Plan Overview

A Data Management Plan created using DeiC DMP

Title: PhD project: Modeling of complex acoustofluidic devices

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Template: DTU data management plan

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Project abstract:
In this PhD project by Nils Refstrup Skov (2016-19, supervisor Prof. Henrik Bruus) we document the gradual development of a numerical model intended to accurately model complex acoustofluidic microdevices consisting of a piexoelectric transducer attached to an elastic solid containing a microchannel filled with a microparticle suspension. The model grows from a simple 2D model containing few elements to a 3D model capable of modeling microdevices to scale. Along the development we verify the model predictions using analytical and experimental results on the acoustophoretic motion of the microparticles including the effects of acoustic radiation forces and streaming. We use the predictive powers of the model as a design tool to improve on existing microdevices and even creating an entirely new one.

ID: 2295

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Grant number / **URL:** N/A

Copyright information:

PhD project: Modeling of complex acoustofluidic devices

Data Collection

Describe the data that will be collected.

Data consists of computer scripts written in COMSOL, MATLAB, and Mathematica, and peer reviewed papers describing the use and results of running the scripts.

Describe any restrictions to the data.

No ethical or legal issues pertain to these data.

Data Storage

Describe the IT infrastructure to be used.

The scripts are developed on PC work stations situated at DTU Physics. The scripts are either run on the same work stations or on the DTU HPC system. Following the DTU Physics Data Policy, the scripts are stored and backed-up on DTU servers, the local work stations, as well as on USB disks. Access to the files at DTU Physics are limited to members of the Theoretical Microfluidics Group, headed by Prof. Henrik Bruus. The scripts are shared freely among the group members. Key scripts are published in our peer reviewed papers and BSc, MSc as well as PhD theses from the group available online at www.fysik.dtu.dk/microfluidics. No sensitive data is involved in this project.

Documentation

Describe the metadata to be associated with the data.

The metadata associated with our scirpts consist of the governing equations of the numerical models and a description of how this is interpreted and implemented. The metadata are availablea in our peer reviewed papers and BSc, MSc as well as PhD theses from the group available online at www.fysik.dtu.dk/microfluidics.

Describe the types of documentation that will accompany the data.

The documentation consist of plain text describing the scripts, the key script code, and some examples of full scripts. The documentation is availablea in our peer reviewed papers and BSc, MSc as well as PhD theses from the group available online at www.fysik.dtu.dk/microfluidics.

Data Sharing

Describe which data will be shared.

Key scripts are published in our peer reviewed papers and BSc, MSc as well as PhD theses from the group available online at www.fysik.dtu.dk/microfluidics.

Describe how the data will be shared for possible reuse.

Key scripts are published in our peer reviewed papers and BSc, MSc as well as PhD theses from the group available online at www.fysik.dtu.dk/microfluidics.

Long-term Preservation

Describe how data will be archived beyond the scope of the research project.

Following the DTU Physics Data Policy, the scripts are stored and backed-up on DTU servers.