Abstract Submitted
for the TSF11 Meeting of
The American Physical Society

In Vitro Microtubule and Motor Protein Motion on Glass A.L. LIAO, WPI-Advanced Institute of Materials Research, Tohoku University, Japan and Materials Science and Engineering, Texas A&M University, A. SIKORA, D. OLIVEIRA, K. KIM, M. UMETSU, T. ADSCHIRI, WPI-Advanced Institute of Materials Research, Tohoku University, Japan, W. HWANG, Materials Science and Engineering; Department of Biomedical Engineering, Texas A&M University, W. TEIZER, WPI-Advanced Inst. of Materials Research, Tohoku University, Japan; Mat. Science and Engr. and Dept. of Physics and Astronomy, Texas A&M University — The intracellular microtubule associated protein kinesin uses adenosine triphosphate (ATP) as an energy source for unidirectional and processive motion on a microtubule filament. In a cell, kinesin motor proteins function as transporters for organelles, macromolecules and various particles. To study the related processes *in vitro*, we have performed rhodamine-labeled microtubule gliding assays and kinesin-coated quantum dot motility assays on glass surfaces. Motility is observed by fluorescence microscopy. Results from these two assays, as well as the effect of ATP concentration on kinesin velocity will be presented. We will discuss how we use these assays for the manipulation of microtubules on a surface, thus enabling specific particle distribution by kinesin.

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Date submitted: 12 Sep 2011 Electronic form version 1.4