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umicore
Electroplating

umicore goldpost

Technical service realises complex topics virtually

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Meeting environmental and safety requirements easier with innovative silver electrolytes

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New business division for semiconductor processes and products

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In **Tokyo** Umicore Electroplating will be present at Nepcon exhibition, one of the most important meeting places in Japan when it comes to semiconductors and sensors, from 20-22 January 2021.

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www.ep.umicore.com.



Dear readers

The last few months have probably been extremely challenging for you as well as for us. And it remains difficult to (at least) not lose sight of the goals we have set ourselves.

Looking back on our last year, I am really proud of what was nevertheless achieved with a lot of creativity and energy. The strengthening of already very collaborative customer relationships, the implementation of innovative products or the optimisation of the technical service are just a few examples. The adjustment of the strategic orientation through the addition of further business divisions, such as the one now presented for semiconductor processes, are also great results despite the crisis.

Let's talk digitally about how we can help you master your challenges – and hopefully soon again in a personal conversation.

All the best,

Thomas Engert
Managing Director



Further advances in functionality and reliability in electronic devices requires changes in system development and integration through adapted materials, chemicals and auxiliary materials.

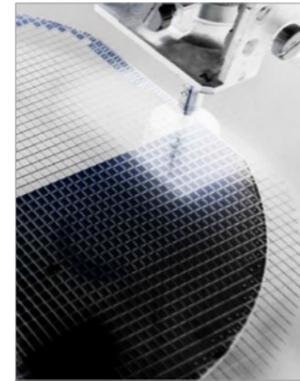
Take Advanced Packaging to a completely new level



Through our collaboration with SHINHAO Materials, we can now also offer innovative and patented copper electroplating additives for the modern advanced packaging industry.*

Many years of expertise in the field of electrodes for ECD equipment was the cornerstone for the establishment of a business division for semiconductor processes and products. Accordingly, we have expanded our product portfolio with innovative products that enable us to take the advanced packaging segment to a new level in terms of performance, cost efficiency and reliability.

We are also now working closely with Umicore's Thin Film Products business line. They successfully develop and manufacture high-quality evaporation materials and sputtering targets for thin-film applications in the advanced packaging segment, among others.



IntraCu® Additives*

Our modular additives are designed to meet the highest requirements of the semiconductor industry in advanced packaging and offer the foundation for depositing customized material properties e.g. for Microbumps in IC packages, RDL in wafer level packaging and Pillar in flip-chip packaging.



Umicore Cu(II)Oxid

Umicore copper oxide high purity metal oxide powder are developed, manufactured and quality tested in accordance with the demanding requirements of the semiconductor advanced packaging industry. In combination with ancosys DMR® concept (Direct Metal Replenishment) clean room usage is possible enabling lower cost of ownership for Cu replenishment along with a boost in performance of the electrolyte through higher Cu concentrations.



PLATINODE® SC Electrodes

Insoluble anodes are proven to help increase process efficiency, reduce process costs, environmental impact and process control efforts in plating tools for advanced packaging. The key differentiator of Umicore's PLATINODE® is the unique layer performance due to the manufacturing method using a molten salt electrolyte allowing ultra-high purity, low porosity and best ductility even at high Pt layer thicknesses.



You can find more detailed information at:
www.ep.umicore.com/semiconductor



If required, our specialists replicate the customer scenario in-house, for quick comprehensibility and implementation on the customer side.

We also realise product installations and other complex topics remotely

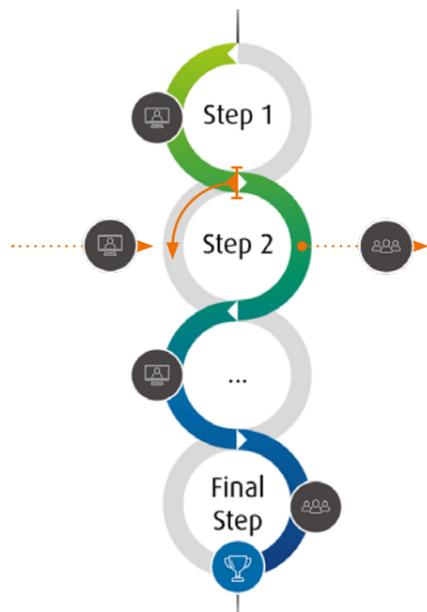
At some times, on-site service is only possible to a very limited degree or often involves a great deal of effort. Often the time factor also plays a role in order not to suffer any economic damage. It's a good thing that our technical sales specialists are also available virtually.

