MANUFACTURING OUTLOOK

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Integrated Surface Technologies

MANUFACTURING OUTLOOK TOP 10
MANUFACTURING COATING
SOLUTION PROVIDERS 2020

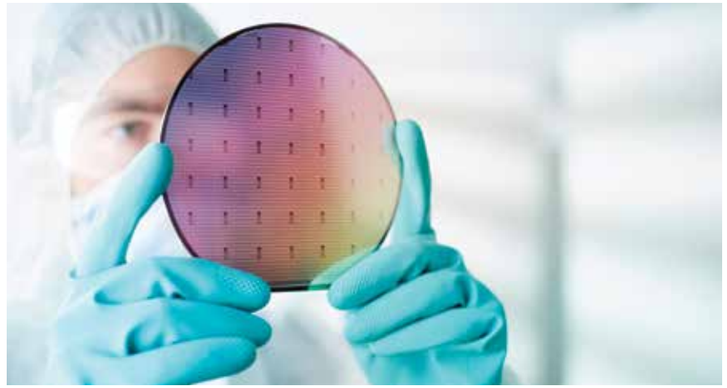
INTEGRATED SURFACE TECHNOLOGIES

ADVANCED NANO-COATING SOLUTIONS FOR ENDLESS APPLICATIONS

The surface of an object plays a critical role in product design as it fulfills a range of functions. Most materials' surface properties are inadequate in terms of wettability, adhesion, biocompatibility, etc. and therefore need to be modified. In recent years, nano-coatings have emerged as a superior alternative to traditional surface treatment procedures, which are unable to meet modern manufacturing demands. These nanoscale thin-films bond physically and chemically to a surface and improve the material's functionalities while delivering protection against moisture, corrosion, and other damaging elements. Several industries such as aerospace, defense, medical are harnessing the power of nano-coatings due to its diverse capabilities. Integrated Surface Technologies (IST) is an innovative company that stands out in the nano-coating and surface modification space. IST builds nano-coating tools based off of semiconductor-style processing technology for companies in the life sciences and developers of biomedical microelectromechanical systems (BioMEMS) and innovative devices.

"From Bench top systems for R&D and pilot production to full-size manufacturing systems, IST provides the equipment, chemistries, and engineering services," explains Jeff Chinn, chief technical officer, IST. The company's capabilities include advanced surface modification, inert and passive coatings for microcircuits and water protection, atomic layer depositions (ALD), specialized plasma chemical vapor deposition (CVD), reactive coupling agents for BioMEMS and industrial applications, as well as customizable hardware solutions. However, what sets the company apart from the competition is its proprietary dry-phase vapor deposition technology, which utilizes state-of-the-art sub-atmospheric processing equipment. Vapor phase processing allows for day-to-day repeatability and at the same time eliminates chemical waste streams. The other advantage is that it provides complete coverage of the device being coated, which is valuable for smaller, high value, critical parts.

IST's advanced nano-thin films are designed to meet the needs of endless applications and industries. The company has engineered a unique vapor-deposited super-hydrophobic/oleophobic nano-coating called Repellix™. Citing a real-life use case of Repellix™, Chinn mentions how a client required a solution to reduce product returns caused due to damage from sweat and loss of receiver sensitivity from ear-wax plugging in their hearing devices. Repellix™ proved to be ideal for reducing moisture, sweat corrosion, and cerium from passing through ear-wax traps in the client's hearing devices. Consequently, the client was able to see a decrease in returns and provide a better quality product. Similarly, another client wanted to minimize field failures in wearable video cameras from moisture and exposure to water by first responders. IST hydrophobic nano-coating was able to form a water-proof seal and thus prevented device failure. In addition, unlike traditional coatings that add too much thickness to a device, IST's nano-coatings allow the device to keep their sleek designs, which is important for wearable cameras and devices.



IST also provides custom coatings for various consumables including all types of glass, microwell plates, and single-use surgical instruments. This type of nano-coating is playing an important role in DNA sequencing—which is vital to developing vaccines and is a priority in the case of the current COVID 19 pandemic—and testing as it requires reactive surfaces for immobilizing cells, DNA and viruses. As a one-stop supplier for surface engineering needs, IST's skilled team of engineers help select the best chemistry for each specific application as well as customized nano-coating equipment. "While there is an initial capital cost for the hardware, the cost-of-consumables is minimal as reagents are not wasted, thus ensuring long-term savings while producing superior nano films," Chinn adds. Today, nano-coatings are playing a greater role in many applications and industries to address surface interface issues. And in the evolving nano-coatings market, IST is well-positioned to be a leader owing to its expertise and commitment to innovative solutions and reliable customer service. MO

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