

Manufacturing of Functional Micro Metallic Patterns and Features Using Electroplating Technique

이주열[†]

한국기계연구원 부설 재료연구소

(leeact@kims.re.kr[†])

3D micrometallic patterns and arrays are critical component to fabricate semiconductor chips and various electric and electronic devices such as sensors, display panels, probes and so on. Particularly, probe card system requires micro metallic probe tips with high hardness, high electrical conductivity and anti-stickness. For this purpose, in the viewpoint of materials, probe tips made of Rh, NiCo, NiW, PdNi and so on were applied to present probe card system. At present, this probe tip arrays are manufactured effectively and economically by electroplating technique. We developed new nickel alloy plating solutions to cope with the necessity for monitoring the electrical characteristics of more precise metallic circuits and architecture with narrow line and space. We manufactured photoresist mold on the silicon wafer surface after the shape of micro probe pin array using spin coating and some semiconductor fabrication unit process. Probe pin was electroplated at different alloy composition and additives, and underwent annealing process in the N₂/H₂ environment. We also observed the effect of surface modification on the electrical properties of probe pins.