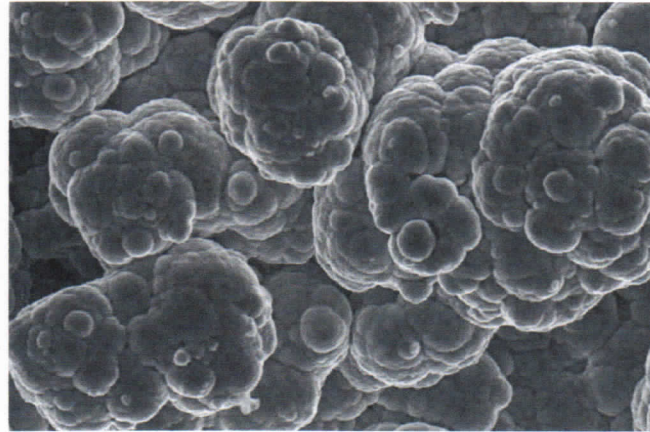


Illuminating Wear With Composite Electroless Nickel Coatings



Nodular structure of electroless nickel-phosphorus coating on Magnesium Alloy AZ31

A New Jersey based company that makes electroless nickel products, began creating phosphorescent coatings in response to demand from a customer in the textile industry—who wanted to protect an expensive component.

“Our customer had an intricate part that was being coated with our composite diamond coating,” says President Michael Feldstein of Surface Technology, Inc. “They wanted to be able to determine when the coating had worn off so that they could replace it and prevent damage to the base metal piece underneath.”

Developed in the 1940s, electroless nickel coatings now come in a variety of composite forms to

A new type of electroless nickel coating, that can be made to glow in the dark, is finding a market among manufacturers—who need to know when a coating is wearing off, either to prevent damage to the underlying part or to ensure consistency of the resulting product.

BY VIRGINIA HEFFERNAN

suit specific conditions, from high temperature environments to applications that require lower friction or corrosion resistance. The most common material incorporated into composites is diamond because of its unsurpassed ability to resist wear.

The new composite phosphorescent coatings have all the inherent features of electroless nickel and are indistinguishable under normal lighting, but they emit a constant glow—when exposed to UV light. The phosphorescence can either be integrated directly into the functional coating or serve as a stand-alone ‘indicator layer’ underneath the functional layer.

The latter application is particularly useful in moulding applications where the shape and volume of the mould should remain consistent while, slowly and imperceptibly, being worn down with use. When a phosphorescent ‘indicator layer’ underlies the func-



Aluminium letters coated with three different versions of Illumi-Layer and photographed under ultraviolet light.

tional coating, an inspector can use a handheld ultra-violet light to check for wear on a regular basis and save the mould from damage.

“If spots of light come through, that means at least part of the functional coating is worn through, and it’s time to pull it off and have it stripped and recoated,” says Feldstein. “It’s all about preserving the base part.”

Another potential market for phosphorescent coatings rests with manufacturers who want to ensure authenticity before installing parts in their equipment.

“Some machine shops are able to make a convincing counterfeit part for a proprietary piece of equipment, but they won’t have the technology to put on a composite electroless nickel coating with phosphorescent particles,” says Feldstein. “If the genuine part is tagged this way, all the operator needs to do is shine an ultra-violet light on the piece to make sure it’s authentic and okay to use.” ■

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“The new type of electroless nickel coating is a unique technology that can achieve two very valuable needs in today’s market: authenticating genuine parts, and identifying wear to critical components. It is a sophisticated technology, yet works in a process that has been used commercially, reliably and economically for over 30 years.”

**MICHAEL FELDSTEIN
PRESIDENT, SURFACE TECHNOLOGY, INC.**

