

Silver News

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An interview with Matthew Glenville, Chief Operating Officer of ICE Benchmark Administration (IBA) Limited.



Matthew Glenville

“Bringing integrity and neutrality to global benchmarks is central to the work of ICE Benchmark Administration.”

As COO, Mathew Glenville is responsible for IBA’s daily operations, technology and business development. ICE Benchmark Administration (IBA) is an independent subsidiary of Intercontinental Exchange (ICE) and is responsible for the end-to-end administration of benchmarks. ICE is the Intercontinental Exchange, a public company that operates a network of global futures, equity and equity options exchanges, as well as global clearing and data services across financial and commodity markets.

With the transition of the administration of the LBMA Silver Price and the underlying auction to ICE Benchmark Administration, we discussed IBA, the silver auction system and participation.

Following is an edited interview with Glenville.

Silver News: Tell us about your work experience and education.

Matthew Glenville: I joined ICE Benchmark Administration in 2016. Prior to this I spent a number of years at Royal Bank of Scotland and Bank of America leading front and middle office teams, as well as change management teams. I have a Bachelor’s and Master’s degree from Oxford University in Physics and Philosophy. My role at IBA is focused on bringing technology and innovation to some of the world’s most important benchmarks which are so integral to global financial markets.

SN: Tell us about ICE Benchmark Administration and the benchmarks you administer.

MG: An independent and trusted benchmark administrator, IBA was created in 2013 after being recommended as the new LIBOR administrator by the Hogg Tendering Advisory Committee in the UK following a competitive tender process. Having established a robust set of governance processes, and with significant investment in new technology and surveillance tools, IBA assumed responsibility for other benchmarks: the ICE Swap Rate in 2014 and the LBMA Gold Price in 2015.

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SN: Discuss the LBMA Silver Price history and how ICE became the administrator.

MG: IBA has administered the LBMA Gold Price since March 2015, implementing a number of innovative changes to the benchmark, such as transitioning the daily telephone auctions to an electronic platform and introducing central clearing. Following these successful reforms, IBA became the administrator for the LBMA Silver Price in October 2017, following a competitive tender process.

Prior to 2014, the LBMA Silver Price auction was known as the Silver Fix and was run by the London Silver Market Fixing Company. It became known as the LBMA Silver Price in 2014 when CME and Thomson Reuters were joint administrators.

SN: What are your goals as a benchmark administrator?

MG: Bringing integrity and neutrality to global benchmarks is central to the work of ICE Benchmark Administration.

Since its creation, IBA has worked with industry stakeholders and regulators in leading reform and transitioning benchmarks to a new era where high standards of governance and independent processes and procedures operate alongside electronic platforms and technology to help market participants make better decisions.

We aim to expand and diversify participation in our benchmarks in order to increase liquidity. Introducing central clearing to the gold and silver auctions has played an important role in increasing participation.

In the silver auction, we have increased the number of direct participants from seven to nine and more are keen to join. Another important aspect of our work is showing compliance officers and traders how our system mitigates conflicts of interest and monitors trading patterns and behavior.

SN: How does your experience with the LBMA Gold Price help your administration of the LBMA Silver Price?

MG: We've spent the last two years evolving the LBMA Gold Price in consultation with the market. We have introduced changes to strengthen the benchmark including an electronic auction platform, strong governance standards, full audit trails, transparency reports and central clearing. These improvements have been easily transposed to the silver auction from day one. For example, the introduction of central clearing removed credit constraints, which helped to increase the number of silver participants. With the same compliance framework, code of conduct and rule book, companies can participate in both the gold and silver auctions with one simple process.

SN: Who can join the silver auction?

MG: The requirements to become a Direct Participant in the auction are: LBMA membership, a functional compliance department, the ability to settle loco London Silver and to trade and clear the ICE Silver Daily futures contracts.

