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Sensitive Detection of Nano-Scale Vibrations by the Metal-Coated Fiber Tip at the Liquid-Air Interface

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Abstract : Optical radiation emitted from a metal-coated fiber tip apex at liquid-air interface was measured. The intensity of the output radiation was strongly depending on the relative position of the tip to a liquid-air interface and varied with surface fluctuations. This phenomenon permits in-situ real-time investigation of nano-metric vibrations of the liquid surface and provides a basis for development of various origin ultrasensitive vibration detecting sensors. The described method can be used for detection of week seismic vibrations.

Keywords : fiber-tip, liquid-air interface, nano vibration, opto-mechanical sensor
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