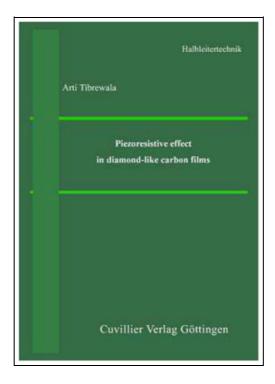
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Cuvillier Verlag Sep 2006, 2006. Taschenbuch. Condition: Neu. Neuware - Diamond-like carbon (DLC) is the metastable form of amorphous carbon with significant sp bonding. DLC is a semiconductor with a high mechanical hardness, chemical inertness and optical transparency. This contribution examines the structural and electrical transport properties of sputtered a-C and plasma-assisted chemical vapour deposited (PACVD) a-C:H as a functional material for MEMS technology, i.e. for piezoresistive strain gauges on bulk micromachined silicon cantilever and boss membrane sensors. The current transport mechanism at high temperature is studied for both the films. The heterojunction of DLC/Si is studied so that devices can be manufactured using it. In this study the piezoresistive properties of a-C and a-C:H strain gauges integrated on a bulk micromachined silicon are addressed for the first time. An extensive study was undertaken to measure the gauge factor of a-C and a-C:H films at high temperatures, different voltages, under longitudinal, transversal, tensile and compressive strain configurations and under vertical and lateral current injection mechanism. The gauge factors were also studied by changing the deposition parameters of the films. Finally a model was introduced to explain the origin of piezoresistance in the a-C and a-C:H films and parameters which can further enhance the value of gauge factor in the films, which was confirmed experimentally. 162 pp. Deutsch.



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