
## 🧭 NanoProbe 2026

**International Symposium on Advances in Scanning Probe Microscopy and Nanoscale Characterization**

**Theme:** “Exploring Surfaces, Atoms, and Forces at the Nanoscale”

**April 2-4, 2026**

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## 🎯 Symposium Overview

NanoProbe 2026 brings together leading scientists and engineers specializing in Scanning Probe Microscopy (SPM) — the cornerstone of nanoscale imaging and characterization.
The symposium focuses exclusively on direct SPM techniques, highlighting recent advances in AFM, STM, MFM, PFM, KPFM, SThM, and related modes that enable atomic-scale visualization and property mapping across materials, electronics, and biological systems.
By uniting fundamental principles with emerging research applications, the event provides a unique platform for exploring how SPM continues to drive innovation in nanoscience, energy materials, and biointerfaces.

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## 🧩 Symposium Tracks

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### 🔷 Track 1 – Fundamentals and Techniques of Scanning Probe Microscopy

Comprehensive coverage of all direct SPM modalities and their operational physics:
• Atomic Force Microscopy (AFM) – contact, non-contact, and tapping modes

• Scanning Tunneling Microscopy (STM) – constant-current and constant-height operation
• Lateral Force Microscopy (LFM) and Force Modulation Microscopy (FMM) – mechanical contrast and friction imaging
• Amplitude Modulation (AM-AFM) and Frequency Modulation (FM-AFM)
• High-Speed AFM (HS-AFM) – dynamic molecular imaging
• Fluid-Mode AFM – imaging under liquid/biological conditions
• Force–Distance Spectroscopy and Nanoindentation-AFM – adhesion and elastic property mapping
• PeakForce QNM (Quantitative Nanomechanical Mapping) – local modulus and adhesion
• Conductive AFM (C-AFM) and Scanning Tunneling Spectroscopy (STS) – nanoscale electronic properties
• Kelvin Probe Force Microscopy (KPFM) and Electrostatic Force Microscopy (EFM) – surface potential and charge imaging
• Scanning Capacitance Microscopy (SCM) and Scanning Spreading Resistance Microscopy (SSRM) – carrier and resistivity mapping
• Magnetic Force Microscopy (MFM) – magnetic domain mapping
• Piezoresponse Force Microscopy (PFM) – ferroelectric and piezoelectric imaging
• Ultrasonic Force Microscopy (UFM) – subsurface mechanical contrast
• Scanning Thermal Microscopy (SThM) – thermal conductivity and temperature mapping
• Electrochemical SPM (EC-SPM) – in-situ electrochemical and corrosion studies
• Cryogenic SPM – low-temperature atomic imaging
• Bimodal and Multifrequency AFM – simultaneous property acquisition
• 3D Force Mapping AFM – potential energy and force-surface reconstruction
• In-situ / Operando SPM – real-time imaging under working conditions

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### 🔷 Track 2 – SPM in Materials Science and Nanotechnology

• Atomic-scale imaging of metals, semiconductors, and 2D materials
• Mechanical, electrical, and magnetic property mapping of functional thin films
• Defect analysis, phase transitions, and grain boundary studies
• Nanomanufacturing and manipulation using AFM/STM probes
• In-situ SPM during film growth, corrosion, and catalysis

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### 🔷 Track 3 – SPM in Electronics and Energy Materials

• Local conductivity and work-function mapping in semiconductor devices
• SPM characterization of perovskites, oxides, and ferroelectrics
• Nanoscale mapping of piezoelectric and thermoelectric responses
• SPM studies of Li-ion batteries, solid electrolytes, and interfaces
• Atomic-level insight into energy storage and conversion materials

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### 🔷 Track 4 – SPM in Biological and Soft-Matter Systems

• High-speed AFM for biomolecular dynamics and protein conformations
• Nanomechanical mapping of cells, membranes, and tissues
• Force spectroscopy of ligand–receptor and DNA–protein interactions
• AFM imaging of hydrogels, polymers, and soft biointerfaces
• Environmental and fluid-based SPM for native-state imaging

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### 🔷 Track 5 – Emerging SPM Instrumentation and Data Science

• Sensor design, probe fabrication, and tip functionalization
• Advanced feedback control and drift compensation
• Multifrequency and quantitative calibration techniques
• AI-assisted SPM data processing and image reconstruction
• Automation, 3D visualization, and correlative SPM analysis