URN etd-0407109-183717-1341
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Statistics This thesis had been viewed 46 times. Download 0 times.
Department
Year 2005
Semester 2
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title Preparation of Conductive Polyaniline Nanoparticles Co-doped with HNO3 and DBSA
Date of Defense 0000-00-00
Page Count 127

Keyword
chemical oxidation method
polyaniline
DBSA
HNO3
co-doping

Abstract
Polyaniline (PANI) is an important in the family of intrinsically conducting polymers (ICP). Doe to its unique electrochemical properties and environmental stability, PANI has been studied extensively by many scientists and developed many applications such as secondary batteries, biosensors, corrosion protections, anti-static packaging materials, and light-emitting diode (LED), etc. In order to improve its solubility and conductivity, the chemical oxidation method was used to prepare emeraldine salt (ES) type conductive polyaniline co-doped with nitric acid (HNO3) and dodecylbenzene sulfonic acid (DBSA). ES type conductive PANI was prepared under various synthetic temperatures (0℃, 10℃, 30℃, and 50℃) and various synthetic times (2 hour, 6 hour, 12 hour, 24 hour, and 36 hour). The results indicate that ES type conductive PANI particle size ranges from 5nm to 80nm at synthetic time of 2 hours and synthetic temperature of 0~50℃. ES type conductive PANI particle size ranges from 140nm to 350nm under synthetic time of 24 hours and temperature of 30℃. As well as its conductivity was 6.908S/cm, and its yield was 52.38%. Conductive polyaniline powder which prepared with co-doping method dissolves not only in the common organic solvent, but also its solubility in chloroform reaches 95%. Due to nanograde structure, polyaniline particles can well be dispersed in aqueous solution.
Advisory Committee - advisor

Files No Any Full Text File.
Date of Submission 2006-07-24