구리 나노 입자에 산-보조 레이저 공정을 적용한 구리 전극 제작 공정 개발 및 투명·유연 전극으로 활용

Cu Electrode Fabrication by Acid-assisted Laser Processing of Cu Nanoparticles and Application with Transparent·Flexible Electrode

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초 록: Copper is a promising electronic material due to low cost and high electrical conductivity. However, the oxidation problem in an ambient condition makes a crucial issue in practical applications. In here, we developed a simple and cost-effective Cu patterning method on a flexible PET film by combining a solution processable Cu nanoparticle patterning and a low temperature post-processing using acetic acid treatment, laser sintering process and acid-assisted laser sintering process. Acid-assisted laser sintering processed Cu electrode showed superior characteristics in electrical, mechanical and chemical stability over other post-processing methods. Finally, the Cu electrode was applied to the flexible electronics applications such as flexible and transparent heaters and touch screen panels.

Keywords

Copper nanoparticle, acid treatment, selective laser sintering, bending test, flexible substrate, low temperature process, surface analysis, touch panel