Effect of organic and inorganic particles on conductivity of water soluble conductive polymer-polyvinylalcohol composites

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The effect of non-conductive organic and inorganic fillers with the size of around 200 nm such as water-dispersible polyester particles (PEs), alumina particles (Al2O3), and two kinds of titanium dioxide particles (TiO2-A and –B) on the conductivity of the composites of water- soluble conductive polymer, polyaniline sulfonic acid (PAS), and water soluble polyvinyl alcohol (PVA). It was found that the species of fillers have a large effect on the conductivity of the PAS/PVA composite. The addition of PEs and TiO2 increased the conductivity of their composites while Al2O3 and TiO2-B decreased it. Such results are possibly caused by the difference of the conductivity of particles and the some interaction force between particles and PAS molecules. In this report filler effect will be discussed.