Indirect participation is also available, in which a direct participant allows their client (who does not need to be an LBMA member) to access the ICE platform for the auction. The direct participant cannot see their client activity during the auction. The client and direct participant trade bilaterally based on the benchmark. To learn more about becoming a participant, contact iba@theice.com

SN: Explain how the silver auction works.

MG: The silver auction begins at 12:00 pm London time and runs in rounds of 30 seconds. An algorithm sets the prices based on market conditions and auction activity. For 30 minutes before each auction starts, participants can enter buy or sell orders in preparation for the auction. At the start of each round, IBA publishes the price for that round. Participants then enter buy or sell orders. At the end of the round, the imbalance is calculated. If the imbalance is not within the tolerance threshold (usually 500,000 oz.), then a new round begins at an updated price. If the imbalance is within the tolerance, then the benchmark price is set. Auctions are supervised by IBA staff in London.

SN: What advantages does the new platform offer participants?

MG: The ICE trading platform provides real-time order management, separation of house and client orders, live credit limit controls, a full audit history, compliance monitoring tools and advanced straight-through processing, order entry and surveillance.

More information on the LBMA Silver Price can be found at: <https://www.theice.com/iba/lbma-gold-silver-price>

India Continues To Play A Significant Role In The Global Silver Market

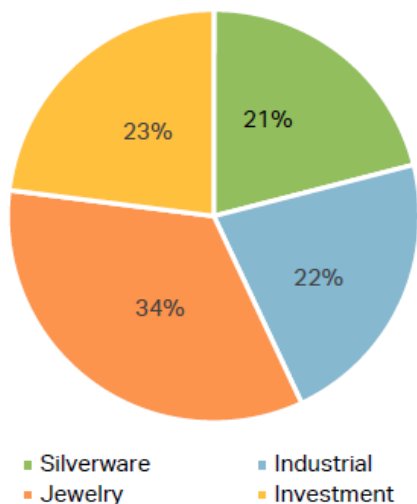
India's cultural affinity for silver underscores the country's importance as a leading source of silver demand. To meet this need, India consumed 160.6 million ounces of silver in 2016, accounting for 16 percent of global silver demand. Between 2010-16, India imported 990 million ounces of silver.

Silver jewelry and silverware fabrication account for more than half of Indian silver demand annually. Typically, silver jewelry is purchased by most income groups in India, whereas silverware is bought by the middle and affluent classes. Since the start of this decade, there has been a large expansion of demand in both markets, from around 39 million ounces in 2010 to 88 million ounces in 2016. The Indian silverware market alone is the largest in the world and its importance is growing, representing 70 percent of the total global demand.

The main aspects of India's silver market, including demand, supply, investment, trade and economic factors, are discussed in a new report, the *Indian Silver Market Study*, published by the Silver Institute and produced by Metals Focus, the London-based international precious metals consultancy.

The report is free and can be downloaded from the Silver Institute's web site at [Indian Silver Market Study](#).

Composition of Demand, 2016



Source: Metals Focus, Silver Focus 2017

Indian demand is almost equally divided among four sectors.

Silver Nanoparticles Plus Electricity a Deadly Combination for Germs on Hospital Devices

Health care providers know that when wounds covered by silver bandages are exposed to low-level electric currents the patient heals faster. That's because electricity weakens bacteria cell walls against attacks somewhat similarly to how silver destroys bacteria cells.

Now, researchers at Sweden's Karolinska Institutet have taken both ideas and shown that when electricity is applied to silver-embedded plastic devices used in hospitals, the antibacterial effect of the silver and electricity are greater than their sum. This allows a lesser amount of each to get the germ-killing job done.

"By targeting the bacteria on several fronts at the same time, the effect of different small attacks becomes larger than when each factor is acting on its own," says Professor Agneta Richter-Dahlfors at Karolinska Institutet's Department of Neuroscience.

