탄소나노튜브를 지지체로 사용한 백금나노입자의 제조방법

김희연*, 정남조, 이승재, 유인수, 강성규, 송광섭
한국에너지기술연구원
(kyeonee@hanmail.net*)

We prepared Pt nano particles using CNT as supports by chemical vapor deposition (CVD) and electrochemical deposition (ECD) method. Before Pt deposition, CNT samples were pretreated by using HCl and the mixed acid of HNO3 and H2SO4 for the enhancement of surface wettability, the modification of the surface structures and the production of surface defects. Methyltrimethylcyclopentadienyl platinum (MeCpPtMe3) was used as Pt precursor for CVD and H2PtCl6 for ECD. In CVD process, MeCpPtMe3 was vaporized at 70oC and was delivered to the pretreated CNT at the reactor. The optimum conditions for Pt-CVD were as follows: 140oC of CVD temperature, O2 added to N2 carrier gas. In ECD process, Pt was deposited on CNT/graphite sheet, which can be directly used as fuel cell electrode. Consequently, Pt nano particles ranges from 1 to 2 nm were synthesized by CVD and from 2-5 nm by ECD.