An Example of Imaging and Force Measurements at the Nanoscale with the SFA/FRET: SNARE Complex Formation

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The nerve signal passes between the neurons through the transfer of neurotransmitters at the synapse. Neurotransmitters are initially encapsulated in synaptic vesicles in the neuron. The release of neurotransmitters requires the fusion of the membrane of the synaptic vesicle with the plasma membrane. It has been found that SNAREs are the key protein to induce membrane fusion through the formation of SNARE complex. We combined Foster Resonance Energy Transfer (FRET) with Surface Force Apparatus (SFA) to simultaneously obtain structural information on SNARE complex assembly at the molecular level and force measurements while keeping the membranes at controlled distance.