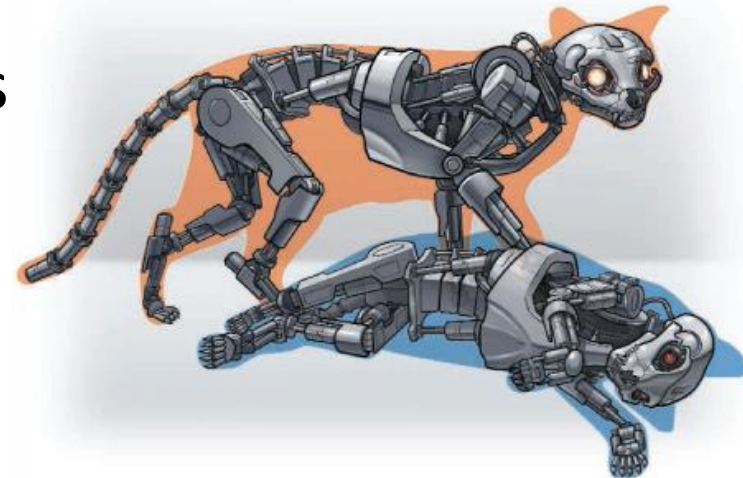


# Rob Knobel

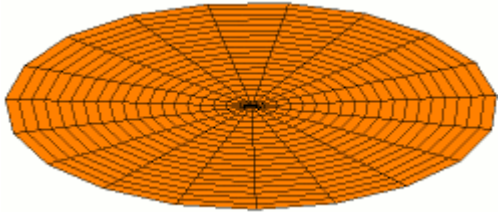
## Queen's Engineering Physics

My group is the heaviest user of NFK – growing and characterizing materials, fabricating devices, and making sensitive measurements.

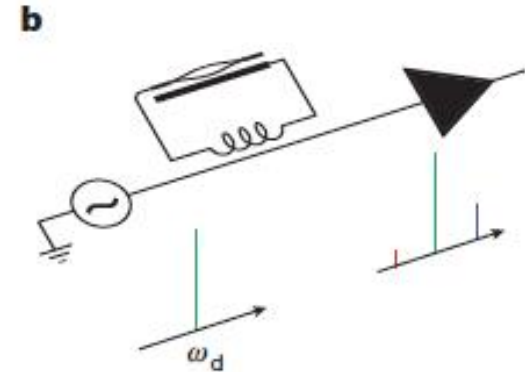
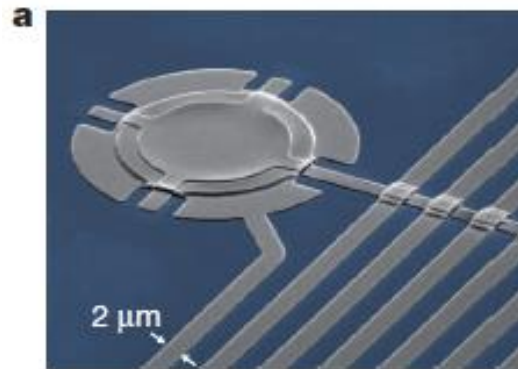
- Micro- and Nano-fabrication
- Nano-mechanical systems
- Graphene and other 2D materials
- Microwave electronics
- Quantum mechanics



