

# OPERATING THE DYNAPRO PLATE READER II DLS

CORE FACILITY USERS ONLY

THIS DOCUMENT IS A REFRESHER

DO NOT USE IF NOT TRAINED BY 106 STAFF

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# SAMPLE

- THE DLS IS NOT A PRECISE ESTIMATOR OF MW. IT ESTIMATES DISTRIBUTIONS AND THEIR VARIANCE.
- FILTER YOUR SAMPLE IMMEDIATELY BEFORE MEASURING. 0.02  $\mu\text{M}$ . YOU ARE UNLIKELY TO GET USEFUL DATA OTHERWISE.
- CENTRIFUGATION DOES NOT SUBSTITUTE FILTRATION. FILTER.

# LOAD SAMPLE

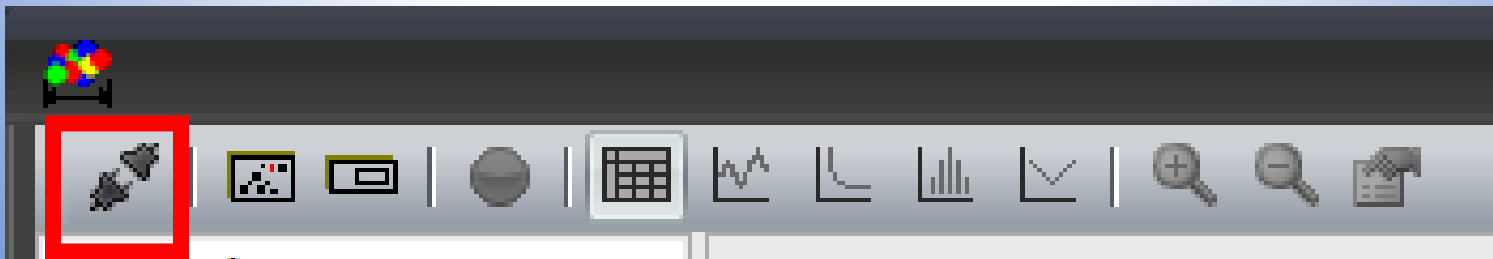
- USE GEL LOADING TIPS.
- MAKE SURE YOU ARE LOADING EMPTY WELLS.
- USING 30 TO 50  $\mu\text{L}$ , LOAD SAMPLE INTO A WELL BY PLACING THE TIP IN THE BOTTOM OF A WELL. DISPENSE SLOWLY TO 1<sup>st</sup> STOP.
- AVOID BUBBLES. REMOVE ANY THAT APPEAR.

# TURN ON THE INSTRUMENT

- FLIP THE SWITCH ON THE FRONT PANEL UNDER THE RIGHT SIDE.
- WAIT FOR THE MAIN CONTROL PANEL TO DISPLAY INSTRUMENT CONTROLS.
- THE MAIN PANEL IS A TOUCH SCREEN. CLICK “DOOR” TO LOAD YOUR SAMPLE.
- ONCE YOUR SAMPLE IS LOADED, PRESS THE SAME BUTTON AGAIN. DO NOT ATTEMPT A RUN UNTIL A GREEN INDICATOR NEXT TO THE DOOR BUTTON SAYS “CLOSED”.

# OPEN DYNAMICS

- CLICK THE ICON ON THE DESKTOP.
- IGNORE AND CLOSE ALL PROMPTS APPEARING IN THE PROGRAM.
- GO TO FILE → NEW.
- CLICK THE CONNECT ICON TO CONNECT TO THE INSTRUMENT.



- CLICK “EXPERIMENT DESIGNER” THEN “EDIT EXPERIMENT”.

