Fabricating microstructures on CVD diamond film

Choung-Lii Chao,Wen-Chen Chou,Wen-Chung Lin,Wei-Jhe Su,馬廣仁
Ph.D. Program in Engineering Science
Engineering
ma600229@ms17.hinet.net

Abstract

Diamond has many advanced properties which may provide potential solutions to various engineering problems. This study focuses on fabricating micro-structures on CVD diamond film. A thin layer of Au or Pt together with thermal annealing process is used to form micro-masks and reactive ion etching (RIE) method was subsequently adopted in this research to etch and fabricate micro-structures. Field emission scanning electron microscope (FESEM) and micro Raman spectroscopy were used to observe and analyse the morphology and composition of the obtained microstructures. Results show that different coated materials and thickness can produce different types of micro-masks and, as a consequence, different microstructures. Depending on the micro-mask, whisker-like or pillar-like microstructures are successfully produced and, based on the micro Raman spectrum; these microstructures still retains good diamond quality.

Keyword：diamond film; thermal annealing; reactive ion etching; RIE; microstructure.