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Biomotor-functionalized Nanowires for Nanobio-mechanical Applications DONG SHIN CHOI, NANO Systems Institute, Seoul National University, KYUNG-EUN BYUN, Department of Physics and Astronomy, Seoul National University, EUNHEE CHO, MOON-SOOK LEE, Samsung Electronics Co. Ltd., SEUNGHUN HONG, Department of Physics and Astronomy, Seoul National University — Protein motors such as actomyosin have shown the possibility as a building block for bio-inspired nanomechanical applications such as protein motor-based nanoscale engines. For such applications, it is crucial to combine protein motors with inorganic nanostructure such as nanowires. However, it has been difficult to functionalize nanowires/nanotubes with biological motors due to the incompatibility of such nanostructures with biomotors. Herein, we present a method to functionalize nanowires with biomotors while maintaining their functionalities. Significantly, we successfully demonstrated various motility assays using biomotor-functionalized nanowires, such as the delivery of nanowires functionalized with actin filaments on solid substrates.

Dong Shin Choi
NANO Systems Institute, Seoul National University

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