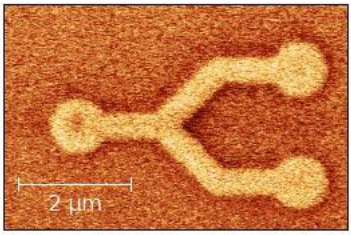
# Bachelor Thesis Overview

## Controlled Domain Wall Propagation in Co/Pt Nanowires for Nanomagnetic Logic Applications


**Abstract**




Nanomagnetic Logic is promising to complement CMOS-Logic using both logic and memory functions. The magnetic layer is a Cobalt/Platinum multilayer with perpendicular magnetisation. For realizing nanomagnetic logic applications, the signals which are represented by the magnetization state of the magnets, need to overcome distances between several points in the circuit. This can be done by coupled dot chains. In this thesis these dot chains were replaced by single structures of magnets with single-domain behaviour, for containing a more reliable signal-propagation. Several shapes where processed at different Co/Pt multilayers, structured with FIB-irradiation and analyzed with respect to their magnetic behaviour when exposing them to an external field. The domain wall nucleation und controlled propagation was realized by attaching weaknesses in the crystalline structure via FIB-irradiation. The processed dimensions of the structures reached from 2µm to 22µm in length and 1000nm to 200nm in width. Besides long dots, other forms like curves and fanout-structures were also processed and analyzed. Measurements were done using MOKE and MFM/AFM.


**Number One Result**

Controlled domain wall nucleation and propagation in magnetic nanowires and experimental demonstration of fanout structures for perpendicular NML.


**Supervisors:**
**Dipl.-Ing. Stephan Breitkreutz**
**Prof. Dr. rer. nat. Doris Schmitt-Landsiedel**