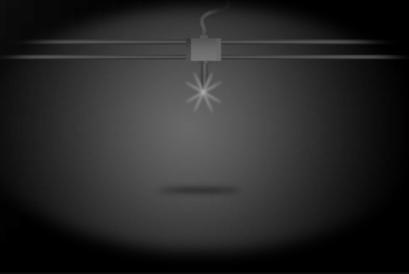
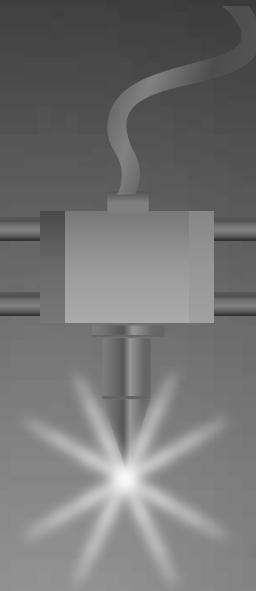


Things I have learned in the first year of my 3D printing journey





Mike Nelson  
Technical Evangelist & 3D Printing Noob

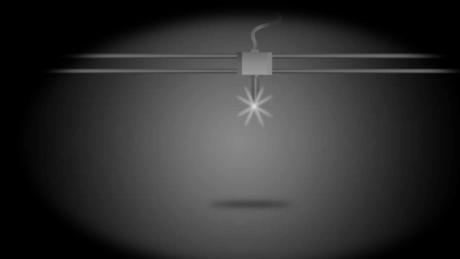
# Why my journey?



Mike Nelson  
Technical Evangelist & 3D Printing Noob

Maybe it will help guide someone who is just starting out, including the pros, cons, mistakes, judgements, successes, & failures, all down to the intimate details.

Or maybe I just want to hear myself talk...





Giveaways!!!

COEX 3D

Coex3d.com

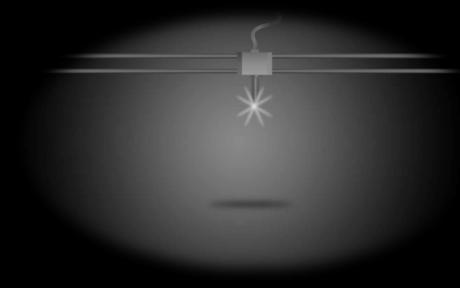


Gift Card

# How did I get into all this?

- ⌚ I love to play with new toys technology
- ⌚ A friend is a Maker
- ⌚ I wanted a palladium to add to my cache
- ⌚ Maybe it could be a side-hustle? (that's how I sold it)
- ⌚ I needed a new hobby & I had some time on my hands

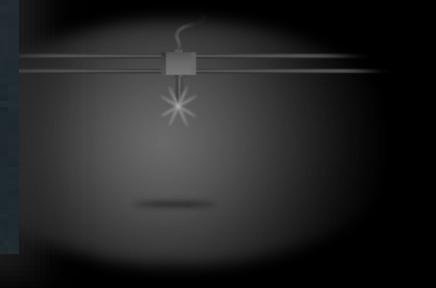
## How did you get into it?



# What are we?

## Makers

“Homo sapien with an innate, unexplained obsession with little machines that melt thermoplastics in layers to create a 3D object.”

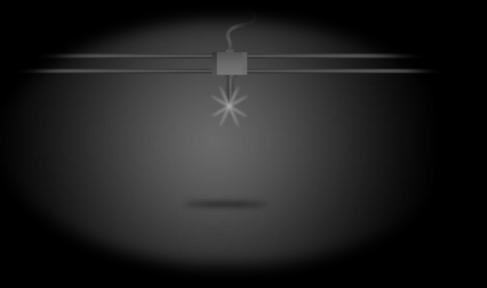


# What is 3D Printing?

3D printing or additive manufacturing is a process of making three dimensional objects from a digital file using layers.

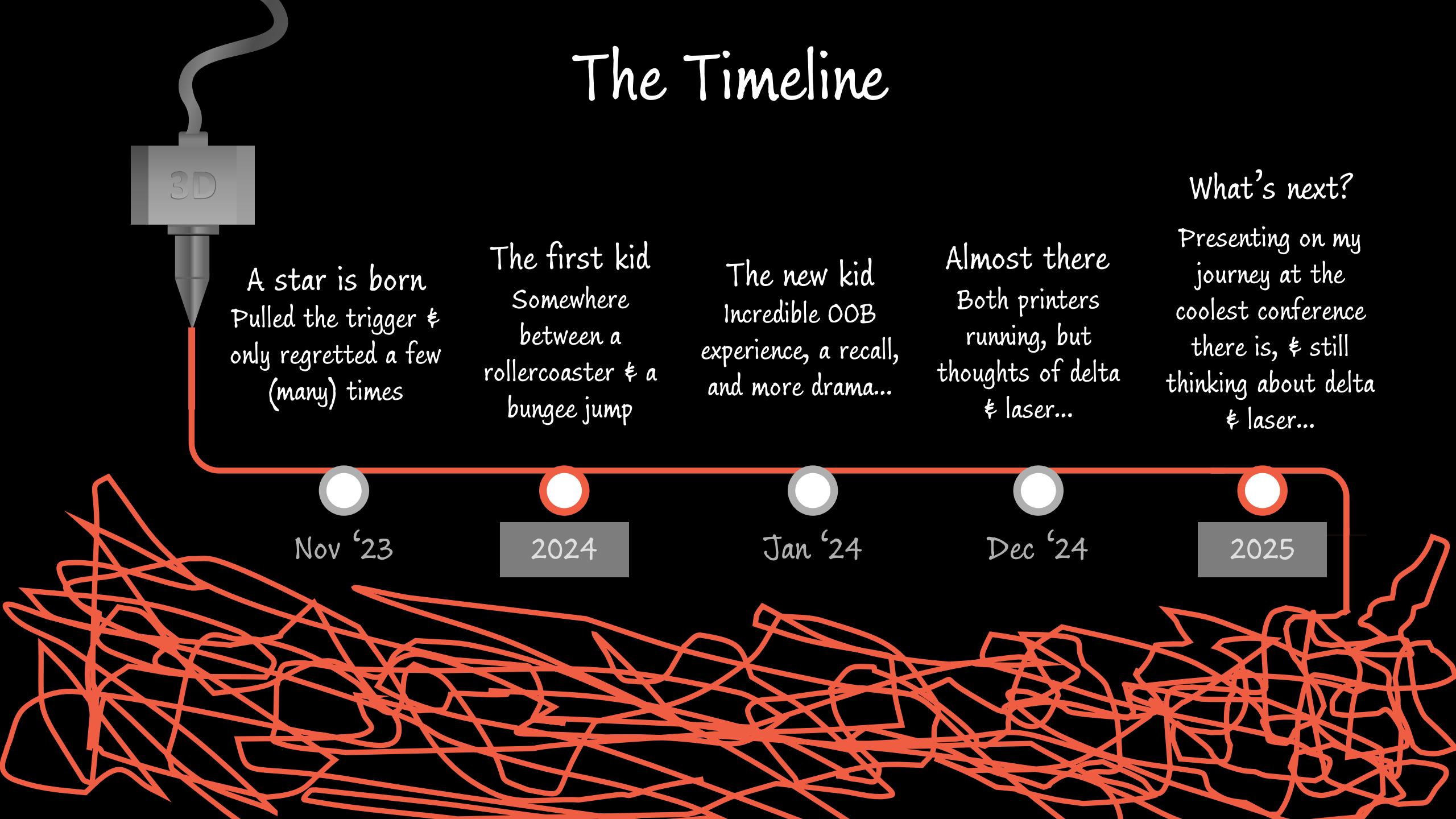
\*Exception – Volumetric 3D

- entire structures can be formed at once without the need for layer-by-layer fabrication.



