

Micro and nanolithography

Jakub Sadílek

CEITEC Brno University of Technology, Czech Republic

[*jakub.sadilek@ceitec.vutbr.cz](mailto:jakub.sadilek@ceitec.vutbr.cz)

In this practical session we will outline the basics of microfabrication of magnetic devices and structures. The students will go through multistep lithography process and will prepare a set of samples suitable for domain observation in Kerr microscopy as well as for magnetotransport measurements.

Outline:

The first 45 minutes will be devoted to an introductory part outside of the cleanroom and the rest of the practicals will take students to the cleanroom where they will go through the following tasks:

1. We will start with prefabricated chips on 2" wafer with contact pads and alignment marks
2. Spincoating of photoresist layer
3. Photolithography exposure of magnetic structures + development
4. Magnetic layer(s) deposition
5. Lift-off in organic solvents
6. Spincoating of photoresist layer
7. Photolithography exposure of electrical contacts + development
8. Lift-off in organic solvents
9. Final cleaning
10. Packaging

All students who successfully finish this practical will take their produced samples for further characterization (or as a remembrance item).

Recommended reading:

- [1] P. M. Martin (ed.), *Handbook of deposition technologies for films and coatings: science, applications and technology. Third edition.*, Amsterdam: Elsevier, 2010. ISBN 978-0-8155-2031-3.
- [2] S. Franssila, *Introduction to microfabrication. 2nd ed.*, John Wiley, 2010. ISBN 978-0-470-74983-8.