# Nanomechanics

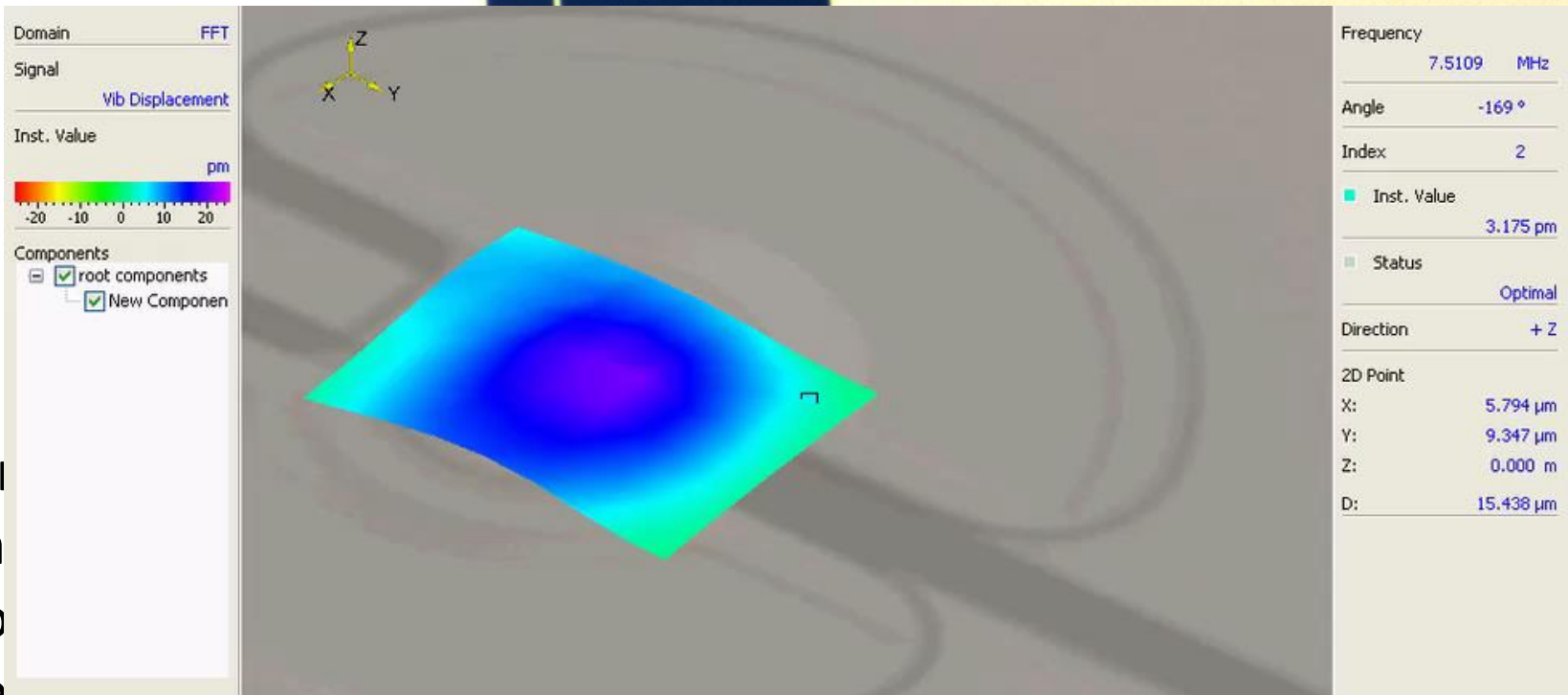


A vibrating membrane is the simplest mechanical system. As the membrane vibrates at **higher frequency and lower temperatures**, it should eventually behave like a **quantum system**. Such a membrane would be a great sensor, a component of quantum computers, and a test of fundamental physics.



# Nanomechanics

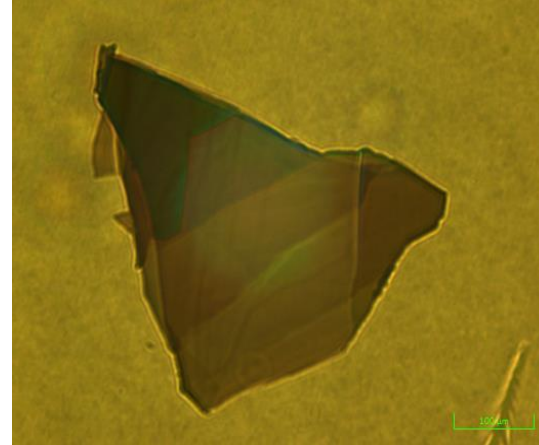
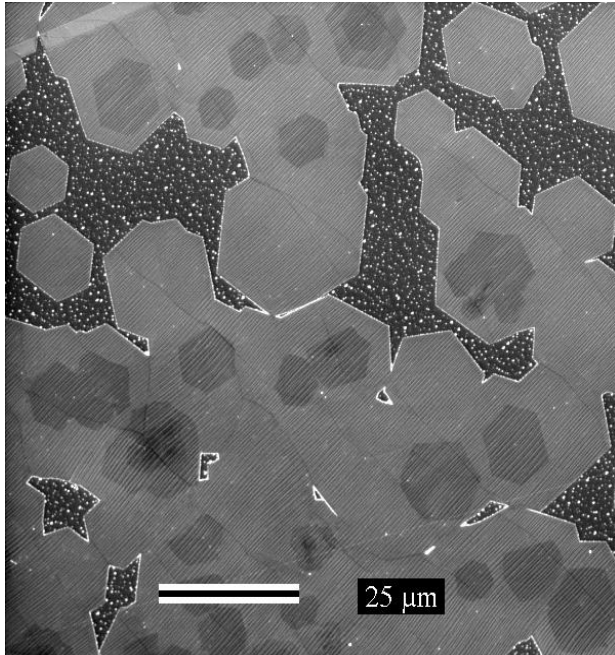
## Aluminum microwave



G  
m  
to  
resonator.

# Materials

Growth of very high quality single-layer graphene by CVD. A scalable method for applications.



Exfoliated  
NbSe<sub>2</sub>  
membrane