ToF-SIMS Instrument at Rice University

The new ToF-SIMS instrument combines a Time-of-flight Secondary Ion Mass Spectrometer with an Atomic Force Microscope. The ToF-SIMS lab offers an experimental facility for sample analysis via ToF-SIMS and/or AFM, including user training and support for sample preparation and analysis. The lab is available to academic and industrial researchers through the Shared Equipment Authority (www.sea.rice.edu).

Instrument Configuration & Options

- **In-situ AFM Combination**
  - Bi Nanoprobe (ultimate lateral resolution)
  - Argon Gas Cluster Ion Source
  - Dual Source Column (O₂ and Cs)
  - Extended Dynamic Range Analysis

- **Fast Sample Rotation**
- **Sample Heating and Cooling**
- **Transfer Vessel**
- **Special Sample Holders**

ToF-SIMS/AFM features & performances

- **Surface Spectrometry:**
  - **Elements Detected:** Full periodic table (including isotopes), plus molecular species
  - **Sensitivity:**
    - High mass resolution and accuracy even on insulating samples (typically m/Δm > 10,000)
    - High mass range (m/z 0 – 12,000 a.m.u)
    - Detection limit: 1 ppm -10 ppb
    - Ideally suited for analysis of inorganic, organic or hybrid and biological, conductive/insulating materials

- **Correlative Analysis with in-situ AFM**

- **Surface Imaging:**
  - High lateral resolution (~ 70 nm)
  - Fast image acquisition (up to 50 kHz pixel frequency)
  - Field of view from μm² to cm²

- **Depth profiling:**
  - Depth resolution better than 1 nm
  - Sputter speed of up to 10 μm.h⁻¹
  - Ideally suited for insulators

- **3D Volume Analysis**
- **Retrospective Analysis**

Applications in ToF-SIMS analysis

**CONTACT US FOR MORE INFORMATION**

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