

Internship / Graduation Assignment

Optical techniques to explore the penetration of liquids into paper

General description

Océ, a Canon Group company, is an international leader in digital printing and document management for professionals. Océ has a long history in developing, manufacturing and selling printing technology. Our environmentally friendly inkjet based print technologies are water based. They are addressing a large diversity of media: paper, textiles, plastics, etc...

Considering the interaction between ink and paper, we can say that some liquids penetrate faster than others, the paper type playing an important role. Paper is a porous material and the paths for penetration of the liquid depend on the structure and geometry of the pores. Many aspects of the liquid penetration are known, others are not.

Optical experimental techniques applied to liquid penetration into paper

In this assignment, you are challenged to use several advanced optical techniques to explore the liquid penetration into paper. We are interested in determining the advancing speed of the liquid front as a function of liquid properties and paper characteristics. Two techniques that are available are 2-photon spectroscopy and coherence tomography. These techniques have been used in the biomedical realm to explore liquid penetration (for instance into tissue) and they offer a fair chance to study the penetration of liquids into paper. They are attractive because they offer high resolution, both in space and in time.

The goal of the project is to investigate if these techniques are suitable for studying liquid penetration in paper. The conditions for performing reliable measurements should be explored and the measurement accuracy that is attainable must be determined.

Qualification

For this assignment you are

- studying (Applied) Physics, Chemistry, Material Science
- looking for a challenging internship with a focus on applied science
- wants to develop advanced experimental skills
- able to survey such a project and work independently.

Are you interested in this assignment?

If you would like to know more about the assignment, please contact dr. ir. Jac Huyghe or dr. Sami Musa. This internship is a cooperation between TU/e and Océ Technologies. The experimental work will be performed at TU/e laboratories. If appropriate, additional experiments can also be performed at Océ R&D.

Moreover, Océ offers a student allowance of 400 euro/month and the travel cost or rent a room in Venlo up to 220 euro/month.