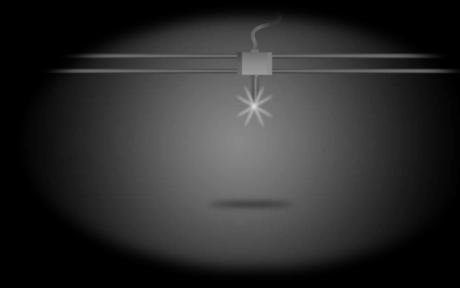


# The Timeline



# What kind of printing - aka printer?

- ⌚ The most features for the least cost
- ⌚ What all the “experts” say...
- ⌚ Resin or FDM?
- ⌚ Over-thinking engineering things is my thang
- ⌚ Needed to be up & running fast

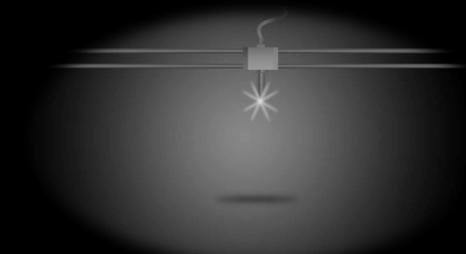


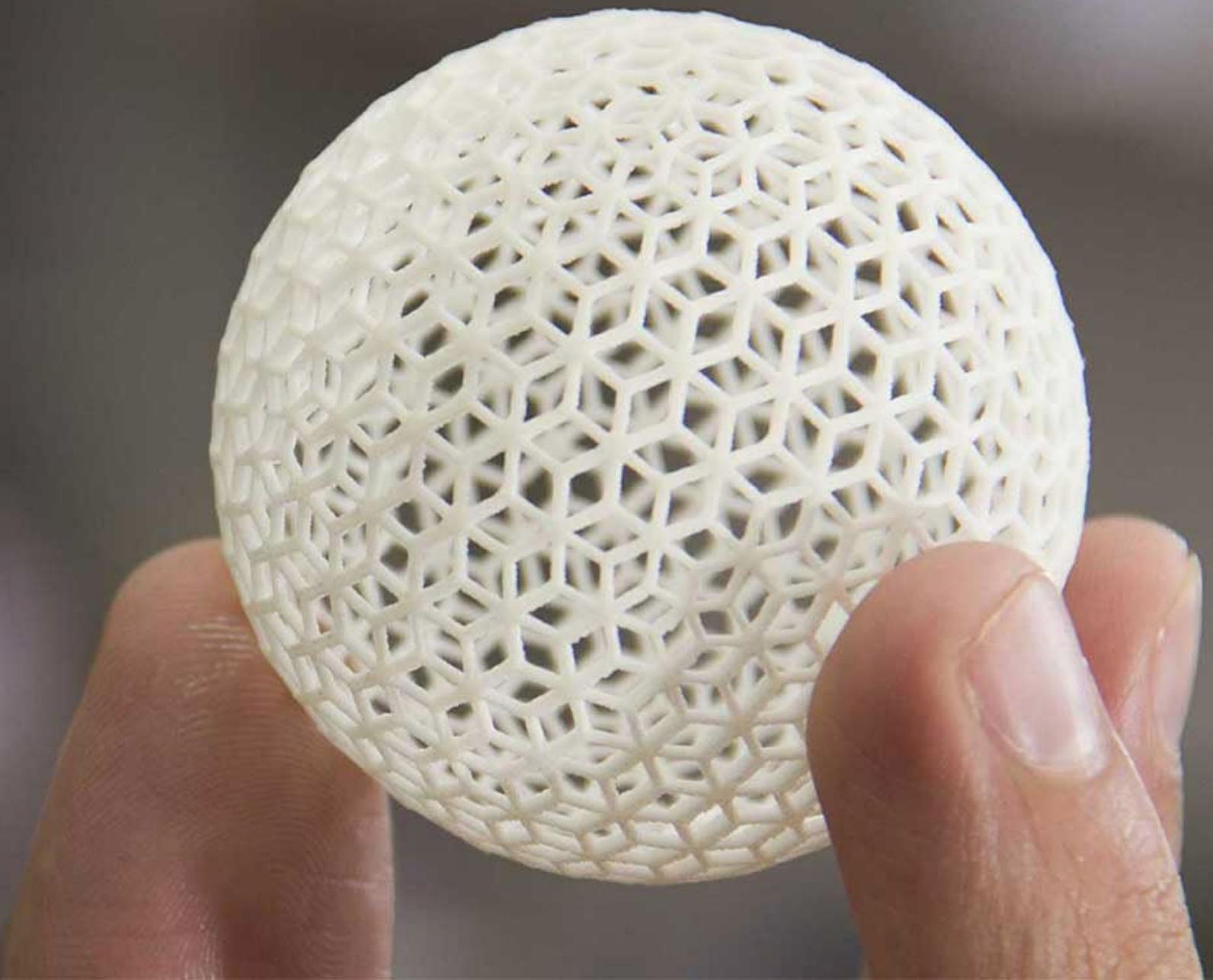
# What do I want to print?



What do I want to print & how do I want to print it?

Functional

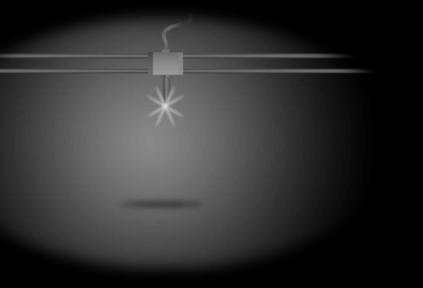
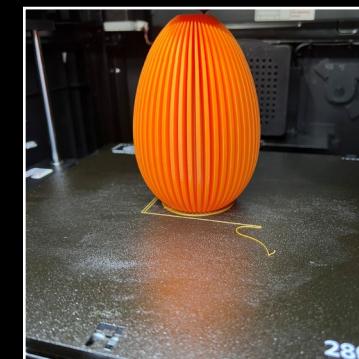




What do I want to print?



Fun stuff!



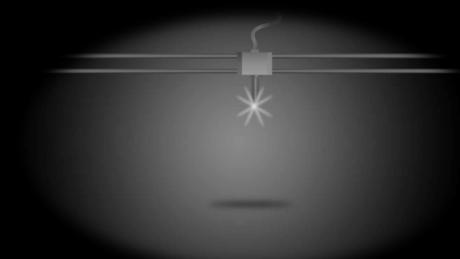
Not in it for the money... yet



X-Y-Z (FDM) or resin?



