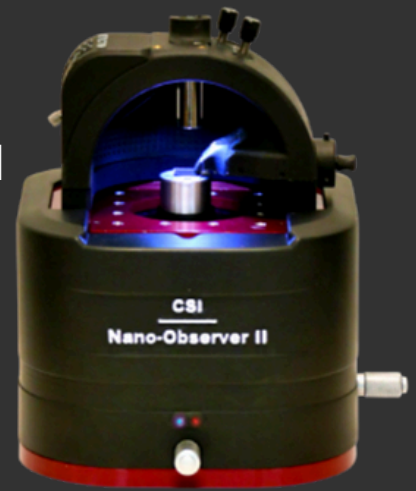


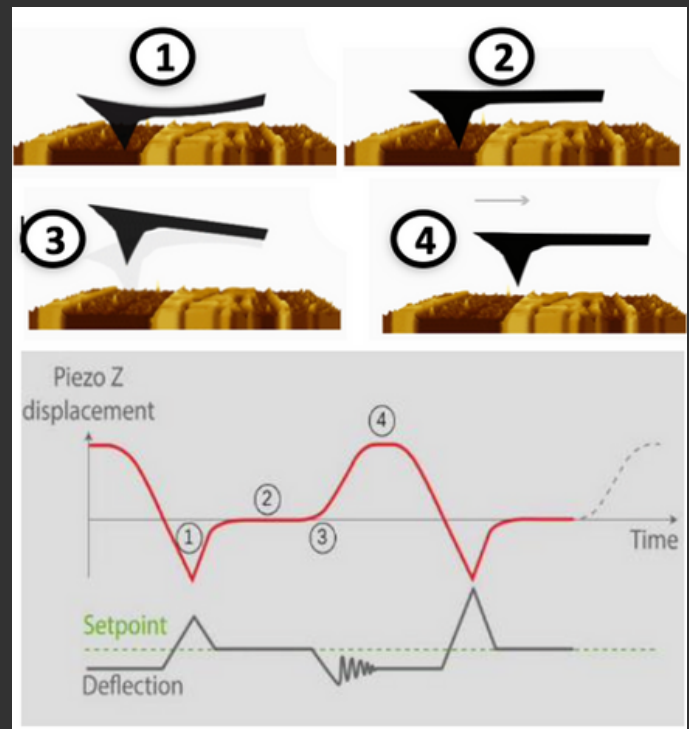
Soft Intermittent Contact Mode: Precision Without Friction

Soft Intermittent Contact Mode (Soft IC) combines the advantages of both contact and resonant AFM modes while eliminating their drawbacks, such as friction forces and instability. In Soft IC, the AFM tip is periodically lifted from the sample, ensuring minimal wear on both the tip and the sample. This intermittent contact allows for high-resolution measurements of mechanical properties, such as stiffness, adhesion, and Young's modulus, while maintaining constant force throughout the scan. Soft IC is particularly beneficial for soft and delicate samples, where traditional modes may cause damage. It offers a non-destructive approach, ideal for applications in material characterization, polymer science, and biological samples.

