Magnetic Nanocilia for Microfluidic Flow Sensing

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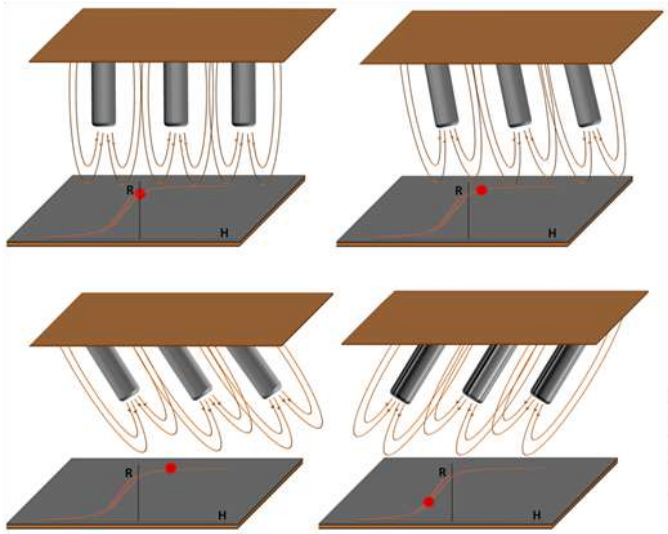
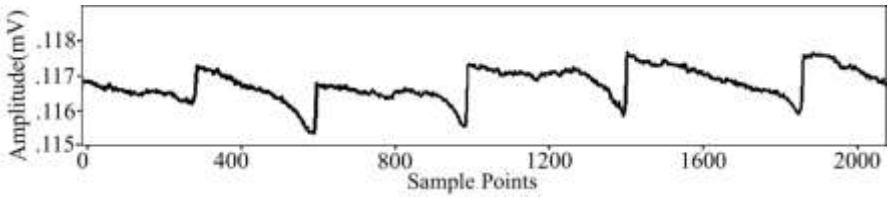
- **This work focuses on fabrication of:**
  - Cobalt nanocilia flow sensors for flow sensing in microfluidic channels
  - Sensors are designed by suspending an array of electrodeposited Co nanowires above a GMR sensor. Upon actuation, wires bend and the changing magnetic field is detected by the GMR sensor

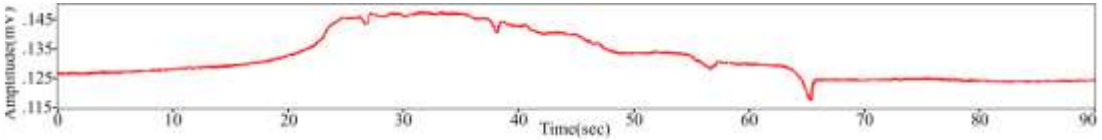


Co nanocilia suspended above giant magnetoresistive (GMR) sensors

- **Results and Observations**:
  - Output of the sensor was obtain via voltage measurements over a Wheatstone bridge utilizing a Labview interface.
  - Initial data showed the response of pulsed flow (top) and a smoothly changing flow using syringe –injection into a microfluidic channel.



Detecting short pulses of flow



Detecting flow from 0ml/min to 6ml/min and back with a few pulses