Resin was not my thing  
Stereolithography (SLA)



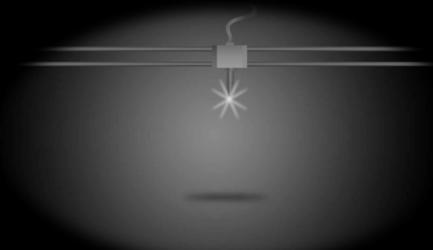
Final answer?

FDM - Fused Deposition Modeling

Also called FFF - Fused Filament Fabrication

aka... Filament

Thought think about Selective Laser Sintering (SLS) aka Laser Powder  
\$\$\$\$



Qidi  
(ch-EE-D-E)  
X-Plus 3



## Industrial Grade 3D Printer



QIDI Latest High Speed Extruder



6×6 Automatic Levelling



KLIPPER Master



CoreXY Structure



Temperature Controlled Chamber



Applicability Materials



Filament Runout Sensor



Flexible HF Board



280x280x270  
600mm/s - 2000mm/s

Qidi  
(ch-EE-D-E)  
X-Plus 3



Con/Prosumer Grade 3D Printer



QIDI Latest High Speed Extruder



6×6 Automatic Levelling



KLIPPER Master



CoreXY Structure



Temperature Controlled Chamber



Applicability Materials



Filament Runout Sensor



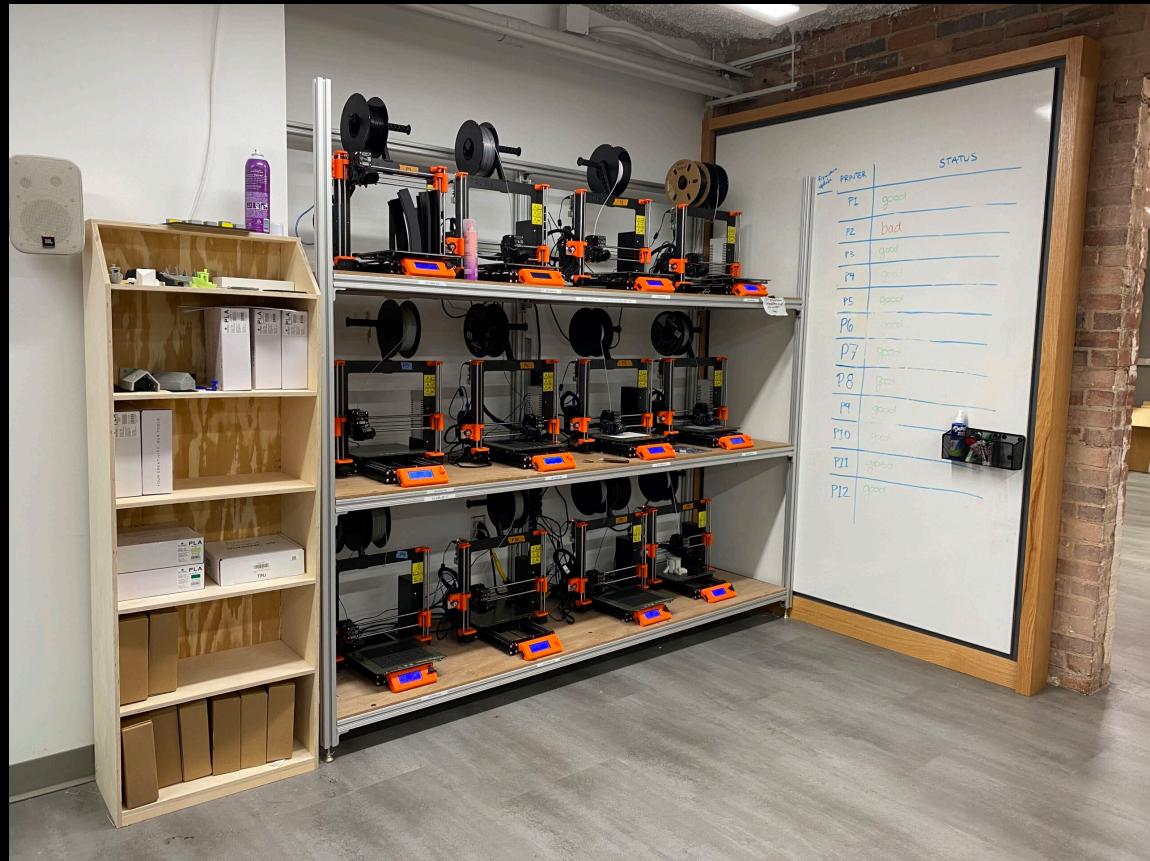
Flexible HF Board



280x280x270

600mm/s - 2000mm/s

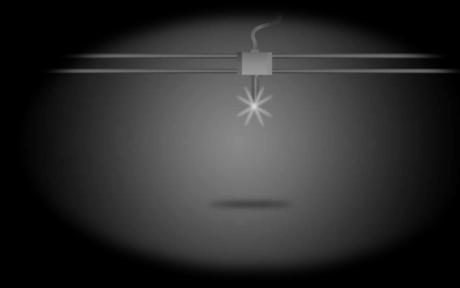
# Commodity Manufacturing



Obligatory first print



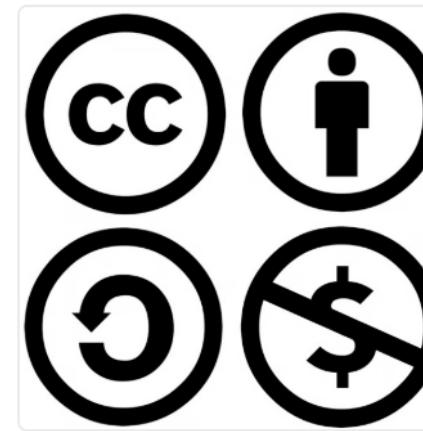
The Benchy  
And the new drama



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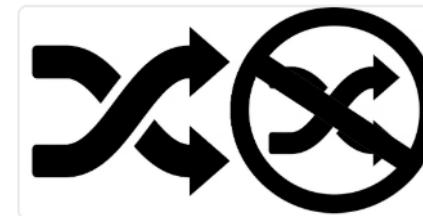
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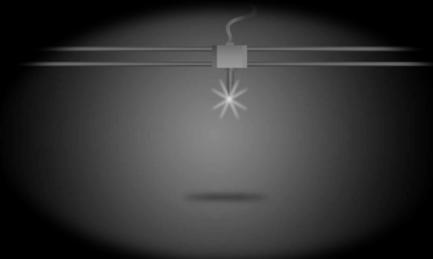
Remixing

Image credit: All3D.com



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Learning as I printed

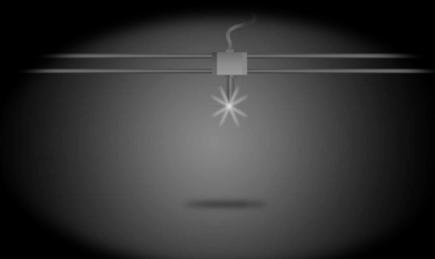


Where to find stuff to...

