Preliminary operations

1. Switch on the pc and all the electronic devices;
   - Open Matlab
   - Open the Process Manager (CTRL-SHIFT-ESC) and set matlab's priority to High
   - Surf to your working directory and launch `ISR_INIT`
2. Wash carefully the trough, the barriers and the glass channel;
   - wash every component unisng a soapy sponge;
   - rinse them out with warm water first, then with high-purity water;
   - dry everything with compressed air;
   - Additionally, put the glass channel walls into a KOH solution, in order to improve their cleanness; then, rinse them out with high-purity water and dry them.
3. Fix the trough into the ISR apparatus;
   - fix the barriers in their positions using the two correspondent screws;
   - connect the trough to the thermostat tubes, and select the temperature setpoint;
   - the trough must be perfectly horizontal, if not so, move the support screws;
   - put the channel position at the center of the trough;
   - fill the trough with either high-purity water (or buffer);
   - put the thermocouple into the subphase;
   - check that the 'KEPCO BIPOLAR OPERATIONAL POWER' is 'on';
   - check that the 'TTi POWER SUPPLY' 'O/P 1' is 'on';
4. Calibrate the Wilhelmy balance;
   - hook the Wilhelmy plate to the balance, immerse it in the subphase and wait until it is uniformly wet, using `ISR_isotherm` $\rightarrow$ `2`;
   - set offset and gain;
   - close the bulkheads;
5. Check subphase purity, by measuring a $\Pi - A$ isotherm on pure water
   - put the needle in the channel and launch the isotherm measurement (`ISR_isotherm` $\rightarrow$ `1`);
   - for the cleanness test isotherm, set the lever to 'Comp' and set the barriers electric engine speed to '150 a.u.' (you can see the speed only if the engine in 'on');
   - When the isotherm measurement is completed, open the barriers. If the subphase is not clean, repeat points 2-5.

6. Perform a quick calibration of the ISR apparatus.

   - launch `ISR_SETUP_NEEDLE`, center the camera on a needle edge and select a ROI;
   - launch `ISR_CALIBRATE` in order to calibrate the appraturs on clean water; a Voltage to Force conversion factor is obtained (it is saved in 'V2Ncalib_cron.dat');

Measurement

1. Spread the sample;

   - clean the syringe with exane;
   - spead the desired quantity of sample onto the water subphase;
   - wait 10-15 minutes to let the sample solvent evaporate;

2. Prepare the magnetic needle

   - extract the needle from the chloroform bath, using the permanent magnet in order to ensure complete magnetization;
   - put the needle inside the channel; launch `ISR_SETUP_NEEDLE` for visual inspection of the cleanness of the needle.

3. Compress the Langmuir film to the desired surface pressure;

   - set the 'Pressure/Area' value to your target;
   - set the barriers electric engine speed to the desired speed (20-40 a.u.) and switch the direction lever to 'Auto';
   - at the same time launch `ISR_isotherm` $\rightarrow$ `1` to measure the $\Pi - A$ isotherm (when it is finished, save it);

4. when the target pressure is reached, launch `ISR_SETUP_NEEDLE`, center the camera on a needle edge and select a ROI;

5. Edit `ISR_MEASURE.m` to select proper frequency and voltage ranges;

6. launch `ISR_MEASURE` and then save file as 'name_raw';

7. launch `ISR_ANALIZE` to perform data conversion to the dynamic shear modulus. Output file is saved as 'name_output';

8. Clean the trough

   - take the needle back into the chloroform bath;
   - put the Whilelmy plate in its bowl;
   - draw away the water/buffer;

9. If the measurement session is finished, launch `ISR_clean` and close Matlab