

Carbon Nanotubes as Conducting Agent in Electric Vehicle Batteries: The Status and Future Challenges

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The inclusion of conductive carbon materials into lithium ion batteries (LIBs) is essential for constructing the electrical network of electrode. When considering current demands on the cell makers from the producer of electric vehicles (e.g., higher energy density and lower cell cost), the replacement of the currently used carbon black by carbon nanotubes (CNTs) seems to be unavoidable. This talk describes how CNTs can contribute to the development of advanced LIBs for EVs. First, the reason for choosing CNTs as conducting agent for cathode is discussed in terms of energy density. Second, the reinforcing effect of CNTs into the anode is described in related with the choice of silicon as active material. Third, water based cathode fabrication as well as dry electrode fabrication is developing with aid of CNTs. Fourth, three technical hurdles, such as their price, dispersion issue and entrapped metal impurities, for widespread use of CNTs in LIBs will be discussed.