

CEO's Desk

From Taymur Ahmad, Founder and CEO of Actnano Inc.

We tend to take for granted all the roles that electronics play in our lives. We often don't even think about something until it stops working – but a phone not working is significantly different than key functions in a vehicle failing.



There are an estimated 16.5 million electric cars on the road today, and that number continues to grow. Additionally, the number of electronics in ICE vehicles has increased ten-fold. With over 200 circuit boards per vehicle, electronics power everything from simple tasks like power windows to more complex and safety critical functions like automatic braking systems.

Electronics in automobiles are exposed to numerous environments, which can affect how they perform. With the continued advancements and growing complexities of the circuit boards within the electronics, the process of protecting them from these varying environments has also grown more complex.

While mobility has evolved significantly in recent years, traditional coating technologies have not followed suit. Traditional coatings are not able to cover the entire circuit board, which leaves holes in the protection system. They cannot be applied to processors because processors can run hot and traditional coatings can trap the heat inside, causing them to fail. They cannot be applied to connectors because they are rigid, and a connector cannot pass through them. They cannot be applied on the antennas because they can dampen Wi-Fi or Bluetooth signals, affecting how the vehicles can connect with other systems and external communication networks. They can also contain fluorine-based forever chemicals like PFAS or produce them as a manufacturing by-product, which is not safe for the operators who apply them and can contaminate our drinking water.

I spent nearly 20 years in manufacturing and saw each of these challenges firsthand. I knew there had to be a better solution, so I founded actnano to address these shortcomings. With considerable research and input from a well-rounded team of scientists, experts, and academia, we have accomplished what we set out to do. actnano developed an innovative, fluorine-free, surface protection technology that provides 100 percent coverage, does not trap heat, does not impact signal integrity, and uses human-safe, sustainable materials.

When a circuit board is exposed to water, it can malfunction. Only nanoGUARD can provide 100 percent protection of circuit boards because we can cover the entire board. Other coatings need to mask certain areas because they cannot connect or 'plug in' directly through the coating, which leaves some areas vulnerable and exposed. As we transition toward autonomous vehicles, this could have tragic results if an exposed area fails, causing systems to malfunction and resulting in an accident.

As the rate of global electrification increases, our reliance on electronics to do everything from drive our cars to answer our doorbells grows. The number of electronics used in critical operations is rising dramatically. We must do everything we can to ensure maximum safety and reliability of these systems. I am happy to say nanoGUARD is found in production vehicles globally. Our product is found in the largest ICE and EV brands in the world. Due to our high adoption rates in automotive, we have a lot of demand from consumer electronics markets like mobile devices, headphones, smartwatches, video doorbells, security systems, smart meters, and more.