

초음파 스프레이 코팅과 레이저 소결 공정에 의해 유연 기판 표면에 형성된 탄소나노튜브-구리 하이브리드 박막

Carbon Nanotube-Copper Hybrid Thin Film on Flexible Substrate fabricated by Ultrasonic Spray Coating and Laser Sintering Process

박채원^{a,c}, 권진형^b, 엄현진^c

^a인천대학교 신소재공학과, ^b서울대학교 기계공학과, ^c한국생산기술연구원 뿌리산업기술연구소
표면처리그룹(E-mail: hyeonjin@kitech.re.kr)

초 록 : Recently flexible electrode materials have attracted attention in various electrical devices. In general, copper(Cu) is widely used electrical conductive material. However, Cu film showed drastically reduction of electrical conductivities under an applied tensile strain of 10%. These poor mechanical characteristics of Cu have difficulty applying in flexible electronic applications. In this study, mechanical flexibilities of Cu thin film were improved by hybridization with carbon nanotubes(CNTs) and laser sintering. First, thin carbon nanotube films were fabricated on a flexible polyethylene terephthalate(PET) substrate by using ultrasonic spray coating of CNT dispersed solution. After then, physically connected CNT-Cu NPs films were formed by utilizing ultrasonic spray coating of Cu nanoparticles dispersed solution on prepared CNT thin films. Finally, CNT-Cu thin films were firmly connected by laser sintering. Therefore, electrical stabilities under mechanical stress of CNT-Cu hybrid thin films were compared with Cu thin films fabricated under same conditions to confirm improvement of mechanical flexibilities by hybridization of CNT and Cu NPs.