Richter-Dahlfors and her team targeted the common and difficult-to-kill hospital pathogen *Staphylococcus aureus*. Applying tiny electrical currents to a conducting plastic surface had no effect on bacterial growth. When they added a small amount of silver nanoparticles, bacterial growth was reduced. However, when they applied a tiny electrical current to the silver nanoparticle layer of the plastic, the bacteria were destroyed.

"We used electrical signals to increase the antimicrobial activity of the silver nanoparticles. This reduces the amount of silver needed, which is beneficial for both the patient and the environment," she said, adding, "It has not yet been tested in the clinic, but we believe this technology could be a good approach to limiting the spread of infectious bacteria and the incidence of hospital-acquired infections."

The study was financed by the Swedish Research Council, Vinnova, Carl Bennet AB and the Swedish Medical Nanoscience Center.



Agneta Richter-Dahlfors

KAROLINSKA INSTITUTET

Roll Your Own Flashlight Thanks to Silver Inks

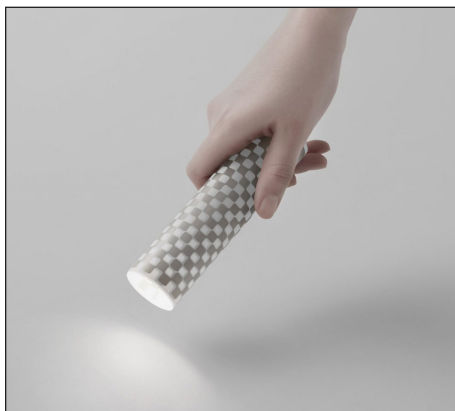
TAKEO, a 120-year-old Japanese paper company, has joined with flexible-printed wiring board company Elephantech Inc. (formerly known as AgIC) to develop a rectangular silver-coated paper that when wrapped into a tube becomes a flashlight.

Paper Torch, designed by Tokyo-based studio Nendo, consists of heavy-duty paper usually used in election ballots and printed with silver ink in a checkerboard pattern. Then they glued to it seven LED bulbs, two button-sized batteries, and a switch. Electricity from the batteries flows through the silver-ink patterns to the bulb without the need for conventional wiring.

In a clever design twist, as the paper is rolled tighter, the light becomes brighter because the current has a shorter distance to travel and therefore offers less resistance. The color of the light can be changed, too, depending upon how the flashlight is formed. "When the paper is wrapped with the surface adhered to the LED facing upwards, the light turns into a warm orange color," said Nendo officials. "When the paper is rolled inside out, the light turns into a white color. In this way users can enjoy two types of color temperature."

Because the Paper Torch is initially flat, it may be ideal for disaster relief and other emergency situations as many flashlights can fit into a box for shipping. The heavy paper is also water resistant.

Nendo will establish a Kickstarter program to further develop the product.



NENDO: AKIHIRO YOSHIDA

Click the image to see a video of the Paper Torch in action.

What to do with Cigarette Butts? Mix With Silver to Kill Malaria-Carrying Mosquitoes

Every year more than 100 billion cigarette butts get dumped in the landfills of India, according to environmental and government groups. This waste product is so pervasive that [several entrepreneurs are finding ways to recycle it](#), which is difficult because filters contain cellulose acetate, a non-biodegradable plastic that takes almost a decade to decompose. The butts also contain toxic chemicals including arsenic and cadmium.

One clever idea taking shape from an international team, including members from India, Italy, Saudi Arabia, Taiwan and Malaysia, is to use the metals as a pest-control method by using the butts to produce silver nanostructures.

The butts were collected from Bharathiar University in Coimbatore and the results of their use in experiments is reported in the journal [Environmental Science and Pollution Research](#). Researchers wrote: "A single treatment with CB [cigarette butt] extracts and silver nanostructures -- synthesized using the extract -- significantly reduced egg hatchability of *Anopheles stephensi* the mosquito species that spreads the *P. falciparum* malaria parasite." In other words, the nanosilver/cigarette butt extract combination killed mosquitoes that spread malaria.