learn the basics

collaborate & level up

print





The basics

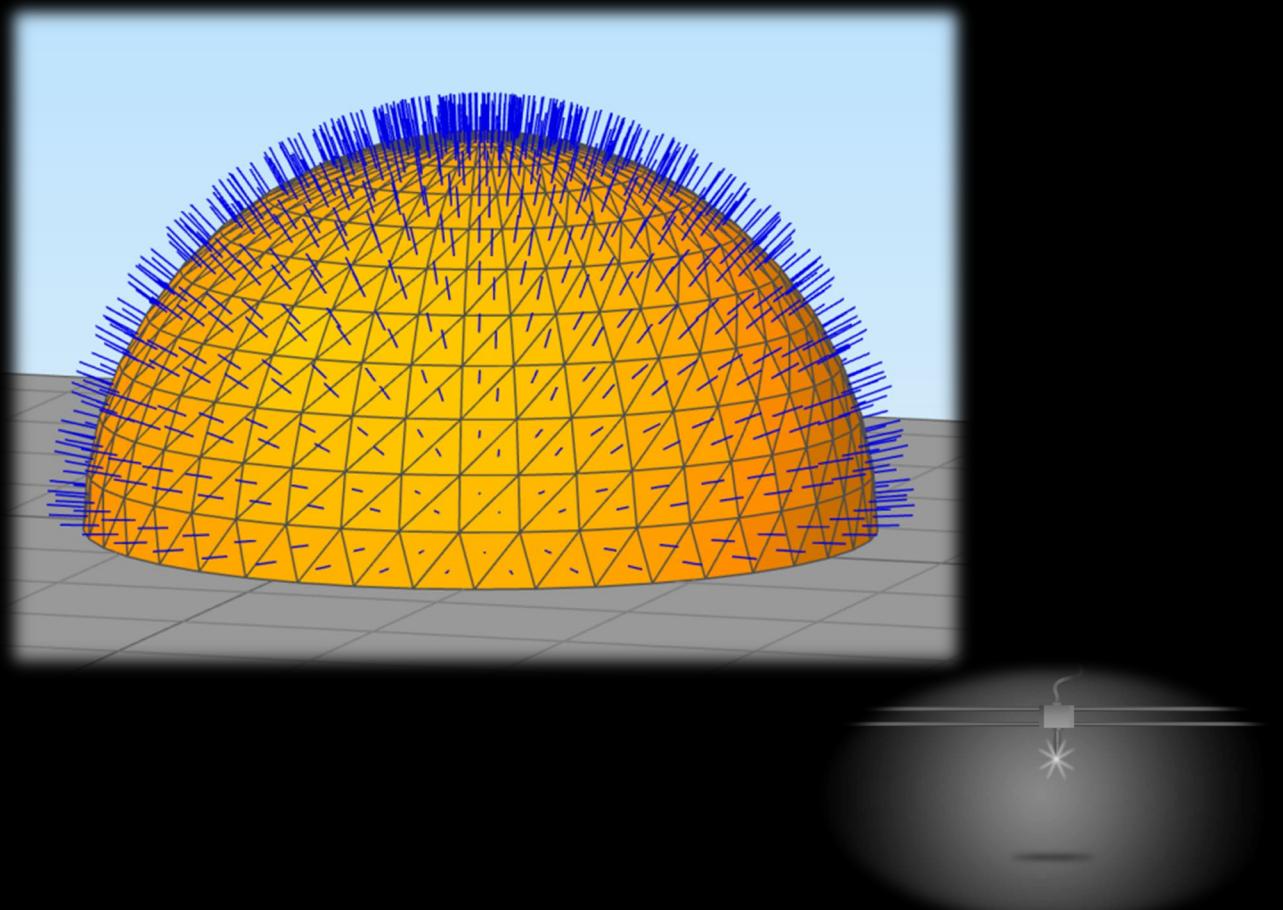
Understanding layers, plastics, & polymers

Triangles & polygons

X-Y-Z

How to measure

How a 3D printer works





# THE METRIC MARVELS

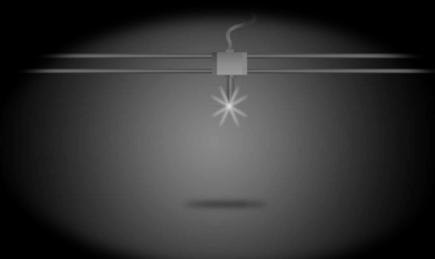
Don't believe all of the hype

Paid prosumers

One way isn't the best way

Influencers are just that -> influence -ers

The usual social boneyards



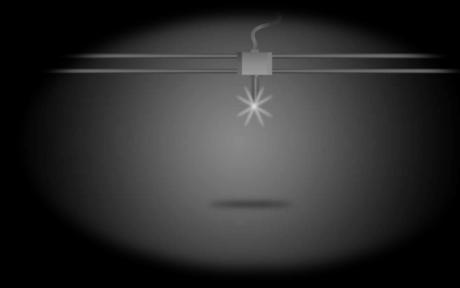
Open source gets a lot of love

Printer OS

“Free” as in free beer

Not always good models / copycats / fakes

Subs, patreons, & “buy me a coffee”



# Sites I like

## Learning - Collab

- YouTube
- All3D
- Fusion for Makers
- MakerBot
- Reddit
- Discord ✓
- Facebook (argh)
- Usual social sites
- Community forums

## Models & Modeling

- Shapr3D
- OnShape ✓
- Fusion360
- HueForge
- Printables ✓
- MakerWorld ✓
- Cults3D
- STLFinder
- Thingverse
- Grainger ✓
- GrabCAD
- Parametric Model Maker ✓  
(MakerWorld)

## Filament / Parts

- Coex3D ✓
- Polymaker ✓
- Bambu
- Numakers ✓
- Slice Engineering ✓
- Biqu (chyro plates!) ✓
- MatterHacker
- AliExpress (yes, I went there)
- Kdeavi plates

# Newbie Tools

Absolute basic tool needed - a good pair of angle snips!



## Screws, pins, & wedges

micro-screwdrivers (slotted, star, phillips, hex), punch, feeler gauges (0.05-1mm), wrenches



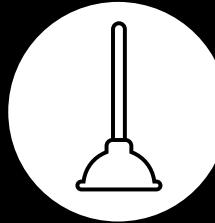
## Cleaning up supports & prints

deburring tool, iso alcohol wipes/pads, pliers set, scraper (flex is better)



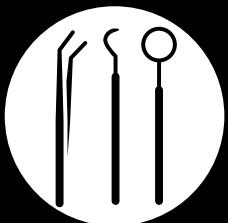
## Washing the plates & making things stick

plain old dish soap & water in a spray bottle, iso alcohol (for the tough stuff), glue stick, hair spray



## Clearing & avoiding clogs

extra PTFE tubing, PTFE cutter, clogging set (acupuncture needles), No-Clogger, plastic repellent paint (Slice Engineering)



