



BioFLUX & MacroFLUX

Dissolution-permeation testing
of whole-dose formulations
in biorelevant and
compendial
USP Volumes

*Pion's BioFLUX (l),
MacroFLUX (m),
and Rainbow R6 (r)*



Pion's BioFLUX™ and MacroFLUX™ transform standard dissolution baths into advanced dissolution-permeation platforms. Paired with the Rainbow R6™ fiber optic spectrometer, the systems simultaneously measure API dissolution and permeation across a lipid-coated artificial membrane, providing biorelevant insight into the oral absorption potential of whole-dose formulations.

Supporting dissolution volumes from 200 – 1000mL, BioFLUX and MacroFLUX scale with your development workflow while delivering automated, real-time analysis without manual sampling.

By providing a more complete assessment of absorption potential than dissolution testing alone, BioFLUX and MacroFLUX enable faster formulation optimization, better-informed development decisions, and reduced risk as programs advance toward the clinic.



Go Beyond Dissolution



Automate Workflows

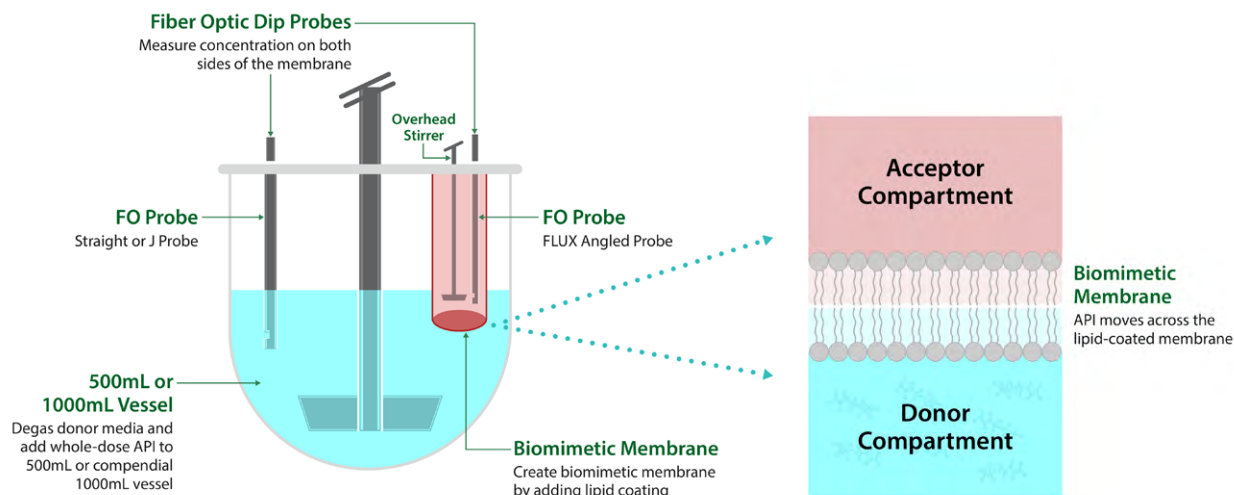


Scale with Confidence

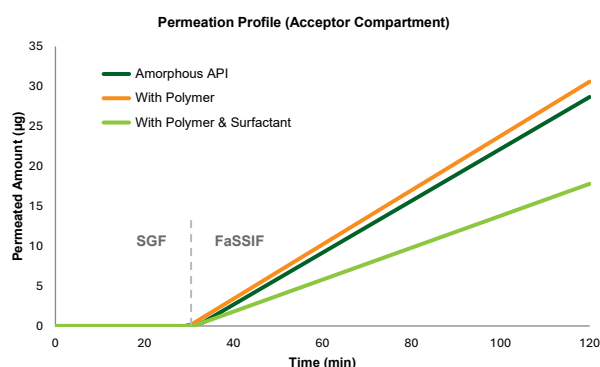
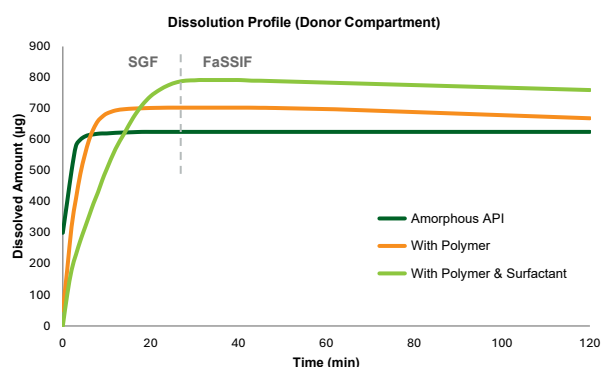


**Unlock Advanced
Insights**

How it works



Capture dissolution and permeation data in real-time as the API moves across the membrane to differentiate formulations by their true absorption potential rather than dissolution alone.



The Pion FLUX Advantage



Go Beyond Dissolution

Measure both dissolution and permeation in a single experiment to gain a more complete understanding of formulation performance, enabling confident screening, ranking, and more informed development decisions.



Scale with Confidence

Choose the platform that best fits your development stage – from formulation optimization under biorelevant conditions to absorption assessment in compendial dissolution volumes.