A completely virtual service is possible

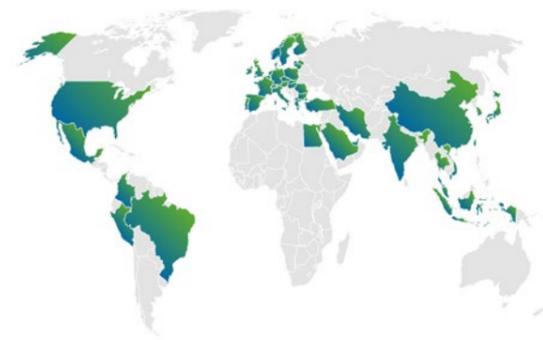
Whether on site or virtually - the foundation for successful work is laid in advance. Detailed questionnaires on equipment and production environment and the resulting questions allow our experienced specialists to gain an accurate picture of your process landscape in both cases.

Once this is understood, the main task of our technicians is to create a new process flow individualised to your conditions or to optimise existing ones. The set-up/adaptation itself is usually no longer a hurdle and can therefore also be successfully managed in a video conference. If necessary, our specialists reproduce individual scenarios in our company. For example, the customer's employees can quickly understand the settings of the equipment on the screen and also implement them (again under the eyes of our technicians).

Downstream training, especially for new process equipment, can also be carried out virtually afterwards. A final documentation and a maintenance plan tailored to the adapted process also complete the successful assistance in our digital service world.



It is possible to deviate from our standard procedure. Decide whether you want to take the next service step with us virtually or on site.



A worldwide sales network enables personal contact partners on site

In over 60 countries, our customers have access to selected sales partners. This means that there is usually a face-to-face contact person on site who can provide quick and qualified information on technical questions and challenges.



You can find more detailed information at: www.ep.umicore.com/technical-service





Especially for medical devices, cyanide-free coating systems are often used.

Meeting environmental and safety requirements easier with innovative silver electrolytes



Both electrolytes do not contain any toxic cyanide compounds and can therefore be used in a simplified way under the increasing environmental and safety requirements.

Electroplating processes are usually selected according to process engineering aspects. However, stricter environmental and safety requirements are also playing an increasingly important role. Electrolytes containing cyanide have a proven need for additional effort in waste water treatment, which is why the demand for cyanide-free solutions is increasing.

In order to offer you ecological and ethic procurement advantages, we have developed the two new fine and hard silver processes ARGUNA® 3230 and ARGUNA® 3430, respectively, which work completely without toxic cyanide compounds.



ARGUNA® 3230 for technically functional silver layers

ARGUNA® 3230 is used for the cyanide-free deposition of fine silver layers, which are often used in medical technology. The technical-functional coatings are also suitable for electrical contacts, e.g. in power electronics or high-current technology, due to their excellent soldering and wire bonding properties. In addition, the possibility of direct coating of copper materials is a further advantage here. Nevertheless, ARGUNA® 3230 is of course also suitable for decorative applications.



ARGUNA® 3430 for hard silver layers up to 40 µm

This cyanide-free hard silver electrolyte also deposits technically functional but particularly wear-resistant silver layers with high hardness. The deposited layers thus exhibit excellent abrasion resistance and are particularly suitable for the application of highly stressed, electrical contact surfaces. Excellent thermal resistance also improves the reliability and durability of these contact systems.

Both silver processes are ideally suited for coating in both rack and barrel applications.



You can find more detailed information at:
www.ep.unicore.com/cyanide-free-silver-coatings





Corrosion resistant alloy without affecting fast charging capability or data transfer speed.

RHODUNA®-Alloy meets the new requirements for mobile devices



The Fraunhofer Institute's award evaluates the degree of innovation, sustainability, enabler qualities and industrial feasibility for surface technology methods and processes.

Our rhodium-ruthenium electrolyte is absolutely without alternative in the corrosion-resistant surface coating of charging contacts and connectors for mobile devices. The previous standard, gold-plated contacts, corrode in connection with chloride-containing solutions (such as skin sweat, swimming pool or sea water, beverages, etc.) during the charging process inevitably and at high speed. RHODUNA® Alloy, on the other hand, turns mobile phones, tablets, wireless headphones or smart fitness wristbands into durable products that can be used at any time without hesitation.

