MANIPULATION OF NANO-OBJECTS BY A FORCE-FEEDBACK HAPTIC INTERFACE

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In near upcoming we have much to learn about the nano-scale world, including how properties such as mechanical properties, electrical transport, and dynamics are affected by the atomic scale structure of the nano-objects and their interfaces. Nanomanipulation provides exciting insight into these problems by allowing us to probe individual nano-objects with great facility, and to combine property characterization with structural information. Advanced user interfaces will continue to play a critical role in making experiments more transparent to the user, and enabling the scientist to be virtually in the nano-scale world. The current work presents an integration of a force-feedback haptic interface SPIDAR (SPace Interface Devices for Artificial Reality) with its controller, a Scanning Probe Microscope (SPM) and a PC with high graphic facilities. This setup allows the scientist to be immersed in real time in the nano-scale world. The benefits of this are: improved perception of 3D structures, more effective exploration of the sample, the ability to observe dynamic processes in near real time, and the ability to interactively modify the surface.

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