

Abstract Submitted  
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**Measuring the resonant vibration of a sessile droplet using MEMS based cantilevers** THANH-VINH NGUYEN, KIYOSHI MATSUMOTO, ISAO SHIMOYAMA, Univ of Tokyo — We directly measure the normal force distribution on the contact area during the 1<sup>st</sup> mode resonant vibration of a droplet using an array of MEMS based cantilever. The measurement result shows that the normal force change is the largest at the periphery of the contact area. The ratio between the amplitude of the normal force change at the periphery of the contact area over that at the center of the contact area was approximately 20 times, in the case of 1.8  $\mu\text{L}$  water droplet whose equilibrium contact angle is 140 degrees. We also demonstrate a method to estimate viscosity based on the measurement of the droplet vibration using MEMS cantilevers. The proposed method is able to estimate viscosity using less than 3  $\mu\text{L}$  sample and has a simple operating principle. We believe that this method is suitable for point-of-care testing and characterization of chemical and biological solutions.

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