

In this talk, will be reviewed some applications of a scanning electron microscope (SEM) in the fields of nanolithography, nanomanipulation and characterization of nanostructures at the NEST Laboratory of Scuola Normale Superiore in Pisa. More in details, some recent results obtained on nanodevices fabricated by e-beam lithography will be shown, employing a pattern generator attached to a standard "Gemini" column as nanolithographic tool. Moreover, will be presented some preliminary results on nanomanipulation of semiconductor nanowires by employing "nanobots" inside the SEM vacuum chamber, exploiting the high resolution imaging capability of the system. Finally, SEM characterization at the nanoscale on various kind of structures and materials will be shown, both by standard secondary electron imaging and by energy-dispersive X-ray spectroscopy (EDS) on semiconductors and metals and by "charge compensation mode" on insulators and biological samples.