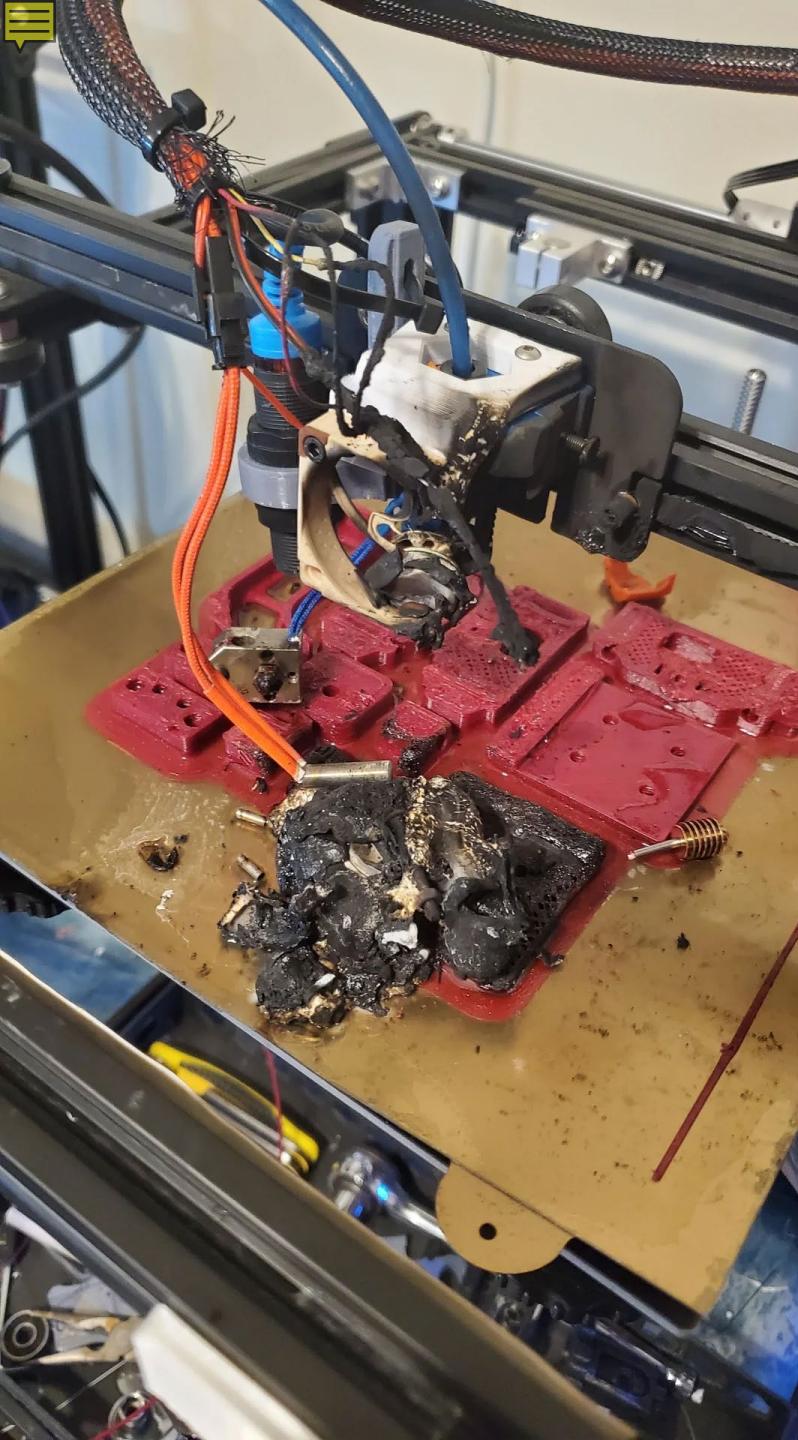
## Tiny parts & connectors

tweezers set, pickup tool, magnetic parts tray, magnetizer, plate-sized bowl

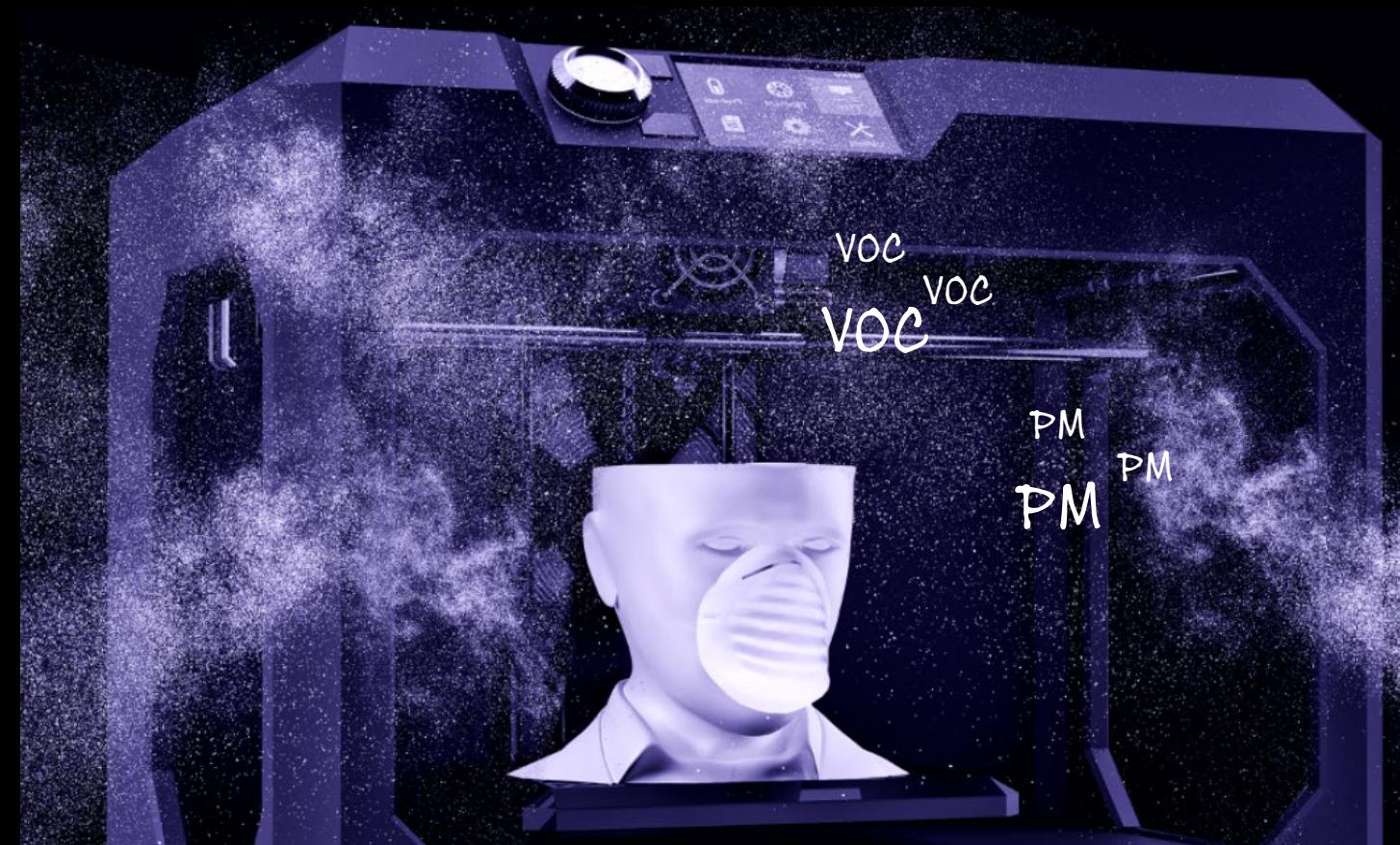


## Lubing & cleaning

Z-rod grease, XY oil, compressed air, cleaning pad, non-woven q-tips, lube tools (printed)



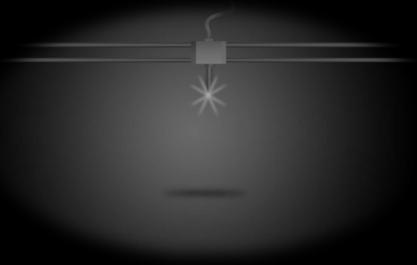
Be Safe!



