

금속 나노 입자를 이용한 인쇄 회로 기판의 회로 형성

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Formation of electric circuit for printed circuit board using metal nano particles

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Abstract : Recently, innovative process has been investigated in order to replace the conventional high-cost micro patterning processes on the electronic products. To produce desirable profit margins from this low cost products, printed circuit board(PCB), will require dramatic changes in the current manufacturing philosophies and processes. Innovative process using metal nano particles replaces the current industry standard of subtractive etched of copper as a highly efficient way to produce robust circuitry on low cost substrates.

An advantage of using metal nano particles process in patterned conductive line manufacturing is that the process is additive. Material is only deposited in desired locations, thereby reducing the amount of chemical and material waste. Simply, it just draws on the substrate as glass epoxy or polyimide with metal nano particles.

Particles, when their size becomes nano-meter scale, show some specific characteristics such as enhanced reactivity of surface atoms, decrease in melting point, high electric conductivity compared with the bulk. Melting temperature of metal gets low, the metal nano particles could be formed onto polymer substrates and sintered under 300℃, which would be applied in PCB. It can be getting the metal line of excellent electric conductivity.

Key Words : Metal nano particles, printed circuit board, sintering, resistivity