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

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## Abstract content <br>   (Max 300 words)

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.

## Apply to be<br> considered for a student <br>   award (Yes / No)?

No

## Main supervisor (name and email)<br>and his / her institution

Sekhar Ray

## Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?

No

**Primary author:** Mr MBIOMBI, Wilfred (University of wits)

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

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