Automate Workflows

Capture dissolution and permeation data without manual sampling to reduce hands-on time, improve consistency, and minimize experimental variability.



Unlock Advanced Insights

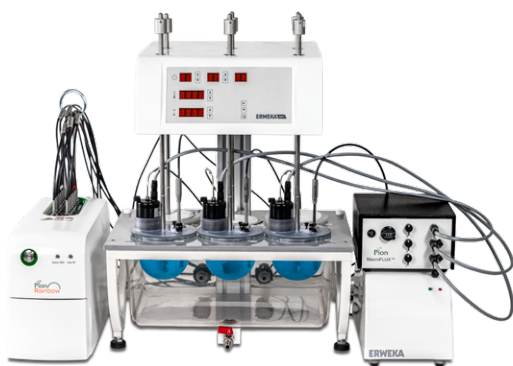
Visualize dissolution and permeation profiles in real-time with AuPRO™ software, then seamlessly export data to Predictor™ for advanced oral absorption analysis.

Which System is Right for You?

Both systems combine dissolution and permeation measurements in a single experiment to support more informed formulation decisions. Select the platform best suited to your development stage and testing requirements.

BioFLUX

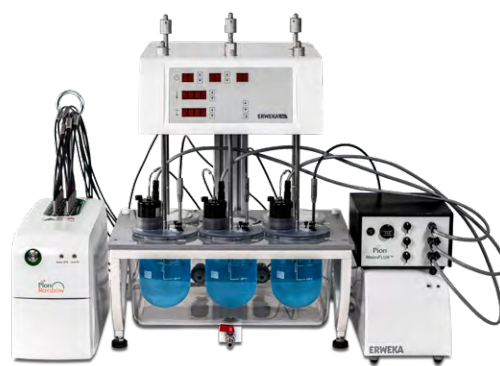
Optimize whole-dose formulations under biorelevant conditions



-  Early formulation development
-  Biorelevant volumes (200-500ml)
-  Conserves media and reagents

MacroFLUX

Unlock absorption insights during compendial dissolution testing



-  Late-stage formulation evaluation
-  USP II volumes (800-1000ml)
-  Supports clinical development

Applications

- Formulation screening and ranking
- Food effect assessment
- Excipient and formulation optimization
- Supersaturation and precipitation characterization
- Dissolution- vs. permeation-rate limitation studies
- Dose and strength selection
- Biorelevant performance evaluation of final dosage forms
- Bioequivalence studies

In Vitro + In Silico: Predictive Modeling

Data from BioFLUX and MacroFLUX experiments can be integrated into Pion's Predictor software to provide biorelevant absorption insights and predict *in vivo* formulation performance. Predictor software applies the mechanisms of the Gastrointestinal Unified Theoretical (GUT) framework* to convert *in vitro* dissolution-permeation data to estimations of *in vivo* oral absorption, percent fraction absorbed (FA%), and the rate-limiting factor to absorption.



*Sugano, K. *Biopharmaceutics Modeling and Simulations: Theory, Practice, Methods, and Applications*; John Wiley & Sons, Inc.: Hoboken, NJ, USA, 2012.



Instrument comes with

- Rainbow R6 Fiber Optic Spectrometer with standard dip probes (dissolution)
- Interchangeable tips with variable path-length to facilitate measurements in turbid solutions or for weakly absorbing compounds
- FLUX Stirrer Assemblies and benchtop controller
- 10 mm fixed path length FLUX Angled Probes (permeation)
- Dedicated glass vessels with covers
- Erweka Dissolution Bath* (optional)
- Standardization Station for streamlined calibration process
- AuPRO Software for instrument control and data collection

*Compatible with most USP II dissolution baths



Consumables

- Single use acceptor chambers with attached PVDF membranes
- Acceptor sink buffer
- GIT Lipid

Dissolution Portfolio

Configuration	Media Volumes
microDISS Profiler™ (Rainbow R6 and MB8)	2 – 20 mL
miniDISS Profiler™ (Rainbow R6 and miniDT)	40 – 250 mL
DissoSpec™ (Rainbow R6 and integrates USP Dissolution bath)	USP Compendial volumes

Dissolution and Absorption Portfolio

Configuration	Media Volumes
MicroFLUX™ (Rainbow R6 and MB8 with MicroFLUX vessels)	16 – 20 mL
MiniFLUX™ (Rainbow R6 and miniDT with MiniFLUX vessels)	180 – 250 mL
BioFLUX™ (Rainbow R6 and external USPII bath with stirring unit and BioFLUX vessels)	200 – 500 mL
MacroFLUX™ (Rainbow R6 and external USPII bath with stirring unit and MacroFLUX vessels)	800 – 1,000 mL

Rainbow R6

The Rainbow R6 Dissolution and Permeation Monitor is an *in-situ* fiber optic UV-VIS spectrometer, measuring real-time dissolution and permeation as fast as every 2 seconds. Equipped with up to eight independent fiber-optic channels the Rainbow R6 provides high accuracy and resolution in concentration and % dissolved measurements.

