

Short description written by each ESR and ER

Project acronym: MULTIMAT
Project ID (6 digits): 505226
Project Participant: University of Glasgow

Name	Nationality	Previous place of work / education	Start date	Duration (months)	Category ESR/ER	Place	Country
Wiese, Nils	German	Siemens AG; University of Bielefeld	16/06/06	24	ER	Glasgow	UK

Scientific background:

During my diploma thesis in physics at the University of Bielefeld (Germany), I specialised in electron beam lithography of sub-micrometer sized spin dependent devices and the magnetic and transport properties of these systems. These studies have been followed by my PhD that I did in a collaboration between Siemens Corporate Technology and the University of Bielefeld. In my PhD I have investigated the magnetic behaviour of magnetic elements for use in spin-electronic applications, like magnetic logic or magnetic memory devices. I am experienced in a wide range of experimental techniques and instruments, concerning sample preparation, magnetic characterisation, patterning processes and micromagnetic simulations.

Experiences (positive/negative):

It was possible for me to join the 4th MULTIMAT network meeting in Cambridge before the start of my contract. The meeting gave me a good opportunity to get to know researchers and their scientific interests. It was possible for me to initiate first contacts to other experimental groups, and will lead to my first secondment in January 2007.

Training:

In the first months of my contract I was introduced to the fabrication using the lithography facilities within the University of Glasgow. On the other side, I got an intense training on Transmission Electron Microscopy (TEM), and the magnetic imaging modes in particular.

Responsibilities in the network:

We are responsible to provide experimental input to the theoreticians inside the MULTIMAT network. Our data will be used to test existing analytical models of magnetism on a wider range of length scales than it has been possible before. Our results will help to extent and improve these models in future.

Research achievements:

I established an electron lithography process to pattern magnetic films down to sub-micrometer size. The resulting samples extend over a range of length scales of more than two orders in magnitude. A systematically study of the magnetic states in these multi-scale samples is currently carried out, using the existing high-resolution magnetic imaging techniques at our lab. Micromagnetic simulations have been used to calculate the magnetic states. However, they do not predict the correct magnetic behaviour for larger element sizes.