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Synthesis and characterization of diamond like carbon (DLC) thin films for gas sensing applications

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Abstract content
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DLC thin films were deposited on Si and Aluminum strips using DC magnetron sputtering system. Thin films on Si substrate were characterized using XRD, SEM, EDX, RBS, AFM and Raman. Thin films deposited on Al strips we used for gas sensing purposes. DLC films were very smooth with a roughness ranging 0.29 -3.2 nm. DLC thin films were found to be polycrystalline with a pronounce peak of DLC. The composition of the sample was C and Si. The sp3 to sp2 ratio (ID/IG) was estimated to be 0.7- 0.9. In gas sensing applications material that withstands poisonous gasses such as H2S are required. DLC thin films were observed to be more sensitive on gases like NO2 and NH3 at room temperature. This gas sensor was found to be selective became its sensitivity was less for gasses like CO,H2 and H2S at room temperature.

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