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Vibrational Spectroscopy of Biomolecules via Scanning-Thermal Conductance SARAH DUNNING, MICHAEL GELLER, University of Georgia
— Since the advent of the Scanning Tunneling Microscope (STM), considerable progress has been made in the use of scanning tunneling microscopy to image and spectroscopically identify single biomolecules. However, for molecules and substrates of poor electrical conductivity, tunneling microscopy is not effective. Here we propose a scanning thermal-conductance microscope, which measures the transport of thermal energy carried by phonons, from a temperature controlled atomic-force microscope tip to a substrate. We apply this idea to a model DNA strand and show that such a thermal conductance measurement can be used to identify the base-pair sequence.

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