

LIBRARY FOR SMART SCANNING STRATEGIES IN SCANNING PROBE MICROSCOPY

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Scanning probe microscopy (SPM) belongs between most frequently used characterisation techniques for nanoscale topography of solid surfaces, including mapping of different physical quantities (electrical, thermal magnetic or optical properties). Present SPMs are capable to measure with sub-nanometer resolution, nanometer accuracy and in range up to few hundreds of micrometers; in special devices even in range up to millimeters. Even if the combination of large scanning range and high accuracy seems to be very attractive, SPMs are still considered as slow instruments comparing to other imaging techniques and such high spatial density measurements are even much slower. A solution is to measure with high data density only on sample areas that contain

information necessary for particular quantities that should be evaluated and to use low data density in all the other parts. To do this, we need to change the way how the data are acquired and how they are processed afterwards. We present an approach covering both these steps, forming an open source library for non-equidistant scanning, data previewing, storage and processing. During development we concentrated on library portability, applicability on different hardware and software platforms. Examples of library use on both synthetic and real data will be presented to show the SPM performance improvements.

Keywords: SPM, adaptive scanning**Author did not supply full text of the paper.**