Ion beam doping of semiconductor nanowires

Semiconductor nanowires are of major importance within the area of nanotechnology, and are usually synthesized using the so-called vapor-liquid-solid (VLS) growth mechanism. Controlled doping, a necessary issue in order to realize advanced devices, is an unsolved problem and an extremely difficult task if using such a growth mechanism. We use an alternative route for modifying either the electrical, optical or magnetic properties of semiconductor nanowires: ion implantation. However, one cannot simply adapt bulk implantation parameters when the ion range is comparable to the size of the nanostructures. Therefore, we developed a new simulation tool in order to account for this. I will present the program iradina, as well as several recent studies on the modification of semiconductor nanowires by ion beam doping.