

## **Pushing, pulling and prodding; light as our hands in the micro-world**

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Optical microscopes have been central to much of the science performed on micro- and nanosystems, offering a way to measure many quantities in a noninvasive way. However, we can also use light to affect microscopic samples in more active ways, for example exerting forces and torques on microstructures using optical tweezers or creating sharp thermal gradients through local heating. This seminar will look at some developments in holographic optical tweezers technology and the microscopy that goes with it, enabling the use of microfabricated tools to provide a sense of touch as well as vision in a microscope. It will also touch on the use of thermal forces to control larger systems where light is used to guide chemical self-assembly, producing inorganic microtubes that can be steered and connected into networks. Finally, some of the other work in the Nanophotonics group at Cambridge will be discussed, where optical effects are confined into even smaller dimensions using metallic nanostructures.