits filled with natural asphalt, which preserved them for millions of years. Now, museum visitors can see jewelry -- including earrings, necklaces and rings -- that resemble ancient bones but are ‘grown’ from sterling silver powder, according to their creators.

The artists, Flavia Lowenstein and Juan Azulay, are a husband-and-wife team who will not reveal how they make the jewelry. They will only say that they spent three years producing sketches, turning them into 2-dimensional computer models and then into 3-dimensional pieces. Lowenstein told media at the exhibit opening: “It’s not 3-D printing and it’s not casting. The pieces are grown from sterling silver powder.”

They would not further discuss the proprietary process but did say that the design work was done in the United States but that the jewelry was made in Italy.

Most of the pieces are silver but then plated with either gold or covered with a rubber coating. [The Flowen Specimens](#), as they’re referred to by the artists, are recognizable through their trademark use of the Greek letter phi, which represents the golden ratio in mathematics and is intrinsically linked to the form and behaviors of the natural world, the artists note.



The Hexa Pendant is ‘grown’ from sterling silver powder.

FLOWEN



# New Plastic Material Containing Silver Nanoparticles in Clinical Trials

[Lamilux Composites GmbH](#) of Rehau, Germany, is offering a fiber-reinforced plastic material with a nanosilver coating that company officials say mitigates germs within a few hours.

Initially developed as a wall coating for hospital operating rooms, the company's AntiBac product was developed with Rent-a-Scientist, a Regensburg-based company that specializes in nanosilver research.

With the rise of multi-resistant germs in hospitals, sometimes lethal to patients, Lamilux officials note that one in particular — methicillin-resistant *Staphylococcus aureus* or MRSA — appears regularly in operating rooms and can cause wound infections and respiratory inflammation that can lead to death. MRSA is resistant to many drugs.

In addition to clinical use, AntiBac can be used in the food industry in refrigerated warehouses, cold stores and refrigerated vehicles as well as in processing areas and slaughter houses, according to company officials.

The new composite is being tested at the Asklepios Clinic in Bad Abbach, Germany, where some parts of operating room walls have been covered with the anti-bacterial panels.



LAMILUX

Lamilux Product Manager Sascha Oswald holds the company's antimicrobial material.

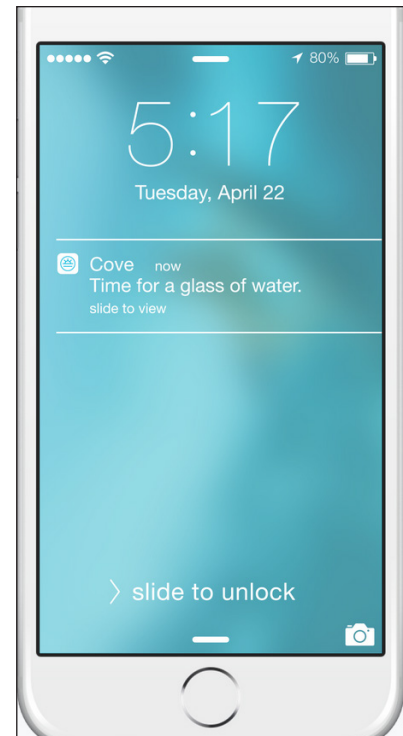
# “Drink Water,” says your Smartphone App; Silver Filtration System Speaks to You

Do you need your smartphone to remind you to drink more water?

That's the idea behind a new water filtration system known as [Cove](#) that uses a two-stage system to purify and store three liters of water in a plastic container. The stylish design features a first stage of filtering with silver impregnated carbon, activated alumina, and mineral stone to absorb impurities. The second stage is a series of filter blocks and silver-coated micro-membranes to catch residual impurities and refresh the water before dispensing. A micro-pump drives water through the second stage of the filter, company officials say.

The mobile app does double duty. It not only tells you when to drink more water — based on your own criteria — but also when to replace the Cove's filter. The app is free. The system retails for US\$249. The filters should be changed three to four times a year, company officials say.

Asked why he wanted to design and offer another water filtration system when there are others on the market, CEO Alex Totterman said in a public statement: “The majority of water filters today fall short on effectiveness. In fact, four of six filters tested in laboratories found bacterial counts in filtered water were higher than in the original tap water. Most filters don't even begin to filter the 60,000 chemicals found in tap water. Even 40 percent of all bottled water comes from a municipal water supply -- the same place we get our tap water. Not only do these ‘solutions’ not provide us with the clean water they promise, but the devices themselves are clunky and unattractive. We developed Cove to simplify and reinvent all of this.”



COVE

This app connected to the Cove water filter system reminds you to hydrate.

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# The Silver Institute to Host Silver Industrial Conference

The Silver Institute announces the Silver Industrial Conference to be held in Washington, D.C., on October 28-29.

Industrial uses of silver accounted for 56 percent of silver demand in 2014. The Conference will examine the metal's many roles in the industrial world, including an analysis of market trends affecting industrial silver demand as well as discussions on the discovery of new silver-based applications and the progression of existing technologies that rely on silver.

Participants at the Conference will include executives and experts from across the silver supply, fabrication, and end-use sectors. Attendees will include personnel from industrial fabricators, miners, refiners, bullion bankers, technology companies, and government agencies.

The Silver Industrial Conference will be held at the University Club in downtown Washington, D.C. The preliminary schedule includes an opening reception on the evening of October 28. The conference program on October 29 will include a variety of presentations and a concluding panel discussion featuring industry experts. The Conference will provide a unique venue to exchange viewpoints and experiences with other industry participants during the program and the accompanying networking opportunities.

Conference registration, as well as speakers, panelists, and additional information, will be announced shortly.

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## Registration Open for 14th China International Silver Conference

Registration is open for the 14th China International Silver Conference (CISC), which will be held in Shanghai, China, from September 16-18, 2015. The CISC is the most prominent global international silver conference and offers attendees an opportunity to network with key Chinese and international silver market participants, according to the conference hosts.

The CISC will be held at the Hilton DoubleTree Hotel, a five-star hotel located in the heart of Shanghai.

Presentations will include:

- Current View of the Global Silver Market
- The Status of China's Silver Industry During the 13th Five-Year Plan
- Silver Scrap: The Forgotten Fundamental
- China's Growing Opportunities for Silver Investment
- Outlook of Silver's Industrial Uses
- China's Silver Jewelry and Silverware Industry
- Two-Year China Economic Forecast
- The Foundation and Status of the Shanghai Free Trade Zone
- The Evolution of Silver and Global Trade
- World Silver Mining Resources and Future Mine Supply
- Silver Processing in China
- The LBMA Silver Price and Silver Bar Certification

Conference participants will include manufacturers, refiners, leading silver mining companies, investors, silver traders and futures brokers, government officials, silver industry organizations, and the media. Last year's conference drew over 400 delegates from across the silver supply chain.

The CISC is hosted by the China General Chamber of Commerce, the China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters, the China Nonferrous Metals Industry Association, the Gems & Jewelry Trade Association of China, and the Silver Institute. The Conference is being organized by the Shanghai White Platinum and Silver Exchange.

A welcome dinner will take place on September 16th, and the speakers' program will cover a full day on the 17th and a half-day on the 18th.

Registration is now underway, and more information on the conference can be found at the conference [web site](#):

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