

銅微細パターン作製のための172 nm真空紫外光を用いた液晶ポリマーフィルムの表面改質

福谷 修平*, 浅倉 秀一*, 不破 章雄*

Surface Modification of a Liquid Crystalline Polymer Film Using 172 nm Vacuum Ultraviolet Light for Fabricating Copper Finepattern

Shuhei FUKUTANI*, Shuichi ASAKURA* and Akio FUWA*

* 早稲田大学理工学研究科 (〒169-8555 東京都新宿区大久保3-4-1)

* Graduate School of Science and Engineering, Waseda University (3-4-1 Okubo, Shinjuku-ku, Tokyo 169-8555)

Abstract

This work reports on the surface modification of liquid crystalline polymer (LCP) films using 172 nm vacuum ultraviolet (VUV) light for fabricating copper (Cu) finepattern on the surface. First, the LCP film was VUV-irradiated for 30~90 min under a pressure of 1.0×10^3 Pa. Surface wettability, topography and composition were investigated by water contact angle, atomic force microscopy and X-ray photoelectron spectroscopy (XPS), respectively. It was revealed that the LCP surface became hydrophilic without roughening the surface. From XPS measurements, the surface was confirmed to be covered with oxygen-containing groups. Secondly, an amino-terminated organosilane film was prepared on this film by chemical vapor deposition. Then, palladium (Pd) particles as a catalyst for electroless Cu plating were immobilized on a VUV-lithographically micropatterned amino-terminated film with coordinate bonds between amino-group and Pd(II) ions. Finally, as Pd(II) ions were reduced to Pd(0) by formaldehyde solution, Cu finepattern with 15- μ m wide were electroless plated on the surface.

Key Words: *Electroless Plating, Excimer Lamp, Surface Modification, Self-Assembled Monolayer, Liquid Crystalline Polymer*