

Molecular Motors – A Different Kind of Transport

Winfried Teizer

WPI Advanced Institute for Materials Research, Tohoku University, Japan

Department of Physics and Astronomy and Department of Materials Science and Engineering,
Texas A&M University, USA

Nature has generated sophisticated and complex molecular motors, employed for nanoscale transport at the intracellular level. As a complementary tool to nanofluidics, these motors have been envisioned for nanotechnological devices. In order to pave the way for such applications, a thorough understanding of the mechanisms governing these motors is needed. Because of the complexity of their in-vivo functions, this understanding is best acquired in-vitro, where functional parameters can independently be controlled. I will report on work that studies and harnesses the transport properties of molecular motors on functionalized structures of reduced dimensionality, such as carbon nanotubes (Figure below),ⁱ lithographically designed electrodes,ⁱⁱ microwiresⁱⁱⁱ and loops.^{iv} In addition, I will show recent results that demonstrate the use of molecular motors in investigating neurodegenerative diseases^v and the dynamics of cluster formation in active elements.^{vi}

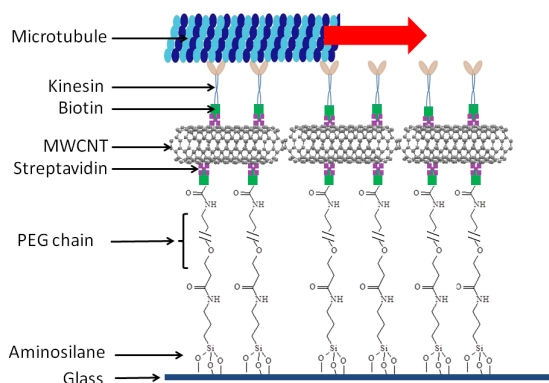


Figure: Microtubule transporter on a carbon nanotube nanotrack.

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