



## Hard X-Ray Scanning Microscope Using Nanofocusing Parabolic Refractive Lenses

By Jens Patommel

Cuvillier Verlag Jan 2011, 2011. Taschenbuch. Condition: Neu. Neuware - Hard x rays come along with a variety of extraordinary properties which make them an excellent probe for investigation in science, technology and medicine. Their large attenuation length in matter opens up the possibility to use hard x-rays for non-destructive investigation of the inner structure of specimens. Medical radiography is one important example of exploiting this feature. Since their discovery by W. C. Röntgen in 1895, a large variety of x-ray analytical techniques have been developed and successfully applied, such as x-ray crystallography, reflectometry, fluorescence spectroscopy, x-ray absorption spectroscopy, small angle x-ray scattering, and many more. Each of those methods reveals information about certain physical properties, but usually, these properties are an average over the complete sample region illuminated by the x rays. In order to obtain the spatial distribution of those properties in inhomogeneous samples, scanning microscopy techniques have to be applied, screening the sample with a small x-ray beam. The spatial resolution is limited by the finite size of the beam. The availability of highly brilliant x-ray sources at third generation synchrotron radiation facilities together with the development of enhanced focusing x-ray optics made it possible to generate...

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