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Simulation-based Extraction of Key Material Parameters from Atomic Force Microscopy[1] HUSEEN ALSAFI, GRAY PENINNGTON, Towson Univ — Models for the atomic force microscopy (AFM) tip and sample interaction contain numerous material parameters that are often poorly known. This is especially true when dealing with novel material systems or when imaging samples that are exposed to complicated interactions with the local environment. In this work we use Monte Carlo methods to extract sample material parameters from the experimental AFM analysis of a test sample. The parameterized theoretical model that we use is based on the Virtual Environment for Dynamic AFM (VEDA) [1]. The extracted material parameters are then compared with the accepted values for our test sample. Using this procedure, we suggest a method that can be used to successfully determine unknown material properties in novel and complicated material systems.

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