The silver offered another benefit. Low doses of the silver nanostructures also inhibited the growth of a soil bacteria *Bacillus subtilis*, which is generally non-toxic to humans but can spoil crops, the organism *Klebsiella pneumoniae* that causes pneumonia, and *Salmonella typhi* that causes typhoid, the article noted.

Lead author of the report Kadarkarai Murugan, Vice Chancellor of Thiruvalluvar University at Vellore, India, said that the group checked the effect of their nanomaterial on marine life and found that it did not harm particular crustaceans that eat the larvae of the malaria-carrying mosquitoes before they grow into adulthood.

Other experiments showed that the nanosilver/cigarette butt extract chemical was comparable to the mosquito-killing power of the common pesticide Permethrin, which is sold under the trade names *Nix* and *Lyclear*. Although used worldwide, and safe to employ under controlled conditions, the U.S. Environmental Protection Agency classifies Permethrin as a 'likely human carcinogen.'

Silicone and Silver Make Dish Scrubbing Easier and Eliminates Odor

A new kitchen item from [Peachy Clean](#) combines silicone and silver to produce a dish scrubber that lasts a long time and doesn't smell, company officials say.

They claim that the scrubber lasts longer than traditional scrubbers and sponges -- due to its silicone composition -- and if it has an unpleasant odor within the first 3 months of purchase, the customer will receive a replacement.

A 3-pack of Peachy Clean Silver Infused Gourmet Silicone Dish Scrubber Sponges retails for US\$10.98.



The Peachy Clean kitchen scrubber combines silver and silicone.

PEACHY CLEAN

Mimicking the Human Brain With A Silver Nanowire Network

Even as artificial intelligence systems move closer to mimicking the human brain, they still have a long way to go to match its speed, agility and capacity.

However, scientists at the California NanoSystems Institute at the University of California, Los Angeles (UCLA), are using nanosilver to resemble the brain's structure.

The device they've created is a 2 millimeter by 2 millimeter mesh of silver nanowires connected by artificial synapses (minute gaps across which impulses pass between nerve cells). Unlike computers chips that have a distinct, human-made geometric shape, the mesh was allowed to organize itself using random chemical and electrical processes – much like the human brain.

The mesh has one billion artificial synapses per square centimeter, which is within a couple of orders of magnitude of the brain, said Adam Stieg, a research scientist and associate director of the Institute, in a prepared statement.

Early experiments show that this mesh can do simple logic problems and learn from its mistakes once it's corrected. It can also separate background noise from salient input signals. This trait may be useful for understanding human speech.

Jim Gimzewski, a professor of chemistry at UCLA, who co-leads the project with Stieg, began studying silver mesh networks and switches using silver about ten years ago after he learned about similar work from Japanese scientists. The switches were composed of silver sulfide placed between solid metallic silver. By sending electricity through the switches, positively-charged silver ions were pushed out of the silver sulfide and toward the

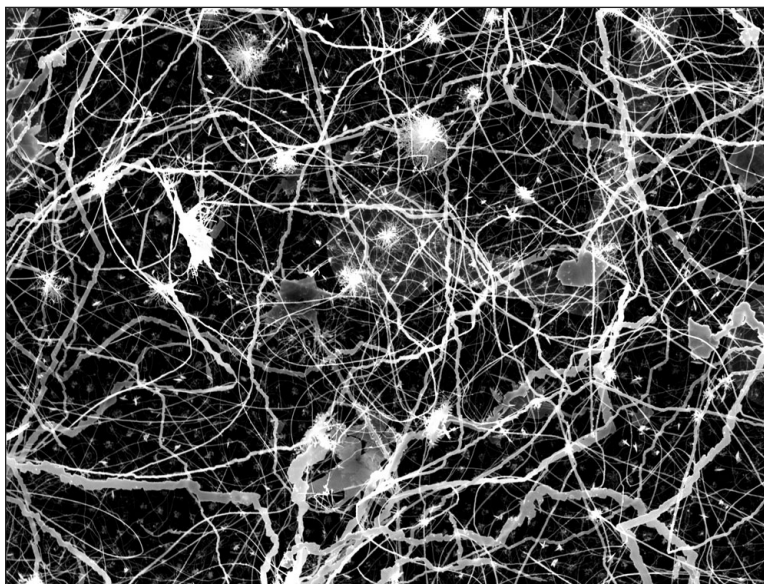
silver cathode layer. Atomic-sized silver filaments were formed allowing current to flow. The switch was now 'on.' Reversing the current flow caused the filaments to shrink and leave an open gap. The switch was now 'off.'

