

# Weekly task: Experiments with complex fluids

Deadline for submission: Sat 15 Nov 2014, 11:59 p.m.  
Format for videos: if possible please use: H264 codec/ mp4-movies  
Format for pictures: png, jpg, pdf



## Experiment 1

# A shear thickening liquid

# Experiment 1: A shear thickening liquid

For the first experiment „A shear thickening liquid“ you need:

- 56g starch
- 100ml water
- some kind of bin and a spoon

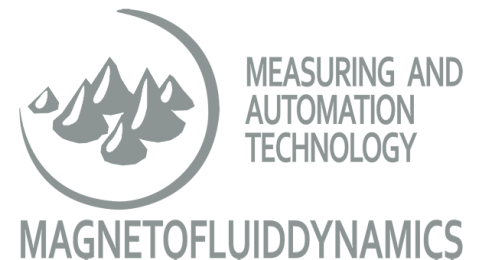
## Step 1

Mix both ingredients and stir them. Be patient while stirring since increasing mechanical load will increase viscosity dramatically and fast stirring will thus not work.

## Step 2

Add stepwise small amounts (2ml) of water and observe what happens.

Take pictures or small videos to document the changes of the fluids behaviour and describe them in your submission. Submit your result via the submission form.



## Experiment 2

# The shape of a free liquid jet

# Experiment 2: The shape of a free liquid jet

For the second experiment „The shape of a free liquid jet“ you need:

- 2 syringes
- water
- shower gel or dishwashing detergent

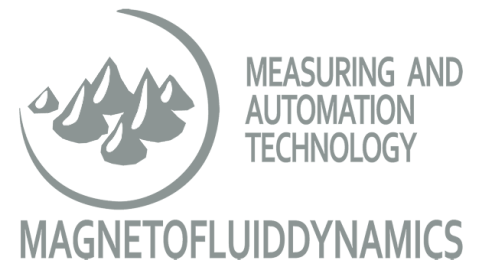
## Step 1

Put some water in the syringe and press the water out of the syringe. Observe what happens at the nozzle of the syringe.

## Step 2

Afterwards fill the syringe with the shower gel and press the shower gel out of the syringe. Vary the velocity of the jet. Observe what happens at the nozzle of the syringe.

Take pictures or a small video of your experiments and submit your result via the submission form.



## Experiment 3

# A bouncing liquid stream

# Experiment 3: A bouncing liquid stream

In the third experiment „A bouncing liquid stream“ you will observe one of the most spectacular effects in rheology: The so-called Kaye-Effect.

You need:

- shower gel or dishwashing detergent
- a dish (or something comparable)

## Step 1

Place the dish in a tilted position (e.g. by leaning it against a cup) close to a sink

## Step 2

Let the fluid slowly (do not press on the bottle!) rinse on the dish

If everything works well you'll see the fluid forming a heap from which the stream jumps out. Probably you'll have to change the fluid, the height from which the fluid falls down (15cm are usually a good starting point) or the fluid's temperature if things don't work immediately.

Take small videos or pictures (that's a bit difficult here) of your experiment and submit your result via the submission form.



# Good luck with your experiments!

The solutions for the experiments will be available on Sun 16 Nov 2014 via <http://mooc.tu9.de/>

