

## OrelTech Technological FAQ

### OUR PROCESS



#### Questions - General



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<p><b>Why an FAQ?</b></p>	<p>OrelTech has developed a <b>new metallization technology</b>, and every new technology raises questions. We gathered the most common ones below. If you have a follow-up question, please use the contact form, and we will get back to you shortly.</p>
<p><b>Who are OrelTech?</b></p>	<p>We are a Berlin-based company that developed a <b>new technology and new conductive inks for printing electrodes and catalytic surfaces</b>. We are looking for new customers. We are offering an alternative to production of many devices, such as OLEDs, sensors, transistors, batteries, solar cells, fuel cells, wearables, medical devices and many others..</p>

<p><b>Why do I, as your customer, need a new technology?</b></p>	<p>Electrodes are an integral part of any electronic device, but methods for electrode deposition are outdated and often do not suit the customers' needs. High-temperature processes ruin delicate substrates, for example. Price of materials is another huge problem, of course, with the price of electrodes reaching 80% of the price of the whole device.</p> <p><b>We offer an alternative way and solutions to these and many other problems.</b></p>
<p><b>What is your technology, and how can it help me?</b></p>	<p>We developed <b>new nanoparticle-free metallization inks</b>. Instead of using heat or UV laser to cure our inks we use <b>cold plasma metallization</b> to sinter the printed layers. That allows us to make the metallization process benign to the substrate, and the inks - quite practical.</p>
<p><b>How is your approach different from an established one?</b></p>	<p>Think about the difference between <b>snow</b> and <b>ice</b>. An established approach - nanoparticle inks - behave like snow. They deposit small particles on top of your surface, and then connect them together. <b>In our approach metal behaves like ice</b>: it grows directly on the surface. That means better adhesion, better cohesion, higher stability and lower roughness.</p>
<p><b>Who would be your ideal customer?</b></p>	<p>Our best customers are usually medium-sized companies that are <b>developing new products</b>, for example a novel wearable sensor, a printed OLED or a lab-on-a-chip, or <b>looking for ways to improve existing ones</b>. Someone who is willing to move quickly and innovate in order to stay competitive.</p>
<p><b>What are the best application markets for OreITech now?</b></p>	<p><b>OLEDs, flexible electronics, medical devices, sensors.</b></p>

## Questions - Printing and Inks



**How can I print your inks?**

**Our inks are very versatile.** They can be printed using a variety of ways, depending on your needs. If you need precision and intricate patterning, we offer inks for **inkjet** printing. If you have a 3-dimensional substrate, or just want to increase production speed, we offer **aerosol** sprayable inks. If you are looking for something in the middle, **slot-die coating** is also an option. We can adapt our inks to almost any known deposition method, based on your preferences.

**And what about substrates? I have a very specific material, and I cannot change it if the ink does not sit well on it.**

That's ok too. We have a large ink library with inks suitable for many different substrates, ranging from **glass** to **paper**, and from **PET** to **fabrics**. We can find a good fit for your substrate, and if not, we can make a new ink especially for you. We have extensive R&D experience in suiting inks to, let's say tricky materials.

## Questions - Plasma Metallization



**And what is this cold plasma metallization? Does it have additional benefits?**

Plasma metallization is a **quick and simple process**. It occurs at **low temperatures** - always below 70°C - and **does not produce any liquid or solid waste**. You can say that it is by far the greenest metallization process available today.

**Do I need special instruments for this process?**

You do, but you have a large choice here. **There are tens of plasma equipment providers**, all around the world, who offer both off-the-shelf available and custom-made devices. Plasma equipment is both **batch and roll-to-roll compatible**, and is widely used in the electronics industry, for example, for surface cleaning. There is a chance you already have such a device in your line. We offer full support in choice of the most suitable instrument for you.

**How can your technology be practical, if I need to purchase new equipment?**

First of all, the **operational expenses of plasma instruments are much lower**, and you save money over time. And second, and maybe more importantly, lack of nanoparticles allows us to make our **ink prices more reasonable**. Nanoparticle synthesis is usually a large part of the ink price, and in our case we just don't need it. So, if you summarize these factors, you win quite a lot in the long run.

## Questions - Product



**What about flexibility?**

Our metal layers are very thin, usually not more than 300 nm, and thus **very flexible**. We have a lot of examples of our metal layers on plastic, paper and textile. They retain conductivity after **tens of thousands of bends**

**Do you make 3D printed electronics?**

No, our metal layers are very thin and flat. But we can **coat 3D printed surfaces** of any complexity.

**What are the parameters of your layers? Conductivity, transparency, roughness, etc.?**

Please **contact us** directly, and we will answer all your specific questions.

**Can we get a sample?**

You can **order a sample kit**. It contains several examples of our metallized layers on various surfaces. It has a fixed price, and we can add extra samples if you have a special request. Please contact us to get a quote.