

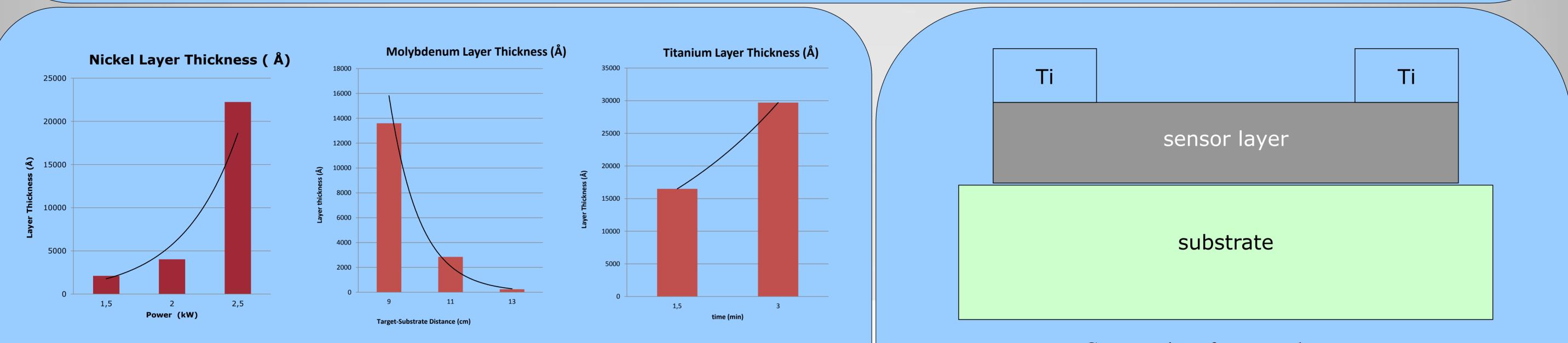




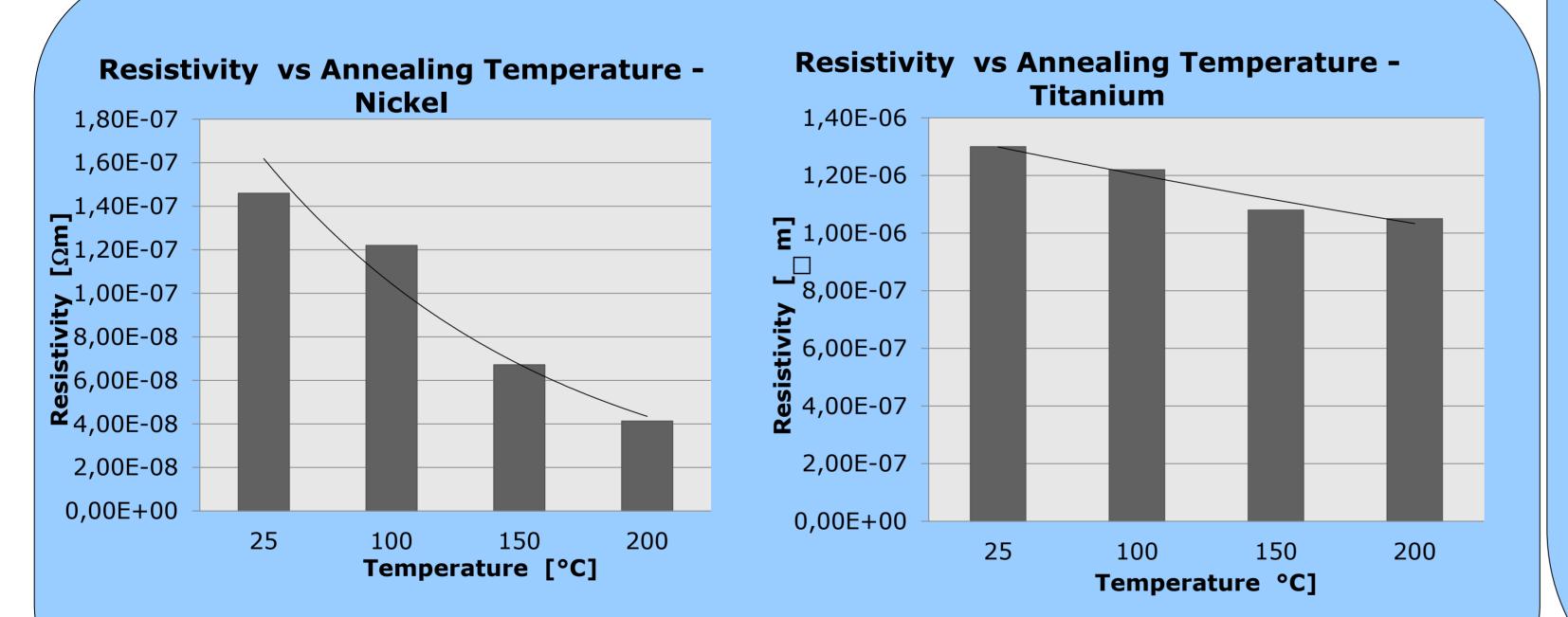
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Structural, chemical purity and electrical investigations have been performed on chosen Ti-, Mo- and Ni- films deposited using the vacuum evaporation deposition process on silicon wafers. The effects of electron beam current, target-substrate distance and evaporation time on the film thickness, surface morphology, and electrical properties are analysed. The effects of annealing temperature on film resistivity are also looked at. Possible contaminations are checked for using SIMS. The metals are to be used in the deteH project to design a hydrogen detector to work in abnormal conditions like high temperature and pressure in industrial and energy applications. The analysis is therefore a part of the project to determine the suitability of the above mentioned metals in the detector's active layer. In addition to that, titanium contacts for carbon-based hydrogen sensors were prepared. The cross section is as shown below. In order to test the linearity of titanium contacts for carbon-based hydrogen sensors a set of samples was prepared. A layer of carbon-based sensor material was deposited on a sapphire substrate. In the first set of samples this layer was fabricated by CVD and in the second set by PVD. Next titanium contacts were prepared as described above. I-V characteristics of these samples were measured using a Keithley 2410 source-meter. Based on these measurements it was determined that titanium to sensor layer contacts are linear for currents from 2 μ A to 2mA. For lower values of measurement current non-linear behavior is observed, especial for PVD samples. Most probably it is due to reduced accuracy of measurements of low voltages.

