DEEP TECH 2M

# BOOK OF ABSTRACTS

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# Hardness measurement of ZA-27 and A356 alloy based nanocomposites

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**Abstract**

Increasingly strict construction requirements initiated the development of different materials. The increasing trend of utilization of contemporary materials, alloys, superalloys, and composites is notable. Hybrid composites based on A365 matrix and nanocomposites on ZA-27 alloy find the spread utilization. The hardness of the mentioned material has crucial importance, due to that, the experiment was performed using CSM Nano Hardness Tester (NHT2). Device measure hardness of material by placing the sample in the clamping tool and by pressing with an indenter into the surface whose characteristics, i.e. hardness, is measured. The Berkovich pyramid is used for pressing, where the depth of indentation is limited. This method is contact, without the destruction because the surface destruction is made on the micro/nano level.

The usage of „Nanoindenter & Micro Scratch Tester" for measuring the hardness has advantage of isolation of the measuring system from vibrations from the environment. Based on that the results are very reliable and accurate. Experiment was done with accurate technology, sensors and measuring devices which were connected with computer and software with aim to additionally achieved reliability and accuracy. The many investigations of these materials are already done, because they represent the good basis for production of different parts used in the mechanical engineering. Nanocomposites with ZA-27 alloy have very spread usage in the systems for power transmission, especially as bearing alloys and manufacturing of bearings. Hybrid composites with A356 matrix are used in the car industry in numerous vehicle elements.



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