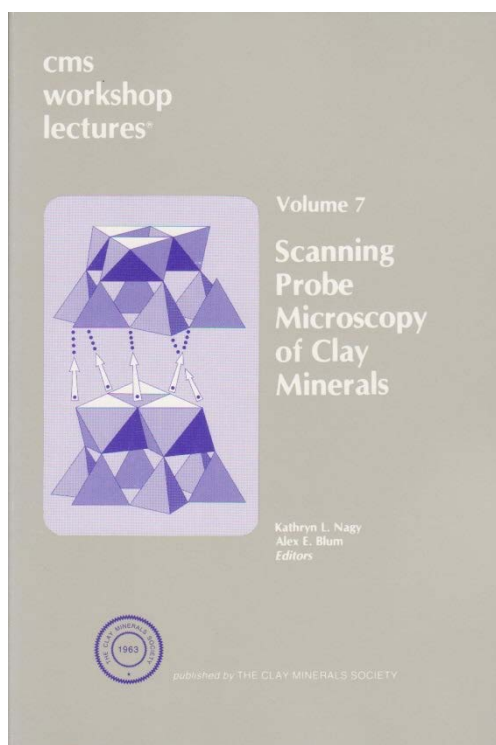


**Workshop Lectures
The Clay Minerals Society
Volume 7
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Volume 7, 1994, Scanning Probe Microscopy of Clay Minerals

Kathryn L. Nagy & Alex E. Blum. Editor

High Resolution Scanning Probe Microscopy: Tip-Surface Interaction, Artifacts, and Applications in Mineralogy and Geochemistry.....C. Eggleston

INTRODUCTION

What is SPM?

Terminology

The Need to Understand Tip-Surface Interaction

SCANNING TUNNELING MICROSCOPY (STM)

Basic Principles

STM in Practice

Feedback Control

Tips

Leakage currents

Calibration

Particles

ATOMIC FORCE MICROSCOPY (AFM)

Basic Principles

- Forces Normal to Surface
- Frictional Forces
- Magnetic forces
- AFM in Practice
 - Tips
 - Tip and Sample Wear
 - Deformation
 - Multiple-tip contact
 - Friction effects
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 - Particles
 - Fluid Cell

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 - Multiple Tips and Microtopography
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 - Changes in Resolving Ability or Position of the Tip.
- Variable Tunneling Barrier (STM)
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- Feedback Oscillations, Resonance, and Shadowing
- Vibrational Noise
- Drift
- Friction Effects and Sample Erosion
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- Pyrite

AFM

- Albite
- Calcite
- Concluding comments

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NON-IMAGING APPLICATIONS OF SPN

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SUMMARY

ACKNOWLEDGMENTS

REFERENCES CITED

Atomic and Molecular Scale Imaging of Layered and
Other Mineral Structures.....F. Wicks, G. Henderson, and G. Vrdoljak

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Lizardite and Kaolinite

AFM IMAGES OF 2:1 LAYER PHYLLOSILICATES

Muscovite

Illite and Smectite

Clinochlore

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Astrophyllite

Calcite

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Uranium Phosphates

Zeolites and Zeolite-Like Materials

Glasses

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Apophyllite

Cesium Adsorption on Clinochlore

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Mineral-Water Interactions: Fluid Cell Applications of
Scanning Force Microscopy.....P. Dove and J. Chermak

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 - Compatible Real Time Reaction Rates
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 - Weathering Reactions
 - Mineral Transformations
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Application of Morphological Data Obtained Using Scanning Force Microscopy to Quantification of Fibrous Illite Growth Rates.....K. Nagy

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