# ELECTROPHORETIC DEPOSITION OF ARAMID NANOFIBERS AND CARBON NANOMATERIALS ON CARBON FIBERS

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In this work, electrophoretic deposition method was adopted to facilitate the large-scale uniform coating of nano-fillers onto carbon fibers to enhance the interfacial properties between carbon fibers and epoxy matrix. As interface–reinforcing materials, aramid nanofibers (ANFs), graphene sheets, carbon nanofibers (CNFs), carbon nanotubes (CNTs) and their metal hybrids were introduced because of their superior mechanical and electrical properties and epoxy matrix-friendly functional groups. Furthermore, these nanomaterials can be readily coated on carbon fibers via electrophoretic deposition because they can possess electrical charges in solution with high electrical mobility. Finally, nanomaterial-coated carbon fibers showed significantly improved interfacial properties such as higher surface free energy and interfacial shear strengths than those of a pristine carbon fiber despite a very small amount of embedding, and the short beam strength of the laminated composite prepared with the nanomaterial-coated carbon fibers was also improved compared to a non-modified composite.

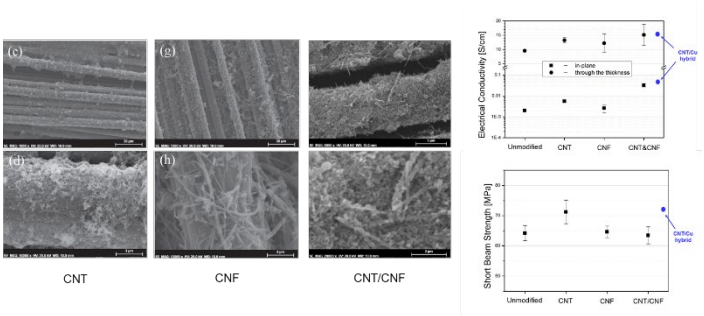


*Figure 1 - EPD of CNT/CNT hybrid*

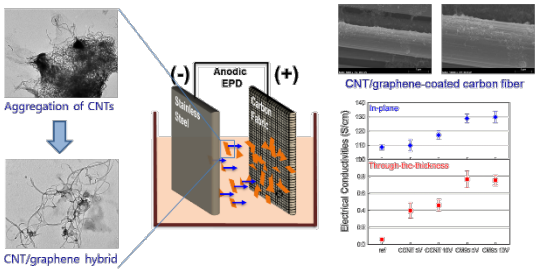


*Figure 2 - EPD of CNT/graphene hybrid*

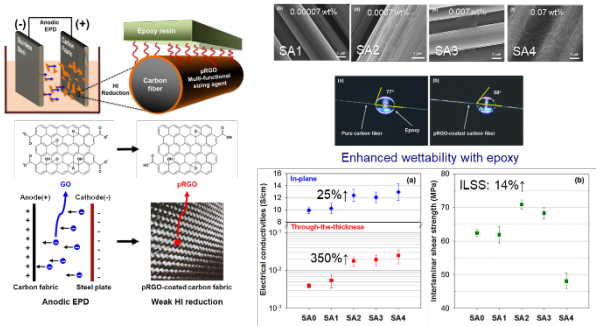


*Figure 3 - EPD of partially reduced graphene oxide*

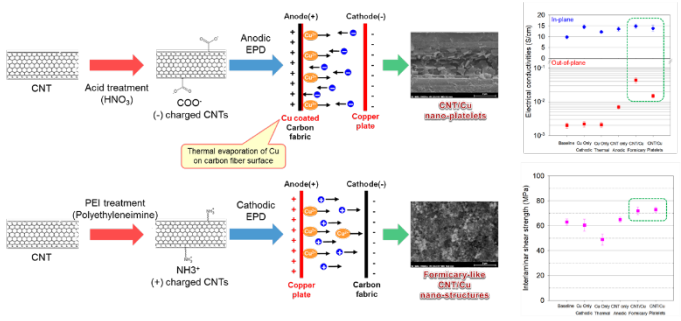


*Figure 4 - EPD of CNT/copper hybrids*

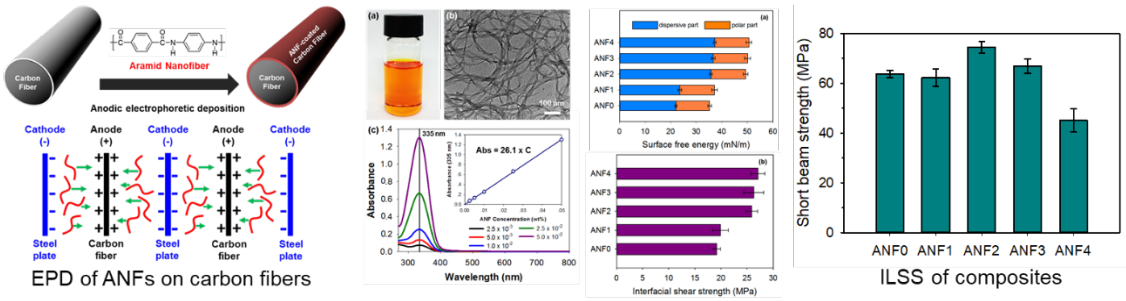


*Figure 5 - EPD of ANF*