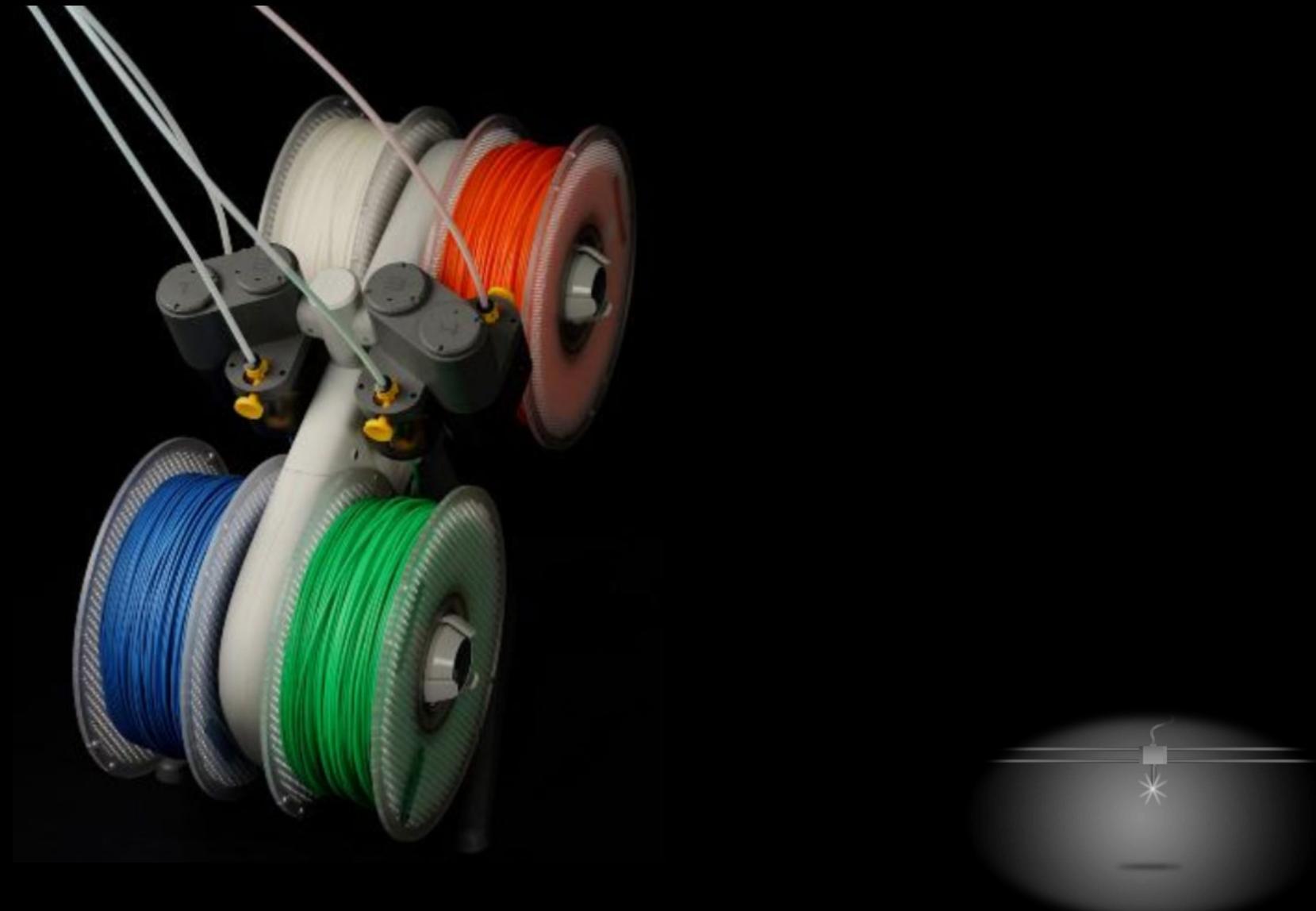
Particulate Matter      Volatile Organic Compounds

We all have bad days & bad prints...

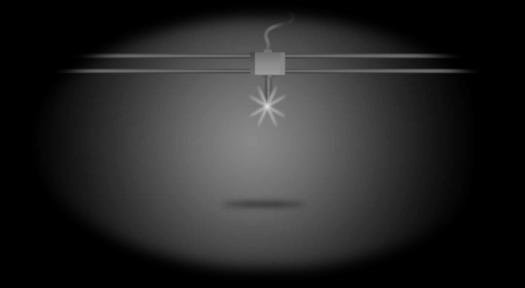
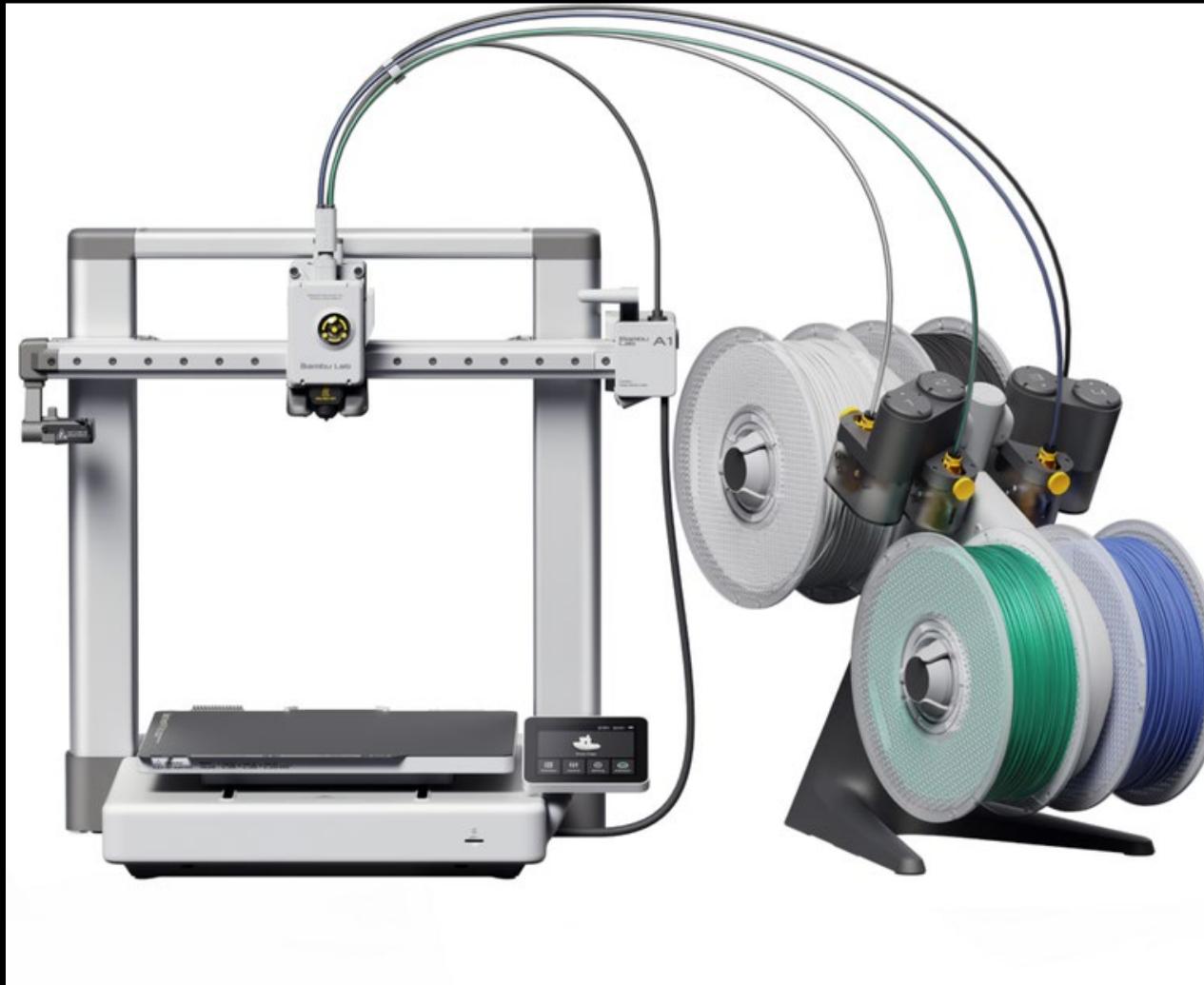




