SAIP2013

Contribution ID : 464

Surface Brillouin scattering characterization of Diamond-like carbon thin films on silicon substrate

Tuesday 09 Jul 2013 at 17:40 (01h00')

Abstract :

In this work we have used un-doped Diamond-like carbon (DLC: a-C:H) and silicon doped DLC(a-C:H:Si) thin film using tetramethysilane (TMS) at 20 standard centimetre cubic per minute (sccm) and both at the same bias voltage (VB) of 400 V . These thin films were deposited on silicon substrate by plasma enhanced chemical vapour deposition with a thickness of 150nm.A Brillouin scattering technique was used to characterise the mechanic property of these diamond –like carbons such as Young's modulus, shear's modulus and bulk's modulus. .Brillouin spectra were obtained at room temperature in a back scattering geometry using a(3+3) Sandercock-type tandem Fabry-Perot interferometer with a probe of 514nm. Brillouin spectra have been observed and two different acoustic modes were present that are identified as the Rayleigh mode and the Sezawa mode. The elastic constants of the films were obtained by utilising the density of the films, and the measured the Rayleigh velocity of each sample, together with the known Poisson 's ratio. Finally, we established a correlation between the microstructure with the shear's modulus, Young's modulus and Bulk's modulus.

Award :

No

Supervisor :

Sekhar Ray

Paper :

No

Primary authors : Mr. MBIOMBI, Wilfred (University of wits)

Co-authors :

Presenter : Mr. MBIOMBI, Wilfred (University of wits)

Session classification : Poster1

Track classification : Track A - Division for Condensed Matter Physics and Materials

Type : Poster Presentation