

### Electromagnetically Induced Actuable Nanorod

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Actuators based on high-density array of nanorods have been investigated recently to mimic nature's movement. Fine hairs can drive microorganisms to move, and the cilia of the bronchial tubes in human body can transfer mucus and foreign substance through ciliary activity. They also could be used in MEMS, microfluidics, micro-scale mixer or micro-robot system.

In this study, we fabricated actuators based on high-density array of cobalt (Co) nanorods to mimic naturally observed phenomena. High-density array of Co nanorods were fabricated inside the porous anodic aluminum oxide (AAO) membrane on a conducting substrate by using electrodeposition of Co precursor. The diameter and height of Co nanorods were controlled by using different diameters of AAO and electrodeposition times. Nanorod was actuated depend on current of electrode and this movement was observed by confocal laser scanning microscopy. These nanorod arrays could be employed for micro-robots, circuits, and sensors.