### **Atomic-Resolution AFM in Liquids**



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### Reviews

Completely essential read through book. It normally is not going to charge an excessive amount of. I found out this book from my dad and i advised this pdf to find out.

(Madelyn Douglas)

### ATOMIC-RESOLUTION AFM IN LIQUIDS



Shaker Verlag Jan 2012, 2012. Buch. Book Condition: Neu. Neuware - The aim of this thesis was to modify an existing AFM to allow for highest-resolution FM imaging in liquids. Based on a commercially available atomic force microscope, the new setup now provides true atomic-resolution imaging in various liquid environments. In order to achieve the required high force sensitivity, the first step is to understand the details of FM AFM theory. Based on an in-depth theoretical consideration of the maximum achievable force sensitivity, presented in Chap. 2, the key parameters influencing the performance of an FM AFM system are identified. In a next step, the instrumentation of FM AFM will be presented from a more engineering point of view. The original design of the used commercial microscope has been designed to suit a brought range of AFM applications, which is of great advantage when using one instrument for different kinds of experiments. To achieve the highest force sensitivity, however, it is necessary to specialize the instrument with the high-resolution application in mind. Care was taken to develop a setup that can be changed to the original setup within a few minutes. In Chap. 3, all improvements of the entire instrument are explained in detail. All modifications were performed with the aim to preserve the instrument's ease of use. This was demonstrated in industry, where the developed setup was tested by technicians with no experience in FM AFM, revealing true atomic resolution in a liquid environment. This clearly demonstrates the high usability of the described instrument in industrial research. The high-resolution capability of the modified instrument was then exploited to resolve the atomic structure of two different systems, being of utmost importance within both, fundamental as well as application-oriented research. One substrate of interest is calcite, the most stable polymorph of...



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