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**Analyzing Nanoindentation data: About a possible Oliver&Pharr method for pile-up, sink-in and creep behavior**Norbert Schwarzer<sup>1</sup><sup>1</sup>Saxonian Institute of Surface Mechanics, Ummanz / Rügen, Germany

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It is well known, that the classical analysis of nanoindentation experiments fails if strong viscose, pile-up or sink-in behavior occurred during indentation.

In the talk it will be shown, how Oliver and Pharr's concept of the effectively shaped indenter can not only help to overcome these problems but even to extract more information from the indentation measurement. This can be achieved by taking into account the holding and loading part of the indentation curve as well, while the classical method usually only uses the unloading curve. What is more, this extension of the classical analysis (the latter is usually called Oliver&Pharr method) also allows the extraction of true physical material parameters like the yield strength instead of a hardness, for instance. An extension to layered materials is possible, too and will be introduced. A variety of examples from homogeneous and layered samples will demonstrate the power of the new extended Oliver and Pharr method.

**Keywords**

nanoindentation

pile-up

sink-in

viscose

Oliver&amp;Pharr