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**Construction of Quantum Dot Micro/Nano-track as a Seedbed for Kinesin Motor Proteins** K. KIM, WPI-AIMR, Tohoku University, Japan, A. L. LIAO, WPI-AIMR, Tohoku University, Japan; Materials Science and Engineering, Texas A&M University, A. SIKORA, D. OLIVEIRA, M. UMETSU, T. ADSCHIRI, WPI-AIMR, Tohoku University, Japan, W. HWANG, Materials Science and Engineering; Department of Biomedical Engineering, Texas A&M University, W. TEIZER, WPI-AIMR, Tohoku University, Japan; Materials Science and Engineering and Department of Physics and Astronomy, Texas A&M University — Kinesin is a motor protein engaged in motion on microtubules. It is involved in various subcellular processes such as cell division and transportation of intracellular cargo. The system of (1) kinesin, (2) *in-vitro* polymerized microtubules and (3) specifically functionalized quantum dots has been employed to realize kinesin motility *in-vitro*. Selective attachment of the kinesin motor protein to a surface is an important prerequisite for the development of artificial bio-engineered devices utilizing these dynamic processes in *in-vitro* systems. We will elucidate the feasibility of using a micro/nano-track paved with streptavidin coated quantum dots as fluorescently traceable linkers for biotinylated kinesins. This will be based on results from fluorescence microscopy observations of recent motility assays and quantum dot distributions observed on structured PMMA (polymethyl-methacrylate) surfaces patterned by electron beam lithography.

K. Kim
WPI-AIMR, Tohoku University, 2-1-1 Katahira, Aoba-ku, Sendai 980-8577

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