

# Capillary Force Disturbances in Submerged Robotic Micromanipulations

Authors

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Description

The objective of this article is to analyse the impact of liquid surface tension on force measurement in submerged micromanipulations. On the one hand, at the present, mechanical characterization of biological objects in biological liquid has significant interest. On the other hand, the reduction of the surface force, and adhesion forces in a submerged medium could be a good approach to perform reliable artificial objects micromanipulations. In both cases, the micro-nano force measurement in a liquid is a great challenge. In case of a force sensor placed out of the liquid, the measurement is disturbed by the liquid surface tension. This article proposes an analysis of the disturbance of the surface tension on the force measurement. Some design rules are proposed to reduce disturbances. We show that the major disturbances are induced by the contact angle hysteresis and a complete method is proposed to calculate ...