Oyster: Wastewater-free Two Layer Desktop PrCB Printing

Joshua J. Park, Nicole Q. Thai
Professor G. P. Li
Department of Electrical Engineering and Computer Science

Background

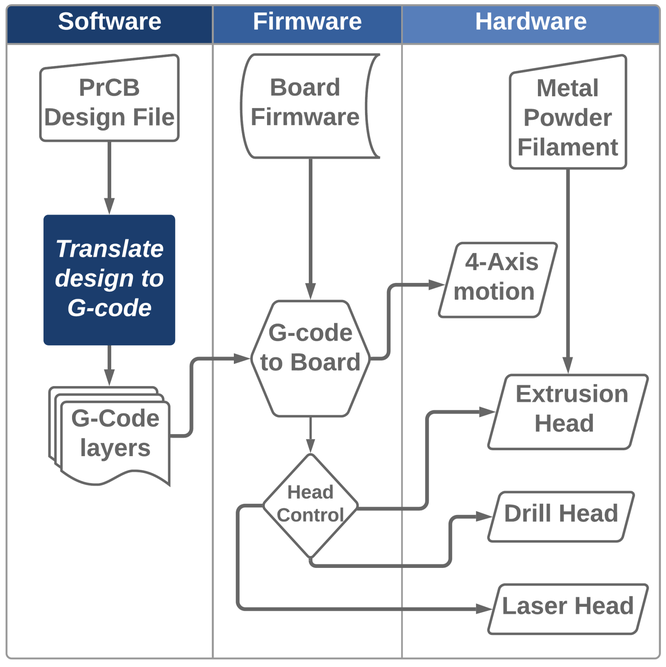
Current PrCB manufacturing methods utilize wet chemicals that are either reprocessed for recovery or disposed of as wastewater. Moreover, current manufacturing of PrCB have not been scaled down to the consumer level, unlike FDM/ SLA printing and CNC machining which now take forms in profiles fit for “prosumer” use.

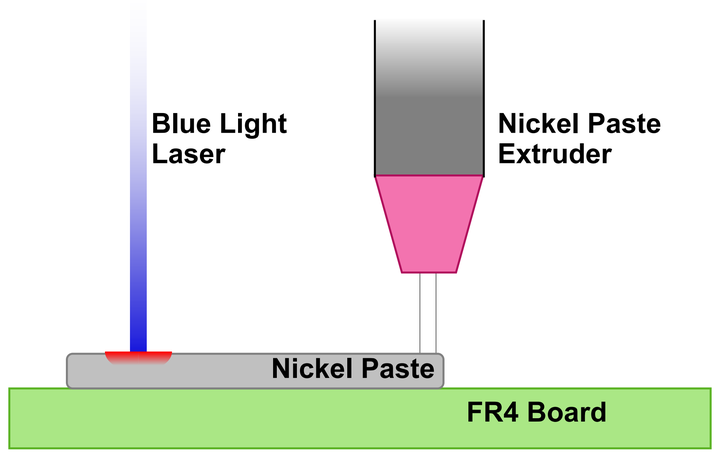
Project Goals

- Printable traces on both sides and VIAs of at least 10-30mil.
- Customizable trace height.
- Low environmental impact and energy consumption.

Progress

- Working on generating g-code commands for 2-layer PCB to extrude, sinter, drill, and bed rotation.
- Testing laser head and working to build the multi-operational head.
- Determining the Nickel powder solution for filament.





Deadlines

Winter 2020

- Week3: Working scripts to compile multi-layer g-code commands
- Week 5**:** Finalize trace material and precision, set-up for 2-layer prints
- Week 7: Safety measures established, tuning mechanic precisions
- Week 9**:** Fabrication verification, safety verification

References

[1] "Workshop Materials on WEEE Management in Taiwan". Environmental Protection Agency. October 2012. Retrieved 1 October 2019.

[2] Gerić, M., Gajski, G., Oreščanin, V., Domijan, A.-M., Kollar, R., & Garaj-Vrhovac, V. (2017). Environmental risk assessment of wastewaters from printed circuit board production: A multibiomarker approach using human cells. Chemosphere, 168, 1075–1081. doi: 10.1016/j.chemosphere.2016.10.101

[3] T. Ito, H. Takatori, “Nickel Powder Dispersion , Method of Producing Nickel Powder Dispersion and Method of Producing Conductive Paste.” U.S. Patent 6620220, issued September 16, 2003.