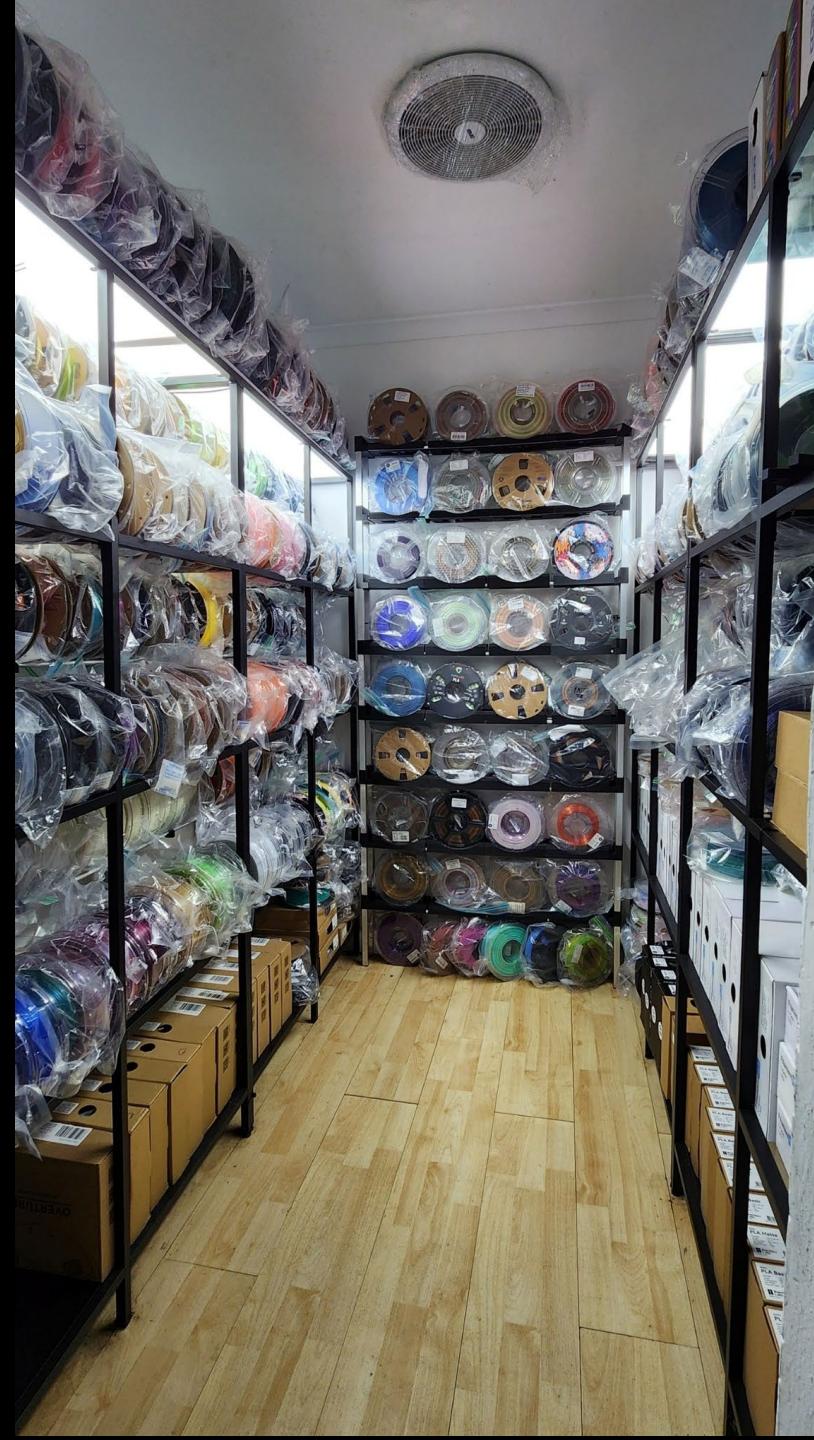
And then I decided to buy another printer. Why?



# Bambu Labs AI Combo



The addiction is real...