Surface technology prize confirms innovative character

To be awarded a top 3 ranking for RHODUNA® Alloy in a broad and renowned field of candidates for the surface technology award "Die Oberfläche" (The Surface) of the Fraunhofer Institute fills us with pride. It is a confirmation that we have created an innovative surface coating in the field of mobile devices.



You can find more detailed information at: www.ep.unicore.com/rhoduna-alloy-technical



Cost-saving rhodium and palladium coatings

The prices for rhodium and palladium have exploded over the last few years and with them the production costs for coated applications to an unknown extent.

In order to be able to continue to serve the market, a rethink in surface plating is required. Alloys represent a way out for both decorative and technical applications, with almost no compromise in quality and appearance. On the contrary - through innovative processes, we have succeeded in improving properties such as abrasion resistance or adapting colour composition as required.

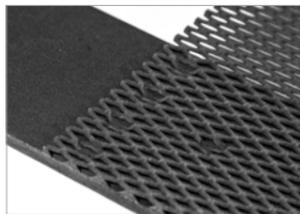


You can find more detailed information at: www.ep.unicore.com/save

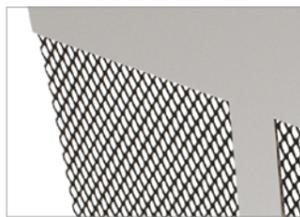


PLATINODE® Cr3 sets the course for a future-oriented chromium(III) process

Chromium(VI) processes have had their day. Due to today's environmental and safety aspects, as well as legal developments, the industry has been using chromium(III)-containing processes for several years.



PLATINODE® Cr3 - MMO 187 LOC



PLATINODE® Cr3 - Nb/Pt

Decorative chromium(III) processes

In order to maintain the stability and permanent function of the electrolyte and thus the quality of the coating during chromium deposition from trivalent solution, the use of insoluble anodes is essential. With our insoluble anode system PLATINODE® Cr3 - MMO 187 LOC, which is equipped with a special layer structure, there is no disturbing concentration of chromium(VI) even in continuous operation.

Chromium(VI)-free Etching Systems

In Chromium(VI)-free etching systems, functional components are chemically reduced and must be re-oxidized in a separate electrolysis cell at an insoluble anode surface. This is perfectly possible with our PLATINODE® Cr3 - Nb/Pt. Our molten salt plating process applied to niobium for this purpose helps the anode to achieve enormous corrosion stability and longevity. At this high-quality level, this is a unique selling point in the equipment of Chromium(VI)-free processes.



You can find more detailed information at:
www.ep.unicore.com/platinode-cr3-anodes



Chrome-plated elements are mainly used in the automotive industry but also in other decorative areas.



Hard. Harder. ARGUNA® 630

Hard silver electrolyte

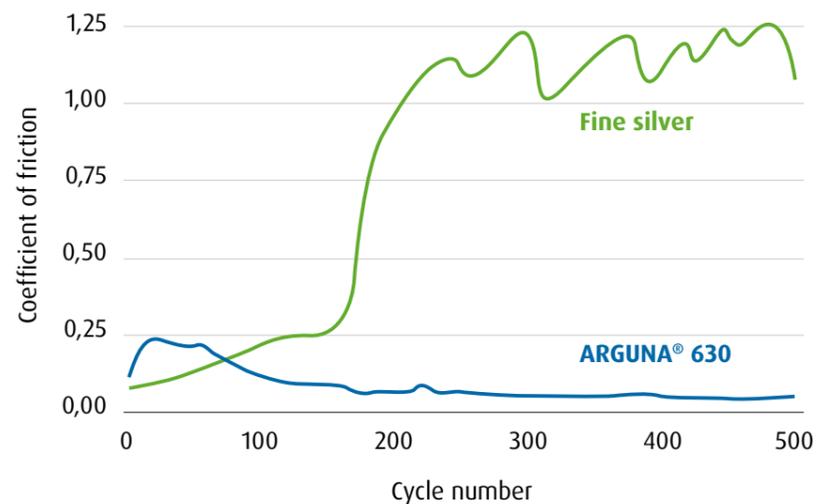


Silver surfaces are usually the first choice for electromechanical components due to their electrical properties. Unfortunately, the abrasion of the precious metal is enormously high, especially for highly stressed contacts such as connectors, high-current contacts or charging plugs of electric vehicles. This has a negative impact on safety and function and thus on service life.

