INTERDIGITATED ELECTRODES IN MICROFLUIDICS

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**Milestones and Validation Plan**

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## Milestones

| **9/16/22** | Train on non-cleanroom related techniques and equipment:   * Softlithography * Plasma cleaner * Microscopes * Syringe pumps * Droplet generation validation procedures * PCR |
| --- | --- |
| **9/30/22** | Design microfluidic channels, fabricate master molds using NanoScribe in AggieFab. |
| **10/14/22** | Design IDEs, train on cleanroom tasks including:   * Metal deposition * Wet etching |
| **10/28/22** | Finish fabrication of device by plasma bonding the microfluidic channels onto the IDE arrays. |
| **11/11/22** | Perform experiments using the bonded device. Experiment with different IDE designs fabricated. Perform simulations using COMSOL. Validate subsystems through comparison to control group and simulations. |
| **11/25/22** | Test using ideal IDE parameters discovered in previous experimentation. |

## Validation Plan

Experimental results and the device’s overall success will be validated by reaching 90% efficiency of droplet sorting as compared to real droplet generation and simulation (via COMSOL) with no IDE array present. This benchmark has been provided by the NanoBio Systems Laboratory, which this project is a part of.

| **TESTING / VALIDATION** | Omar (High-pass) | Erin (Band-pass) |
| --- | --- | --- |
| Channel print quality (leaks, blockages) | ✅ | ✅ |
| Droplet generation | 404 | N/A |
| Fluid biasing | ✅ | ✅ |
| IDE quality | ✅ | ✅ |
| Filtration w/ IDE | ✅ | ✅ |