They soon found that the switches showed unusual, almost human-like behaviors. The more switches were used, the more easily they would turn on, and if they went unused for a while, they would turn off by themselves. This is considered a learned behavior from memory. Scientists also observed that the switches would interact with each other; one turned-on switch would turn off a nearby switch.

This behavior reminded the researchers of human synapses and Stieg noted at the time: "Why don't we try to embed them in a structure reminiscent of the cortex in a mammalian brain?"

Stieg and his team poured silver nitrate into small copper spheres which caused a mesh of silver wires to grow. By placing it in an environment of sulfur gas, they created a silver sulfide layer between the silver wires. Thus, the new switch was produced.

According to the research, highlighted in [Quanta magazine](#), Gimzewski, Stieg and their colleagues at a meeting of the American Chemical Society in San Francisco presented the results of an experiment in which they fed the device the first three years of a six-year data set of car traffic in Los Angeles in the form of a series of pulses that indicated the number of cars passing by per hour. After hundreds of training runs, the output eventually predicted the statistical trend of the second half of the data set quite well, even though the device had never 'seen' it.



ELEANOR DEMIS IN QUANTA

This network of highly interconnected nanowires may look chaotic and random, but its structure and behavior resemble those of neurons in the brain. Researchers at the California NanoSystems Institute are developing it as a brain-like device for learning and computation.

Manitoba Professor Uses Silver Particles to Study Dangerous Ice Jams

Ice jams on rivers may seem like a pretty winter event, but they're deadly to those who live by the water. Ice jams, sometimes called ice dams, occur when water builds up behind a blockage of ice. As ice jams grow larger, they prevent debris, including large ice chunks and dead trees, from flowing downstream in a safe manner. Moreover, these ice piles lock up navigation and, worst of all, cause rivers to overflow their banks, destroying homes and other buildings.

Now, silver particles will help a professor at Canada's University of Manitoba do what she says is the first ice jam-forming study that uses a special laser. "For me, seeing an ice jam form is a really dynamic and interesting and cool thing. And being able to be on the leading edge of this research and to be able to contribute to something that impacts my home is really very exciting," said Karen Dow.

Dow, a civil engineer, noted that a CAN\$160,000 grant from the Canada Foundation for Innovation's John R. Evans Leaders Fund will be used to buy a special laser that will shine into water in which silver particles were placed. The laser's beam will reflect back and allow Dow to record with a high-speed camera how ice jams behave. "By tracking the movement of those [silver] particles, you can see how water moves around different kinds of obstructions," she said.

What Dow calls a 'fancy laser' has the official name of '3-D tomographic particle image velocimetry system,' and will be used in a controlled laboratory setting instead of on an actual river because of safety and logistics concerns.. She told [CBC News](#): "In the field, it's really dangerous to get out there and measure what's happening underneath these ice jams. And logistically, it's pretty impossible to get out there when the ice jam is forming to measure what that flow looks like. And because it can release so rapidly, it's dangerous."

She added: "It can happen within, literally, like, hours. You'll see meters of water rise, and then it can release really quickly, which is going to send a surge of water and ice downstream, which is dangerous for our community."



Click the image to see ice jams and an interview with Dow.

Larry Kahaner
Editor

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

THE
SILVERINSTITUTE

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