The screenshot displays the 'Experiment Designer' interface. On the left, a tree view shows 'Exp1' with sub-items 'Instrument Profile' and 'Parameters'. The 'Parameters' section is expanded to show 'Experiment Designer', which is highlighted with a red box. Above it, 'Edit Experiment' is also highlighted with a red box. The main area is divided into several sections:

- Summary**: A list of experiment parameters including 'Experiment Type', 'Enable Auto-attenuation: Yes', 'Image of Each Well: Yes', 'DLS Acquisition Time: 5 s', 'DLS Acquisitions per Measurement: 5', 'Measure SLS: No', 'Replicate Measurements', 'Measurements per Well within a scan: 1', 'Wait Between Measurements within a scan: 0 min', 'Number of Scans: 1', and 'Wait Between Scans: 0 min'.
- Temperature**: A section with 'Start Temperature: 25 °C', 'End of Experiment', 'Set Temperature: 25 °C', and 'Laser On: Yes'.
- Progress**: A box showing 'Scan# 0 of 0', 'Current well: None, Current Measurement: 0 of 0', 'Current Temperature: unavailable', 'Elapsed Time: 0 minutes', and 'Estimated Time to completion: unavailable'.
- Graph**: A plot of Temperature (°C) vs Time (min) with a y-axis from 0.0 to 1.0 and an x-axis from 0.0 to 0.1.
- Well Plate**: A 9x24 grid of wells (rows A-I, columns 1-24) with a legend for 'Unselected wells' (white circle), 'Selected Measurements' (dark blue circle), and 'Selected Solvents' (light blue circle).

- SELECT “FIXED TEMPERATURE” THEN “NEXT”.

Experiment Designer

1 Experiment — 2 Well Selection — 3 Properties — 4 Review

Select an experiment

**Fixed Temperature**

Measure any number of wells one or more times at a single set temperature.


Continuous Temperature Ramp

Measure any number of wells, while slowly ramping the temperature.

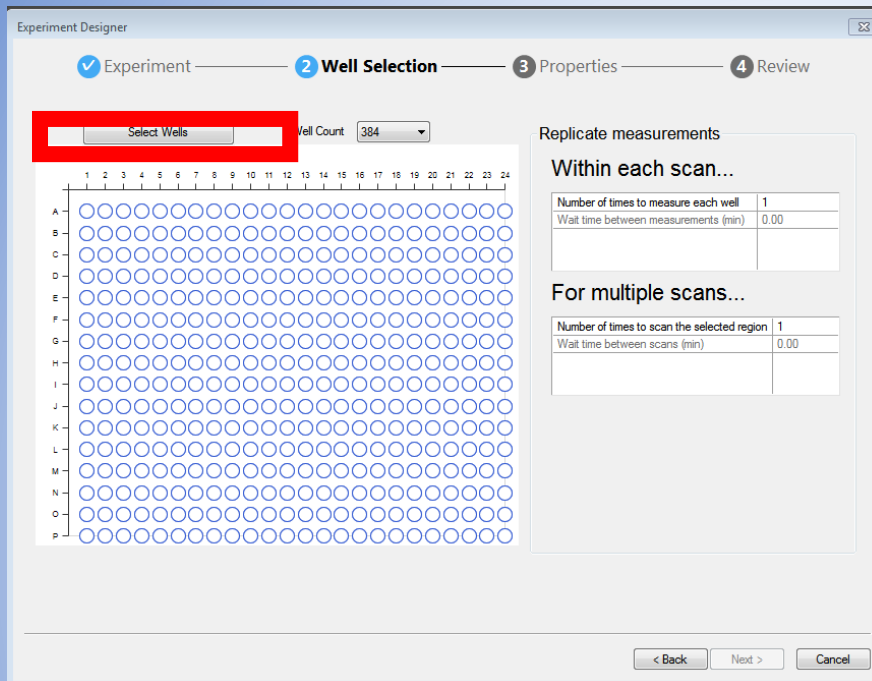
Discrete Temperature Increment

Static Light Scattering

Measure static light scattering



- SELECT “SELECT WELLS”



- A POPUP WINDOW WILL ALLOW YOU TO CLICK EACH WELL YOU WANT TO MEASURE.
- SELECTED WELLS WILL APPEAR BLUE.
- CLICK “OK”.



