

Technical University of Denmark



## FABRICATION AND CHARACTERIZATION OF MICRO RESONANT CANTILEVERS WITH INTEGRATED FLUIDIC CHANNELS

Khan, Faheem; Dohn, Søren; Davis, Zachary James; Boisen, Anja

*Publication date:*  
2011

[Link back to DTU Orbit](#)

*Citation (APA):*

Khan, F., Dohn, S., Davis, Z. J., & Boisen, A. (2011). FABRICATION AND CHARACTERIZATION OF MICRO RESONANT CANTILEVERS WITH INTEGRATED FLUIDIC CHANNELS. Abstract from PhD NANO 2010 - Workshop for Doctoral Students in Nanoscience and Nanotechnology, .

**DTU Library**  
Technical Information Center of Denmark

---

**General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

# FABRICATION AND CHARACTERIZATION OF MICRO RESONANT CANTILEVERS WITH INTEGRATED FLUIDIC CHANNELS

M.F. Khan, S. Schmid, S. Dohn, Z. J. Davis, A. Boisen  
Department of Micro- and Nanotechnology, Technical University of Denmark  
DTU Nanotech, Building 345 East, DK-2800 Kongens Lyngby, Denmark  
e-mail: [faheem.khan@nanotech.dtu.dk](mailto:faheem.khan@nanotech.dtu.dk)

Micro and nano cantilevers have become of increasing interest to detect bio molecules/particles in aqueous solutions. But immersing cantilevers into liquid highly degrades their performance due to viscous damping of the fluid. In our work we describe fabrication and characterization of cantilevers with integrated micro fluidic channels which are fabricated on top of the cantilevers. To detect molecules or particles, the fluid is passed through the fluidic channels. The change in resonance frequency of the cantilevers can be translated in density of the fluid or presence of particles in the fluid. This approach largely helps in reducing viscous damping and additionally very small volume of sample (2  $\mu\text{l}$  -5  $\mu\text{l}$ ) is required to be tested.

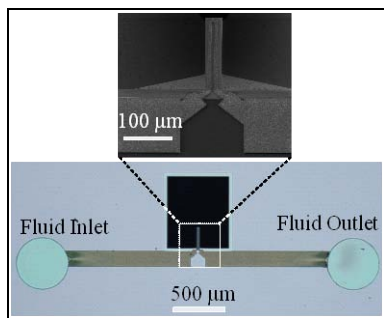


Figure 1. Micro cantilever with integrated fluidic channel

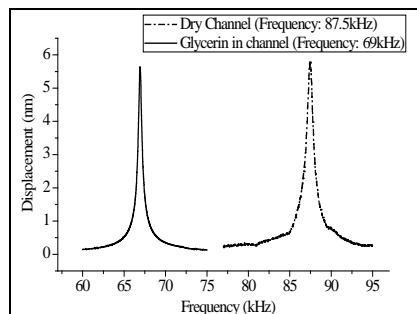


Figure 2. Frequency shift due to presence of water-glycerin solution in the channel.