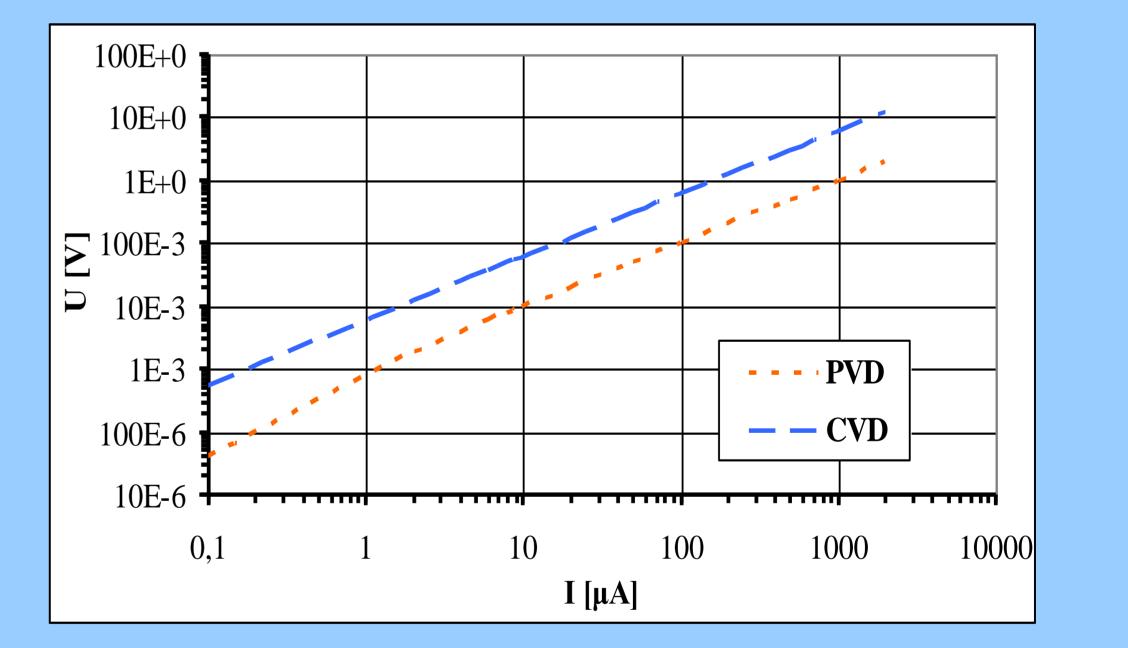


Influence of power, target-substrate distance and time on the thickness of the deposited films.



Effect of annealing temperature on the resistivity of the deposited films.

Cross section of test sample



I-V characteristics of carbon-based hyrogen sensor samples with titanium contacts

