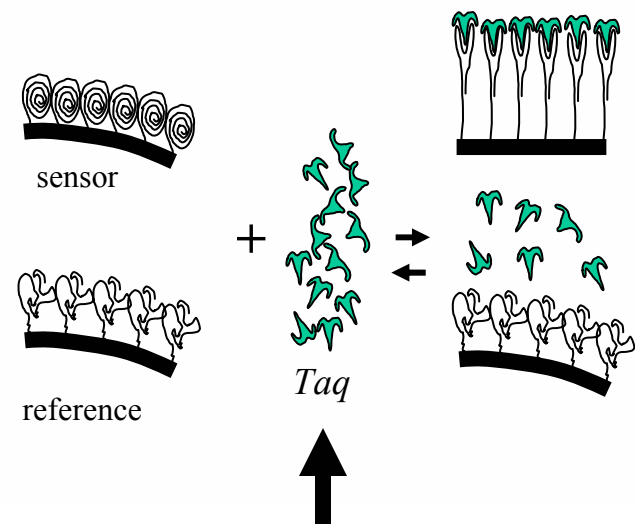
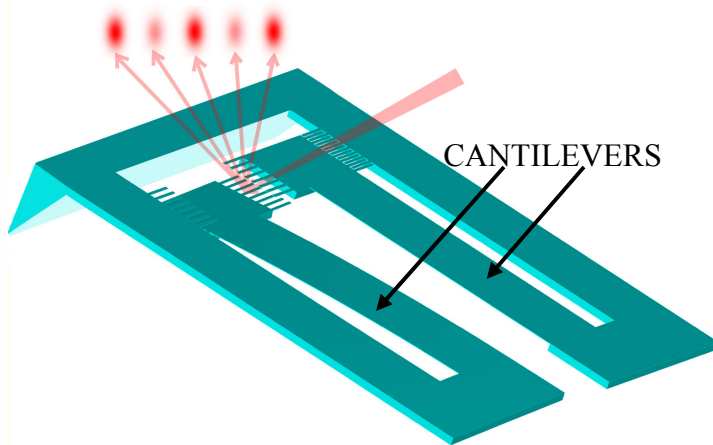


Nanomechanical Detection of Proteins

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This project comprises detection of proteins using a micromachined sensor. The sensor has two adjacent cantilevers that form a **sensor=reference** pair, whereby only the sensor cantilever is functionalized with receptor molecules specific to the molecules to be detected. The reference cantilever is blocked with non-responsive molecules. Binding of target proteins on the sensor cantilever results in nanoscale bending of this cantilever with respect to the reference cantilever. The relative i.e. differential deflection between the two cantilevers is detected optically using a diffraction grating fabricated between the tip areas of the two cantilevers.

The plot (right) shows the response to the presence of Taq DNA polymerase. For this, the sensor cantilever was functionalized with aptamers selected for taq, and the reference cantilever was blocked with single-stranded DNA (ssDNA). Exposure to a non-specific protein (thrombin) yields no response. Also, coating both cantilevers with ssDNA yields no response.

