



DEPARTMENT OF MECHANICAL ENGINEERING  
AND  
MEDICAL ENGINEERING PROGRAMME

SEMINAR

**Online**

**Title:** Measurement of cellular forces through elastic micropillars and nanodiamond nitrogen-vacancy centers

**Speaker:** Mr. YANG Hanbo (MPhil candidate)  
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**Date:** 30 April, 2021 (Friday)

**Time:** 3:30 p.m.

**Zoom Link:** 1) Link to join the meeting:

<https://hku.zoom.us/j/96469760668?pwd=bURqNWl0RjlSQWlmUzV4cTJlENllpdz09>

2) Meeting ID: 964 6976 0668

3) Password: 666666

**Abstract:**

The rotation of an object can be tracked with a set of three-degrees-of-freedom (3-DoF) rotation, namely, roll, pitch, and yaw. In recent years, the concept of utilizing fluorescent nanodiamond nitrogen-vacancy (NV) centers in tomographic vector magnetometry to track nano-scale 3-DoF rotation has received increasing attention. The NV center is a kind of impurity in diamond where 2 carbon atoms are replaced by a nitrogen-vacancy whose orientation can be detected by its luminescent signals under excitation. A promising application such technology is the measurement of cellular forces. It is widely known that, in order execute biology duties such as migration and proliferation, cells need to establish stable adhesion with outside and then exert contractile forces (typically in the pico- to nano-newton range) to probe their micro-environment. However, how to accurately measure such forces, especially the component normal to the cell-substrate interface, remains challenging. In this talk, I will introduce our plan to combine NV sensing with elastic micro-pillar arrays to quantify the traction force generated by cells. Specifically, I will explain the working principle of this approach as well as discuss our current progress. Some preliminary results will also be presented.

ALL INTERESTED ARE WELCOME

For further information, please contact Dr. Y. Lin at 3917 7955.

Research area: Biomedical Engineering