Enhanced compositional sensitivity in atomic force microscopy by the excitation of the first two flexural modes\textsuperscript{1} RICARDO GARCIA, NICOLAS F. MARTINEZ, SHIVPRASAD PATIL, JOSE R. LOZANO, Instituto de Microelectronica de Madrid, CSIC — We demonstrate that the compositional sensitivity of an atomic force microscope is enhanced by the simultaneous excitation of its first two normal eigenmodes\textsuperscript{1–2}. The coupling of those modes by the non-linear probe-surface interactions enables to map compositional changes in several conjugated molecular materials with a phase shift sensitivity that is about two orders of magnitude higher than the one achieved in amplitude modulation atomic force microscopy.


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