

Available
Technologies

Rapid Functional Recognition Imaging in Scanning Probe Microscopy

Applications:

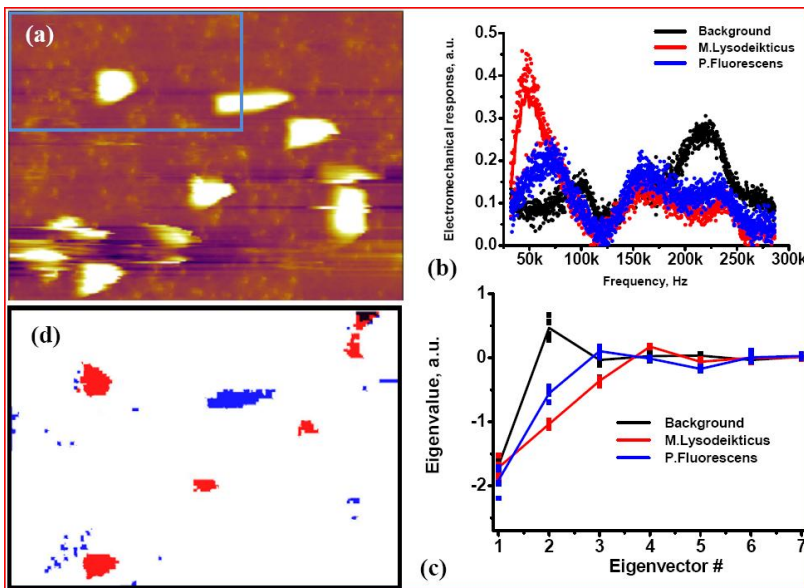
- Rapid imaging in force-, current- and optics- based scanning probe microscopy techniques
- Fields of research include: nanotechnology, inorganic, molecular, polymer, and biological systems.

Advantages:

- Generates recognition images at standard imaging speed
- Prevents the need for storage of large multidimensional data sets
- Avoids lengthy post-processing
- Extracts material parameters preventing the need for exact analytical models

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(a) Topographical image of bacteria in liquid. Box indicates the data subset used in demonstration. (b) Comparison of amplitudes of electromechanical responses for the background of the Poly-L-lysine (PLL) coated mica substrate, *M. Lysodeikticus* and *P. Fluorescens*. (c) Principal component maps of the spectrum image and (d) average signal.

Summary:

Technology Description

A data acquisition, processing, and control method in scanning probe microscopy that allows for rapid functional recognition imaging of local properties and functionality in inorganic, molecular, polymer, and biological systems. It is based on rapid acquisition and automatic denoising, classification, and interpretation of spectral, multimodal, or multispectral data sets (multidimensional data) at each spatial pixel.

Technology Application

This approach can be applied to all force-, current- and optics-based scanning probe microscopy techniques including:

- Intermittent contact atomic force microscopy (AfM)
- Non-contact atomic force microscopy
- Atomic force acoustic microscopy
- Piezoresponse force microscopy

This can be used for imaging in nanotechnology, inorganic, molecular, polymer, and biological systems.

Stage of Development: Proof of Principle

Patent Status: Patent application in progress

Licensing Status: Available for licensing in specific fields of use