

Liquid Handling System

Introduction

Kinetics applications usually involve cycles of binding and washing steps with diverse solutions.

The liquid handling system allows to automatize these cycles of three solutions, e.g. running buffer, analyte solution, regeneration solution. The liquid handling system is controlled by the software EP³View.



Specifications

The liquid handling system consists of a valve unit, a peristaltic pump, tubings and a measuring chamber. It is especially designed for kinetic measurements in liquid ambient like protein-protein interactions with the EP³. All materials are biocompatible.

Valve unit:

- handling of three different liquids automatically
- further handling of up to six liquids on request
- controlled by the software EP³View

Tubing Pump:

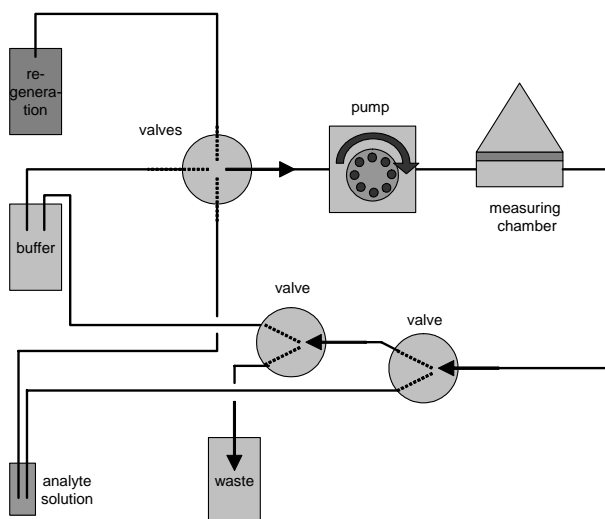
- flow rates: 0.05 – 2.0 ml/min
- 8 or 12 roles for minimal pressure fluctuations controlled by the software EP³View

Tubing:

- inner diameter: approx. 0.5 mm standard HPLC fittings (e.g. ¼"-28)

Volume:

- total void volume (incl. tubing): ~0.6 ml
recommended sample volume: > 1.5 ml



Materials:

- PEEK® and PTFE tubings
- Standard peristaltic pump tubing (like Tygon® ST)
- Teflon® valves
- Viton® O-rings

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Typical procedure of an adsorption experiment

1. Recording of the baseline by pumping the buffer through the system
2. Addition of the analyte to record the adsorption with the kinetic parameter (e.g. k_{on})
3. Washing with buffer to measure the desorption process with its parameters (e.g. k_{off})
4. Total desorption of the analyte from its binding partner by using a regeneration solution
5. Recording the baseline for the next experiment by pumping buffer through the system
6. Manual exchange of the analyte solution

Flow diagrams for all steps are shown below:

