REFERENCE MATERIALS FOR LOCAL MECHANICAL PROPERTIES AT THE NANOSCALE

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Abstract

At present, local mechanical properties can be measured not only for macroscopic objects but even for nanoscale objects and thin films with dimensions of only a few tens of nanometers. For these purposes special indentation devices can be used. In past decades many special data measurement and processing methods for thin film characterization have been developed e.g. continuous stiffness measurement. However, data interpretation in the field of metrology is not so straightforward and especially for special modes it is not easy at all to obtain quantitative results. Therefore it is necessary to use reference samples that would enable the comparison of different instruments and validation of applied methods. In this contribution we will present the results of our effort on preparing and testing thin film based reference materials prepared using plasma technologies. Long term stability, results of characterization on different instruments and effects of data acquisition and interpretation will be discussed and issues of traceability will be addressed.

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