

January 2020

Manual DWR – Dataprocessing

1. Unzip the folder 'DWRDataProcessing'
2. Open MATLAB
3. Go to the directory where you unzipped 'DWRDataProcessing'
4. Type "DWRDataProcessing" in the command window
5. The Graphical User Interface appears
6. Select your type of measurement (simulations for 20 ml of upper phase)
7. Order your data in an xls-file as indicated below (see also example xls-file)
8. Press 'Process Data'
9. The simulation will start now and if finished, the corrected data will be written away in the same Excel-file (if run on a PC) or in a separate csv-file labeled 'out' (if run on a unix system).
10. In the Excel file you can find the corrected surface elasticity (η'') and viscosity (η') values

Layout of Excel-file:

On the first row you can place the titles, the data will be captured starting from the second row. The parameters must be ordered in columns, so one line represents one datapoint. Some parameters only need to be filled in for continuous shear (CS) experiments, others only for oscillatory (O) experiments. If the parameter is not necessary for your type of experiment, just fill in zeros. Order of parameters (first one in first column, second one in second column,...):

1. Density of the lower phase in kg/m^3 (CS and O)
2. Density of the upper phase in kg/m^3 (CS and O)
3. Viscosity of the lower phase in Pa.s (CS and O)
4. Viscosity of the upper phase in Pa.s (CS and O)
5. Frequency in rad/s (O)
6. Angular amplitude in rad (O)
7. Angular velocity in rad/s (CS)
8. Software surface elasticity η'' in Pa.m.s (= start value for iteration) (O)
9. Software surface viscosity η' in Pa.m.s (= start value for iteration) (CS and O)
10. Oscillation torque (sample) in μNm (O)
11. Phase angle in degrees (O)

Remarks:

- Especially with lower and upper phase, the simulations might take some time, so a calculation time of 20 minutes per data point may be possible
- If you have questions about the code, contact Damian Renggli (damian.renggli@mat.ethz.ch)