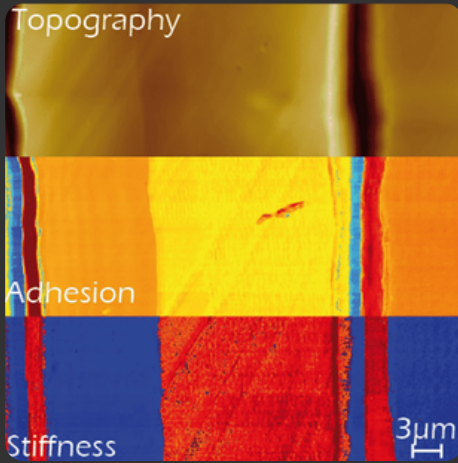


Soft Intermittent Contact Functionality

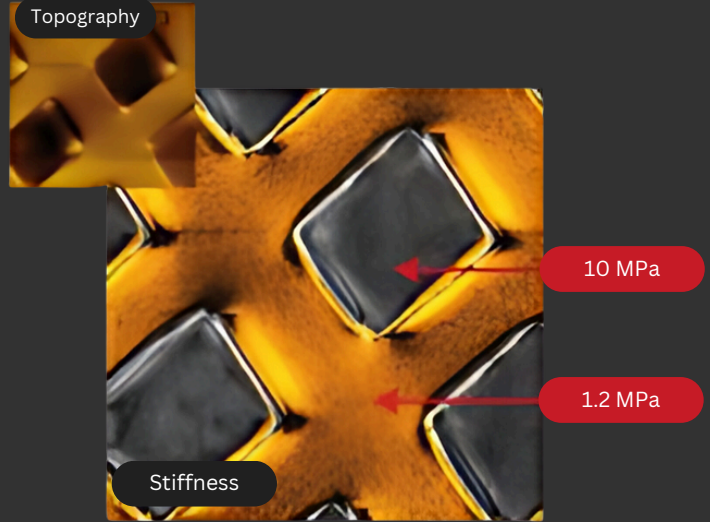
1. The AFM probe moves linearly toward the sample surface from a non-contact position, allowing measurement of contact stiffness and mechanical properties.
2. The tip is held at a constant deflection for a brief period, during which current is measured under stable force conditions.
3. After measuring current, the tip is retracted, and adhesion (pull-off) force is calculated as the deflection decreases.
4. The tip fully separates from the sample and moves to the next point for further measurements.



Application fields & Results

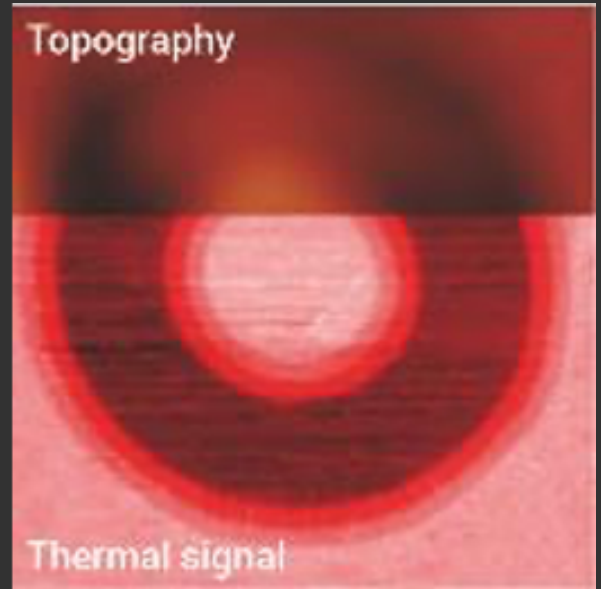
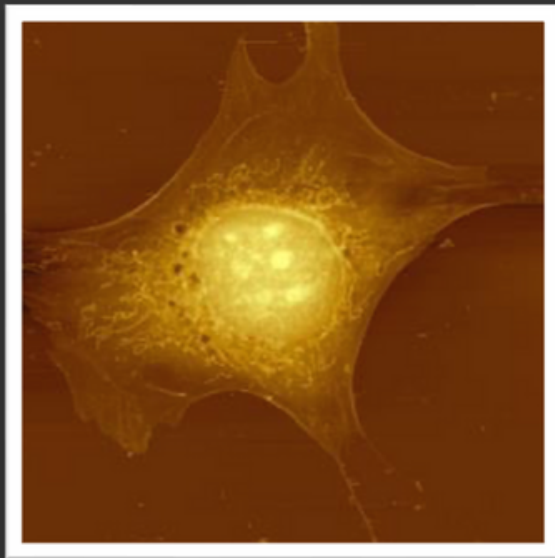


The 50 µm Soft IC mode scan of the PS-PMMA sample reveals detailed topography, adhesion, and stiffness variations.



The 90 µm Soft Meka scan of the PDMS sample shows a smooth surface with minor height variations in the topography. The stiffness map reveals significant differences, ranging from 1.2 MPa to 10 MPa, highlighting varying elasticity across the sample.

Soft IC Mode
 Sample: Cell
 Scan size: 80x80 µm



Soft SThM mode
 Single crystalline Si steps
 under polished CVD SiO₂,
 20µm scan