PLD-PREPARATION OF CARBON BASED MULTILAYERED COATINGS

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Results obtained in the analysis of single layer and multilayered carbon stacks produced by PLD at low temperature will be presented. The mechanical properties like hardness and elasticity were determined for carbon single layer deposited at various laser pulse fluences by means of nano indentation. A wide variety of mechanical properties can easily be adjusted by adapting the process parameters.

In addition, it will be shown that the architecture of various pure carbon films strongly affects the coatings toughness. Scratch test measurements showed that the cohesive break down of such layer systems can be hindered by refining the stack periodicity. This is along with no losses in hardness or elasticity if the stack architecture is suitable, as determined in nano indentation analyses. So, the produced coating systems combine a very good adhesion on several metal and hard metal substrates, very high hardness and elasticity accompanied with low abrasive wear and high crack and spalling resistivity