

ACCELERATED MICROFLUIDIC DEVELOPMENT



The ALine Difference

Creative Problem Solving + Interdisciplinary Expertise

From product concept to market introduction, we partner with you to provide the best and most cost effective custom engineered product solution.

Our knowledge and experience encompasses multiple disciplines, including electrical and mechanical engineering, system design, biological assay development, microfluidics, and bioanalytics.

Instrument System Design

- Instrument/Chip Interface
- Solid Modeling - Mechanicals
- Sensors & Actuators & Pneumatics
- Software & GUI
- WiFi & Bluetooth Communication

Microfluidic Design

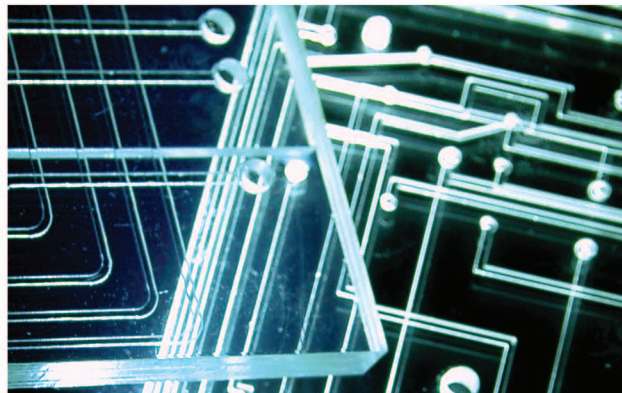
- Fluid Circuit Modeling
- Injection Molding Design
- Tool box of On-Board functions
- Materials Specifications
- Design Rules

Prototyping

- Rapid Prototyping
- 3 D Printing
- 4 axis CNC Machining
- Silicone Molding
- Plastic Injection Molding
- Reagent Storage

Manufacture

- DFMA
- Low Volume – Batch and Semi-Automated
- High Volume – Network of Partners Across US, Europe and Asia



We take a research-focused prototype and partner with you to develop a product-ready solution for your microfluidic product development.

Lab-on-a-Chip products are complex in their requirement for the integration of components, materials and reagents with the sensing platform.

We have a track record of success in working with clients to achieve a functional product solution which meets price targets for manufacture.



+ 1-877-707-8575
www.alineinc.com



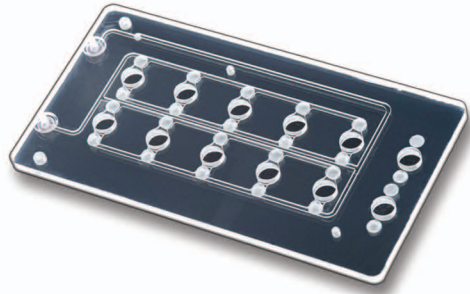
SUCCESSFUL EXAMPLE PROGRAMS

NASA ASTROBIONICS PROGRAM

Introduction: The program's mission is to run autonomous biological experiments in near earth orbit. These nanosatellite systems have restrictions on size, weight and power consumption, and this requires a great deal of engineering sophistication.

Challenges: The cells had to be contained in their individual wells, and fed at the same time and rate from a single inlet. The fluid card required optical clarity for fluorescence and transmission measurements, and a membrane for CO₂ and O₂ exchange.

Solution: Working with NASA engineers, ALine developed a compact design which ensured equal flow of media across each of the ten sample wells. The entire card was constructed of laminate layers, using an adhesive that doesn't inhibit cell growth.

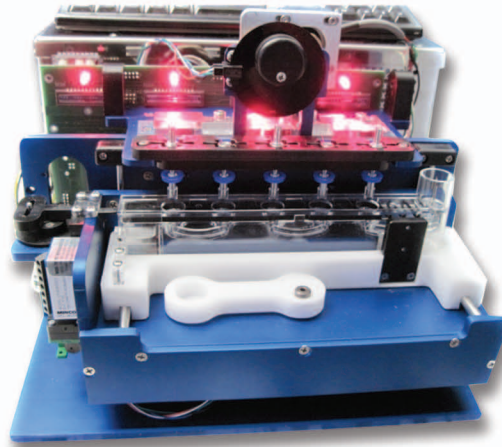


MOLECULAR DIAGNOSTIC PRODUCT

Introduction: GenMark's eSensor XT8 is a multi-plexed electrochemical detection platform for monitoring genetic markers of interest.

Challenges: Room temperature bonding for the DNA chemistry on the sensor. Requirement of 20 minutes to results which was addressed through active mixing of the amplified DNA to enhance the binding kinetics over static diffusion.

Solution: The laminate contains an on-board recirculating pump, which is mechanically actuated. Room temperature bonding adhesive bonds both the injection molded part and the PCB containing the sensor pads with the DNA Probe chemistry.



BENCHTOP WHOLE BLOOD ANALYZER

Introduction: The client wanted a small, bench top solution to automate sample and fluid handling to improve usability and decrease variability

Challenges: Complete automation was required; once the vacutainer was mounted, and the disposable inserted, the user would simply hit go. This required a series of aliquoting, reagent additions and mixing steps to be automated with a custom disposable.

Solution: Working with the client, a computer driven sample and fluid handling system was built that reproduced all the manual steps. A companion disposable was developed to support walk away automation. Closed loop control was achieved with standard electrical components and machined parts. A custom injection molded disposable was designed to support automated assay performance.

CAPABILITIES

- Microfluidic Cartridge Design & Engineering
- Instrumentation and System Integration
- Rapid Prototyping
- Solid Modeling and Mechanical Drawings
- CNC Machining of Metals and Plastics.
- Mold Making and Tool Design.
- Silicone and Plastic Injection Molding.
- Pick and Place Assembly



The ALine Team

With over 75+ years of combined experience, we have a track record of success. We work in partnership with our clients to provide the highest level of expertise and competence to the design and development of your product.



ALine, Inc.

19500 S. Rancho Way, Suite 107
Rancho Dominguez, CA 90220

t: +1-877-707-8575 f: +1-770.818.5475

www.alineinc.com