

Superhydrophobic Surface Coating via Nanoparticle Deposition

ID: 2012-058

Executive Statement:

A novel method for creating superhydrophobic surfaces on touch screens, making them self-cleaning through a one-step nanoparticle deposition process.

Technology Overview:

This technology involves a unique one-step deposition process using urea-formaldehyde polymer to deposit nanoparticles onto a substrate, which is then subjected to high-temperature treatment. This treatment removes the polymer and strengthens the nanoparticle coating. The surface is finally treated chemically with a hydrophobic agent, such as perfluorosilane, to achieve exceptional water and oil repellency. The method is distinguished by its simplicity and effectiveness in creating durable, superhydrophobic surfaces.

Key Advantages:

- One-step deposition process simplifies the coating procedure
- High-temperature treatment enhances the mechanical stability of the coating
- Chemical treatment with hydrophobic chemicals ensures high water and oil repellency
- Potential for improved transparency and durability of touch screen surfaces

Problems Addressed:

- Complexity and inefficiency in creating superhydrophobic surfaces
- Lack of durability and mechanical stability in existing hydrophobic coatings
- Difficulty in maintaining cleanliness and clarity of touch screen surfaces

Market Applications:

- Self-cleaning touch screens for smartphones, tablets, and interactive displays
- Protective coatings for outdoor displays and digital signage
- Advanced water and oil repellent surfaces for optical devices and sensors