Towards Optical Spin Injection
into GaAs Nanowires

Nanowires are promising structures for a variety of applications ranging from micro- and optoelectronics to spintronics. In this talk I will present the results of my diploma thesis “Optical Spectroscopy on freestanding GaAs Nanowires”, where methods for an all-optical creation and detection of electron spin polarization in GaAs nanowires were developed. Thereby, a technique for the investigation of spin dynamics in nanowires may have been found.

Moreover, the unusual crystal structure of GaAs nanowires will be discussed. The crystal lattice not only plays an important role for the optical spin orientation but also has a strong influence on the electronic structure. Connections between the crystal structure and luminescence emission spectra will be shown.