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Fiber-top cantilevers: micromachined sensors on the tip of optical fibers

Fiber-top technology (Iannuzzi et al., patent filed) relies on the idea of fabricating tiny mechanical moving parts (e.g., a cantilever) directly on the tip of optical fibers. Light coupled from the opposite end of the fiber allows remote detection of any tiny movement of those parts and, hence, any physical or chemical event that has caused that movement. On the basis of this principle, it is possible to design all-optical sensors for the most wide variety of applications, ranging from atomic force microscopy to vibration monitoring, from magnetic field measurements to curiosity driven experiments in physics and biophysics. In this talk I will review what this technology has produced over the last six years, going from the early development stage to the most recent results and an outlook on future applications.