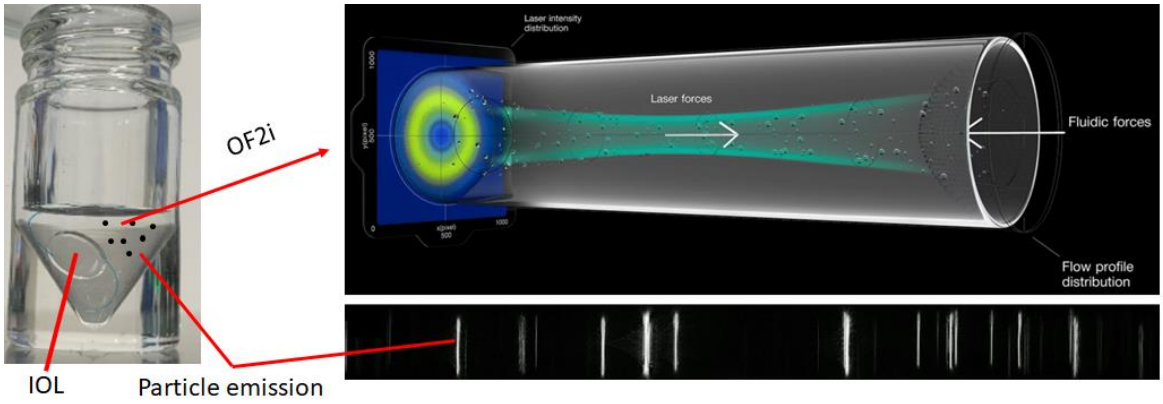
OF2i-A novel approach to Nanoparticle detection for the study of Intraocular-lenses

OptoFluidic Force Induction (OF2i) is a novel technique that is specialized for the detection of micro- and nanoparticles. It uses a powerful laser to trap particles in a micro liquid stream and observe their motion. This allows a price determination of the size of single particles and a very high sensitivity to pollutants such as nanoplastics. OF2i is developed by the local startup BRAVE Analytics and more detailed description can be found on their homepage (https://www.braveanalytics.eu/).

The aim of this thesis is to apply OF2i to analyze the particle emission of intraocular lenses (IOLs). IOLs are used during cataract surgery, the most common surgery in medicine with over 30 million operations a year. Understanding their particle emission might be a crucial step to further reduce post operation complications, such as the posterior capsule opacification (PCO). To this end a comprehensive study of common IOL types particle emission is done in this master thesis using a standard filtration and scanning electron microscopy (SEM) approach as well as the new OF2i-technique. At the end of the thesis two questions should be answered: Are there differences in the particle emission of different IOL-types? How does the novel OF2i-techinque compare to standard methods?



The thesis is embedded in the NanoVISION-project, an interdisciplinary cooperation between *FELMI-ZFE*, *Borkenstein & Borkenstein Fachärzt für Augenheilkunde & Optometrie* and *BRAVE Analytics GmbH*. By that this thesis in introduces the master student into the main techniques used (OF2i, SEM), as well as the topics of optics, particle analysis and ophthalmology.

The thesis will be hosted at FELMI-ZFE and the ideal applicant has a strong interest in experimental work and will receive a financial support of € 2700,- (€ 450 for 6 months).

Addressed to Master students from the following fields: **Technical Physics, Advanced Materials Science**, **Technical Chemistry**

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