

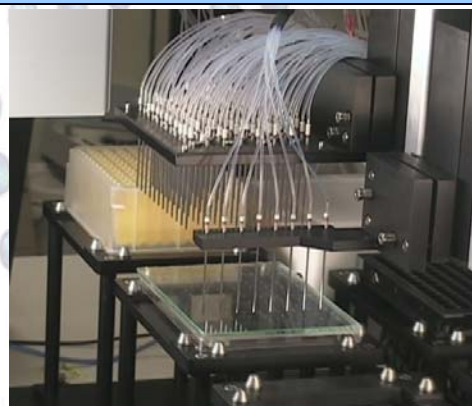
Protein Crystallography Application Overview

Innovadyne's protein crystallography dispensing platforms deliver high throughput crystallization screens and protein addition, for both sitting drop and hanging drop. The cost of producing purified protein for high-throughput crystallization screening is expensive, so the use of robots that can dispense the protein without much waste and without denaturation is crucial. The low volume, non-contact dispensing and fast cycle time requirements of high-throughput protein crystallography are an excellent fit for Innovadyne's technology.

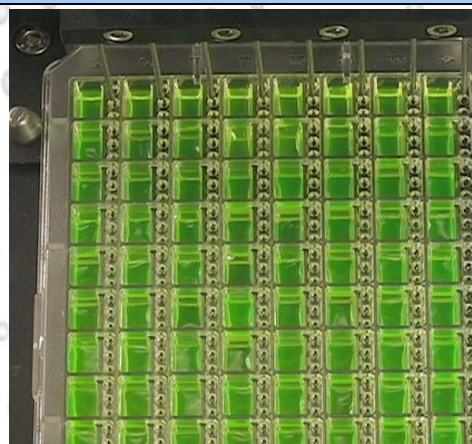
The Screenmaker 96+8 and Platemaker are top-of-the-line, fully automated platforms for protein crystallography experiments. They are the fastest platforms on the market for crystallization screen performance -- <45 seconds. Either can replace 3 liquid handling stations in one multi-faceted application -- screen creation, screen set up and screen performance. The Screenmaker and Platemaker platforms are also capable of preparing of fine and coarse mother liquor screens/grids. The Nanodrop is a medium priced, semi-automated benchtop platform for performing crystallography screens and protein addition. This system can aliquot as many as 4 different proteins or protein concentrations to any well on a crystal plate, and transfer the buffers from a deep well block to crystal plates.

In the application note "Combinatorial Screening for Protein Crystallization," developed in conjunction with the Lawrence Livermore National Laboratory, the LLNL scientists used a Screenmaker 96+8 in conjunction with a custom software system to automate stochastic combinatorial screening. The Screenmaker's performance parameters were optimized and validated for various liquid classes and dispense volumes.

Screenmaker Performing 8-tip Protein Addition (Following 96-Tip Mother Liquor Deposition)



8-Tip Mother Liquor Transfer to Drop Chambers with a Nanodrop



Application Notes

- **Combinatorial Screening for Protein Crystallization (M008)**

Technology Briefings

- **High Precision, Non-Contact Dispensing (M002)**
- **Low-Volume Dispensing with the Nanodrop (M021)**

Screenmaker/Platemaker Features

- High-end, fully automated turn-key system for protein crystallography experiments
- Fastest platform on the market for crystallization screen performance-<45 s
- Can replace 3 liquid handling stations in one multi-faceted application -- screen creation, screen set up and screen performance

Nanodrop Features

- "8 up" crystallography application
- <10 minute screens
- Reagent "cocktail" additions with 8 tips
- Protein dispense in single or multiple tips
- Includes environmental control to minimize evaporation
- Configurations for high pressure enabling the dispensing of highly viscous materials

Platforms

Item	Description	Plate Positions	8-Tip Head	16-Tip Head	96-Tip Head	Syringe Channels	1,4, or 8-Tip Additions to all Wells
10591	Nanodrop ExtY stage and fluidics	1	Yes	-	-	8	Yes
11638	Nanodrop II stage and fluidics	2	Yes	-	-	8	Yes
11164	Screenmaker 96+8	5	Yes	-	Yes	16	Yes
12027	Platemaker HTS	5	Yes	-	Yes	104	Yes

Software

Item	Description
11727	Nanobuilder
10591	Nanodrop GUI (for Nanodrop only)

Accessories

Item	Description
11193	Reagent refill system (Nanodrop)
-	Eppendorf tube chiller (all platforms)
-	Environmental chamber (Nanodrop)

Specifications (all platforms)

Return-To-Spot Accuracy	0.1 mm
Aspiration Range, 8-Tip Head	0.1-500µL
Dispensing Range (8-Tip Non-Contact)	0.1-40µL
Dispensing Range (96-Tip)	Screenmaker: 0.1-125µL Platemaker: 0.1-80µL
Dispensing Precision, 8-Tip Head	CV<10% at 100nL, CV<7% at 200nL, CV<5% at 1µL
Dispensing Precision, 96-Tip Head	CV<15% at 100nL, CV<10% at 200nL, CV<5% at 1µL
Dispensing Accuracy, 8-Tip Head	±10% at 100nL, ±7% at 200nL, ±5% at >1 µL
Dispensing Accuracy, 96-Tip Head	Screenmaker: ±10% at 100-500nL, ±5% at >1 500nL Platemaker: ±10% at 100nL, ±7% at 200nL, ±5% at >1 µL
Dead Volume, 8-Tip head	1.5µL/channel at 1µL across 384-well plate
Dead Volume, 96-Tip head	<1µL/channel
Syringe Capacity	500, 1000µL