URN etd-0407109-183702-106
Author Jian-Fong Liou
Author's Email Address No Public.
Statistics This thesis had been viewed 52 times. Download 21 times.
Department
Year 2005
Semester 1
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title Characteristics of amorphous carbon films produced by electron cyclotron resonance chemical vapor deposition
Date of Defense 0000-00-00
Page Count 92

Keyword
amorphous carbon film
nanoindentation
electron cyclotron resonance chemical vapor deposition
optical character

Abstract
Amorphous carbon films (a-C) is the material which use commonly has much excellent property, such as high chemistry resistance, high hardness, isolation, fine heat conduction, high infrared wave transparency, high biological compatibility and wear resistance. Due to process difference, the carbon thin films have high compressive stress, to cause not good adhesive force and make the films stripped off the substrate. The microwave electron cyclotron resonance chemical vapor deposition(ECR-CVD) to grow amorphous hydrogenated carbon films. The reaction gases propane and nitrogen as gas source, which deposite on silicon wafer, and discuss films property from change gas proportion, microwave power, gas flow rate. Use raman spectrometer, fourier transform infrared spectrometer, scanning electron microscopy, atomic force microscope, nanoindentation test instrument, lateral force microscopy, ultraviolet/visible spectrophotometer examination. The result revealed that the films character obvious amorphous mix phase produced when nitrogen proportion, microwave power, gas flow rate was both increased, to make the hardness, friction and optical character difference.
Advisory Committee Chia-Chun Chu - advisor

Files etd-0407109-183702-106-001.pdf

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Date of Submission 2006-08-11