ARGUNA® 630 provides the right reliability and durability for your contact system

Our newly reworked hard silver electrolyte ARGUNA® 630 offers high, stable coating hardnesses which are not affected by thermal aging. In this way, abrasion is significantly reduced, allowing multiple plug cycles even in high current applications.

Even after 500 wear cycles, our hard silver coating shows an extremely low coefficient of friction.



You can find more detailed information at:
www.ep.umicore.com/arguna-630-electrolyte



Through a modification, NIPHOS® 964 in the HS version is also suitable for high-performance systems.

New nickel-phosphorus electrolyte for the deposition of stress-reduced layers

With our new NIPHOS® 964 / HS, you can deposit bright nickel-phosphorus-alloy coatings by electrolytic means, with extremely low tensile stress up to slight compressive stress. This makes your coatings extremely low in cracks and therefore offers excellent corrosion protection.

Advantages for technical applications

- Gold saving for contact surfaces with hard gold
- Chloride-, boric acid- and ammonium-free nickel-phosphorus-electrolyte
- Alternative to electroless nickel-electrolytes for longer electrolyte service life
- Reduction of Cr6+ input quantity due to thinner hard chrome layers



You can find more detailed information at:
www.ep.umicore.com/niphos-964-electrolyte





Especially in aerospace, PCB production reaches the limits of what is technically feasible. Our DIG process helps PCB designers to reach these limits.

Direct gold plating of copper is the status quo in demanding PCB production

PCB designers are demanding an ever higher packing density of components on substrate carriers for end surfaces in PCB production. This is exactly what our nickel-free DIG process allows and also offers the possibility of achieving high frequencies in signal transmission.

Excellent coating properties thanks to coating with "Direct Immersion Gold"

Due to its excellent coating properties, also directly on copper substrates, DIG deposits are very well suited to meet the higher requirements for fine structuring and high performance in soldering and wire bonding.



You can find more detailed information at:
www.ep.umicore.com/dig-process



MIRALLOY® – the nickel-free alternative for over 40 years

Nickel often causes allergic reactions and is rightly criticised when used on everyday objects. However, nickel is not used without reason, because it usually fulfils several tasks: Corrosion protection, shine, levelling, colour, hardness, abrasion resistance.

MIRALLOY® processes preserve these characteristics and at the same time allow nickel-free production without compromising on quality and function. Due to its diamagnetic characteristics, MIRALLOY® coatings are also ideally suited for high-frequency connectors.

Established and further developed for all conceivable areas of application

The first MIRALLOY® process was developed in 1980. Since then, the portfolio has been successfully expanded and is now used worldwide by well-known producers for the coating of clothing accessories, costume jewelry, connectors and much more.

There is hardly an application in which our copper-tin or copper-tin-zinc electrolytes are not used as nickel substitutes.



You can find more detailed information at:
www.ep.umicore.com/miralloy-processes





We plan to be back on site at events around the world as soon as possible.

Events 2021

Last year, with a heavy heart, we deliberately withdrew from many planned presence events. Only in South and East Asia we were again present through our representatives at the end of 2020.

We hope to be able to welcome our customers and interested visitors in person at events in all parts of the world again in the course of the coming year. Preparations for this are ongoing as usual in order to be able to be on site under the appropriate conditions. Due to the still unclear situation at the time of publishing, we recommend that you regularly visit our event website if you are interested in a personal dialogue - or, more conveniently, subscribe to our newsletter.



You can always find all events posted here:
www.ep.unicore.com/events



The most important information conveniently delivered to your mailbox once a month

With thousands of media channels, it is difficult to filter out relevant news. At least for our business unit this will now be a thing of the past. By registering for our newsletter, you will receive information about our new products and processes. We will also pass on to you the participation in events where you can meet our experts or follow their lectures. Of course, we will also let you know about circumstances that affect your and our daily business, such as new contact persons or information about changed opening hours during public holidays.

Hot topic of the month

Every month we present a new or improved product or service in more detail.

Mentioned briefly

We will only inform you briefly about a maximum of three other actual topics.

What is happening outside

With our net finds we share with you the best reading about electroplating that we found in the net.



Subscription and archive at:
www.ep.unicore.com/newsletter-english



Right Composition.
Perfect Surface.



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