- CLICK THE “...” BUTTON.

✓ Experiment — Well Selection — **3 Properties** — 4 Review

**Experiment**

|                               |     |
|-------------------------------|-----|
| Enable Auto-attenuation       | Yes |
| Acquire an Image of Each Well | Yes |
| DLS Acquisition Time(s)       | 5   |
| Number of DLS Acquisitions    | 5   |
| Laser power (%)               | 20  |
| Attenuation level (%)         | 0   |

Help me decide... Optimization Calculator

**Label Measurements**

Name:  **1**

**Temperature**

|                           |        |
|---------------------------|--------|
| Starting Temperature (°C) | 25.000 |
|---------------------------|--------|

Total Number of Scans: 1  
Estimated time to completion: 0 minutes

**End of Experiment**

|                      |        |
|----------------------|--------|
| Set Temperature (°C) | 25.000 |
| Leave Laser On       | Yes    |

**Build Name**

Name:

Labeling Codes

Insert

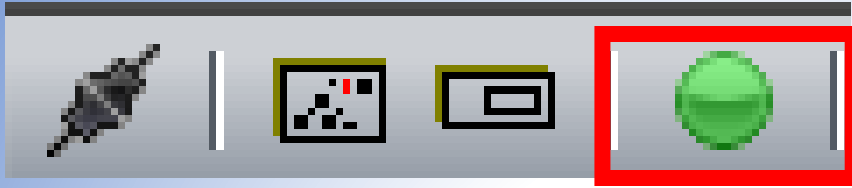
| Value                        | Units |
|------------------------------|-------|
| Row                          |       |
| Sample                       |       |
| Series                       |       |
| Set Temp                     |       |
| Sigma                        |       |
| Solvent                      |       |
| SOS                          |       |
| Span (D90 - D10)/D50         |       |
| Temp Model                   |       |
| Time                         |       |
| Time Stamp                   |       |
| Viscosity                    |       |
| Viscosity Calculation: Use I |       |
| from Sample Rh               |       |
| <b>Well</b>                  |       |

**3**

< Back **Next >**  **4**

- SELECT “WELL”.
- CLICK “OK” AND THEN “NEXT”.
- REVIEW AND CLICK “FINISH”.

- SELECT THE GREEN START BUTTON.



- A DIALOGUE BOX WILL APPEAR AND ASK YOU WHERE TO SAVE THE EXPERIMENT.
- SAVE YOUR DATA IN:  
C:/ → WYATT → WYATT DLS DATA → PI LAST NAME → YOUR NAME
- THE EXPERIMENT WILL RUN ON ITS OWN NOW. THE GREEN INDICATOR WILL TURN RED, YELLOW, AND GREEN AGAIN WHEN FINISHED.

# UNLOADING SAMPLE/ MACHINE OFF

- ON THE INSTRUMENT DISPLAY TAKE OVERMANUAL CONTROL BY CLICKING THE DOOR BUTTON AGAIN.
- THE DOOR WILL OPEN. TAKE OUT THE PLATE AND PROTECT THE BOTTOM. NO FINGERPRINTS OR SURFACES. SEAL STORE IN CLEAN AREA USING ORANGE PROTECTOR FOR THE BOTTOM.
- CLICK THE DOOR BUTTON AGAIN TO CLOSE THE DOOR.
- YOU CAN NOW TURN OFF THE DLS USING THE SWITCH ON THE FRONT RIGHT BOTTOM.

# DATA ANALYSIS

- DO NOT BELIEVE REPORTED VALUES WITHOUT BEING TRAINED TO ASSESS QUALITY DATA.
- CONTACT MICHAEL COLLAZO FOR TRAINING.
- TEXT (805) 982-0606.