Nanostructured Metal Coatings for Electric Vehicles

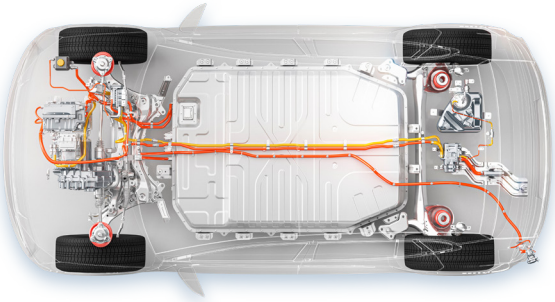
LUNA® is a patented nanostructured silver coating that can boost connector drivetrain performance, extend safe temperature ranges in power electronics, and reduce cost in some charging applications with:

- 10% more current carrying capacity
- A max operating temperature of 220 C
- Low insertion force
- Improved wear durability with a much thinner coating

High-voltage interconnect applications pose new challenges to connector designers.

Tier 1 industry leaders and OEMs are targeting nanostructured metal coatings for:

- Charge plug ports with a need for improved durability with low and stable contact resistance
- High-voltage interconnects in the power system where a boost in thermal performance reduces current derating



Xtalic's computational alloy design tools create thermodynamically-stable grain structures.

Using MIT-based technology, LUNA is engineered with grain sizes less than 50nm for hard gold-like wear and improved corrosion. Controlling the grain size provides the ability to tailor metal properties and maintain those properties at higher temperatures – a significant improvement over traditional silver and silver alloys. Our customers achieve higher performing, safe and reliable solutions for power electronics in electric vehicles with LUNA.

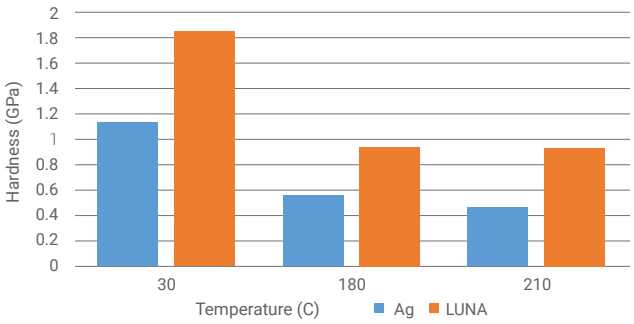


Figure 1. *Hot hardness testing of LUNA and traditional Ag coatings at various temperatures shows LUNA with nearly double the hardness at any temperature. This translates to improved wear and performance at temperature. After temperature exposure, LUNA retains hardness and low /stable contact resistance.*

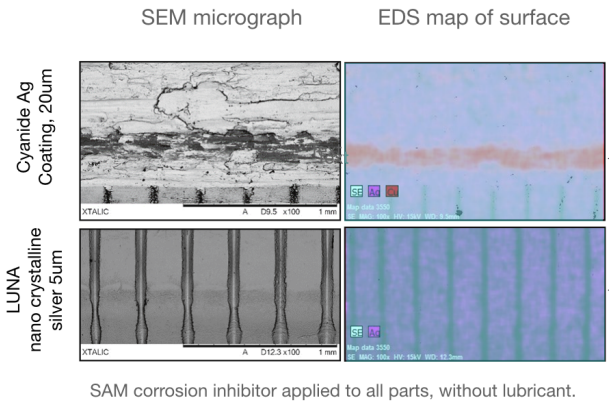


Figure 2. *5000 cycles of wear durability testing on an EV connector with 5N mating force. LUNA shows little to no wear at 5um thick while traditional silver shows deep galling wear and exposed copper substrate despite being 4x thicker.*

Accessing Xtalic technology is simple.

Our nanostructured metal coatings are applied through a traditional electrodeposition process for interconnects. Xtalic provides the chemistry, process, and IP access. Our headquarters in Massachusetts provides materials design and early stage samples, while our global team of application engineers support more than 40 high volume production lines, sampling, and new installations within our customers' supply chain.

Xtalic is the world leader in nanocrystalline metal materials, utilizing MIT-developed technology to unlock materials potential since 2005.

Contact **Rob Legg** at **1-978-835-4478** or Sales@xtalic.com