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CARBON NANOTUBE COATINGS ON COPPER TRANSMISSION COILS FOR WIRELESS VEHICLE CHARGING

Abstract.

Due to the increasing cost and depleting sources of petroleum, gasoline-based vehicles will reach a bottleneck in the near future. Electric vehicles have become one of the few choices for future transportation vehicles because of their low operation costs and extremely low carbon emission. They are more economical and environmentally friendly than other alternatives. However, the driving distance of electric vehicles is limited to around 100 miles after each charge. Due to the time required for electrical charging, electric vehicles are still not as convenient as gasoline-driven vehicles. The ultimate solution to electric vehicles is wireless-charging from wireless transmission coils embedded underneath the roads. The proposed research to coat carbon nanotubes (CNTs) on copper tubing coils is to establish a new technology to address the critical issues in designing and fabricating wireless transmission coils, i.e., how to improve electrical and thermal conductivity and reduce proximity effects of the coils. These are the essential requirements to realize wireless charging with high energy efficiency and low heat generation.