EML

Environmental Measurements Laboratory

"A Federal Resource"

Automated Micro-Pipette System

The Environmental Measurements Laboratory designed micro-pipette system delivers a highly accurate volume of solution in a programmable pattern. The system was designed to spike filter samples for the EML Quality Assessment Program (QAP), a performance evaluation program for environmental radiological analysis administered for the U.S. Department of Energy, Office of Environmental Management. Simulated air filters are prepared by pipetting twelve calibrated drops of a standard radionuclide solution in two concentric circles on a 7 cm glass fiber (Whatman 541) filter.

Modular design, assembled with commercially available components, delivers a repeatable amount of liquid to precise locations.

Dispensing Mechanism

- The system provides highly accurate (±1%) dispensing of small volumes (maximum 25 µL)
- Consistent, repeatable (±0.01 µL) ejection of fluid
- Digital control of volume and rate of the liquid dispensed
- Ceramic elements are non-reactive with dilute acid solutions and require minimal maintenance

Positioning Mechanism

- Light weight, compact assembly allows positioning accuracy to within 0.2 mm (0.04 mm optional)
- Stepping motors control linear and rotational motion of the table. The pipette remains stationary, avoiding inconsistencies in delivery
- Software allows user developed custom design of liquid delivery pattern

Programmable Electronic Control

- Embedded computer links and controls the dispensing and the positioning mechanisms
- Programming done in BASIC
- Extensive digital/analog inputs and outputs are available to accommodate additional requirements

Contact Vincent C. Negro:
☎ Voice: 212-620-3646
E-mail: vinceneg@eml.doe.gov