

# Trapped micro-cylinders act a bit like neurons

December 20 2010

---

Researchers from TU Delft's Kavli Institute of Nanoscience and the Institut Non Linéaire de Nice, have shown that certain physical properties of rotating microscopic cylinders resemble those of communicating neurons, for example.

Both the micro-cylinders and the [neurons](#) are 'excitable', i.e. they respond to an external disturbance by producing a pulse (e.g. a voltage) of a given, fixed size. The results of this study was published online on the *Nature Physics* website on December 19th.

Simultaneously, the researchers have shown that the rotating micro-cylinders can detect the presence of microscopic particles in liquid. This is because the presence of such particles in the vicinity of a rotating micro-cylinder produces a clearly measurable disturbance in the torque experienced by the cylinder. This provides a means of detecting, counting, or separating cells (or other microscopic particles) in liquids.

For the purposes of this study, the researchers employed optical torque tweezers. This unique instrument is capable of measuring both the force and angular momentum exerted on microscopic objects, including biological molecules such as DNA.

Provided by Delft University of Technology

Citation: Trapped micro-cylinders act a bit like neurons (2010, December 20) retrieved 2 May

2024 from <https://phys.org/news/2010-12-micro-cylinders-bit-neurons.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.