

## **Atomic Force Microscope for studies on liquid/solid interfaces at very high pressures and temperatures**

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### **Abstract:**

AFM has proven to be a very powerful tool for surface analysis since many years. Standard AFM instruments are widely available, but most of them are limited to the analysis of samples in an ambient environment without the possibility to apply external stimuli. The interest for application of AFM to operando research has been growing strongly during the last decade. A good example of such development is the AFM systems that can operate under electrochemical process conditions in controlled environment. In this talk we address the development of scanning probe microscopy systems that can operate under high pressure conditions. In particular the focus will be on the development of an AFM system with a liquid cell that can be pressurized up to 100 bar and heated up to 150 deg. C. Applications are the investigation of solid-liquid interfaces during processes such as heterogeneous catalysis, corrosion, adhesion etc. We will present the working principle of the instrument and show the first results obtained with the instrument that is installed at the TU Delft.