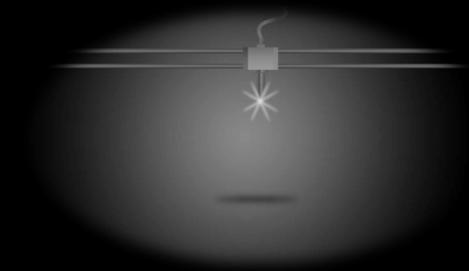
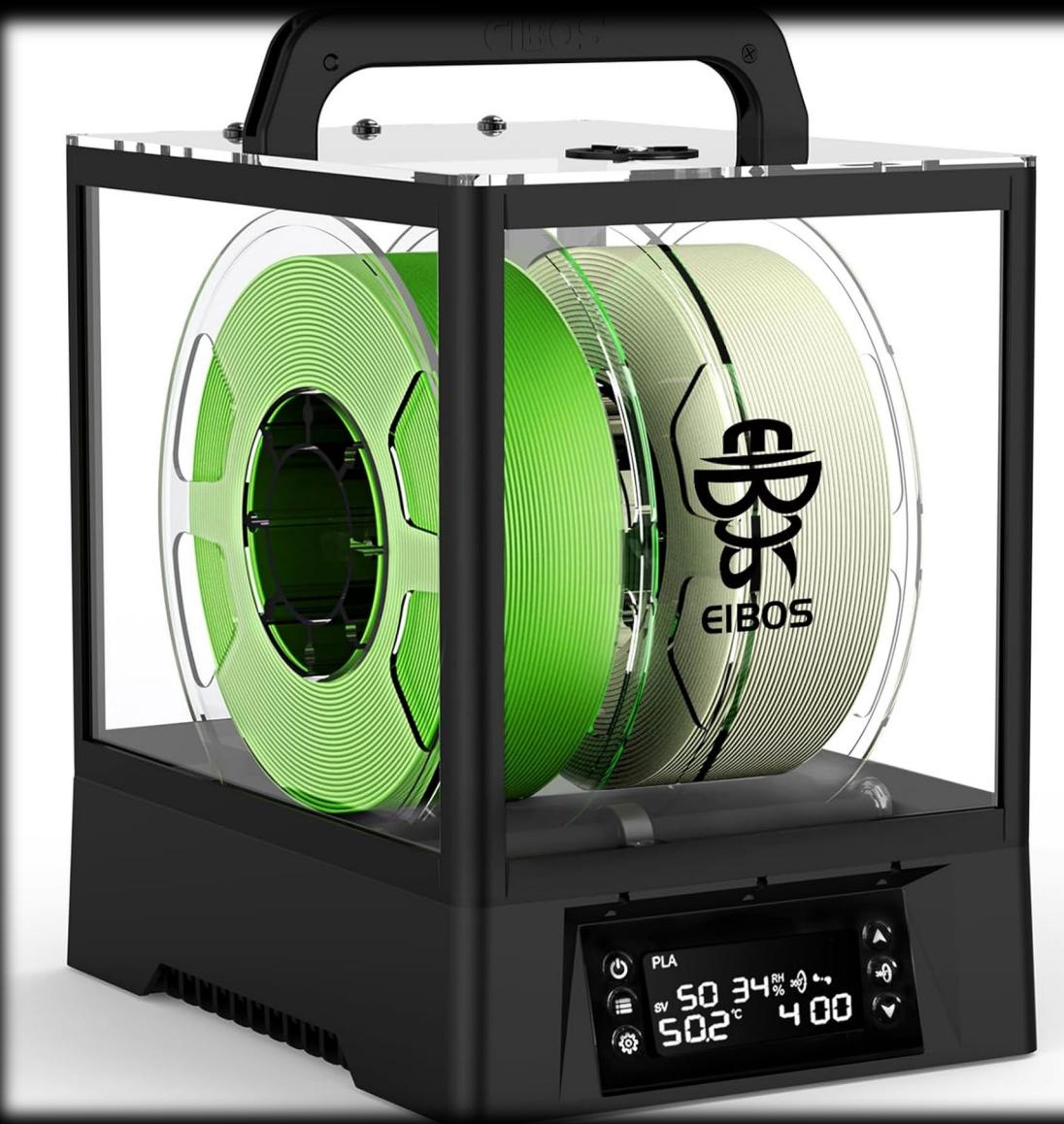
# Proof...

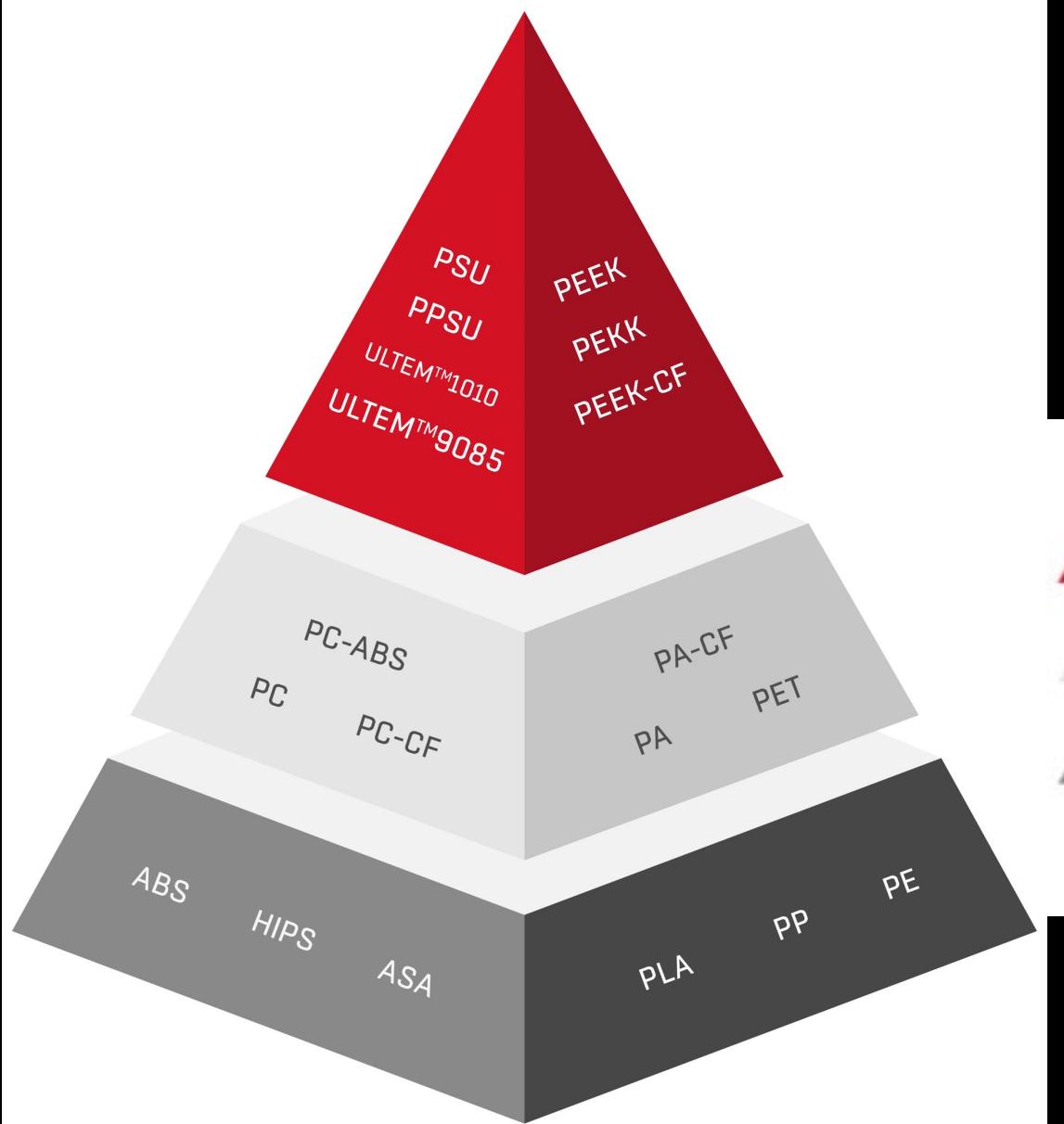


# Moisture is bad



They got a thing for that



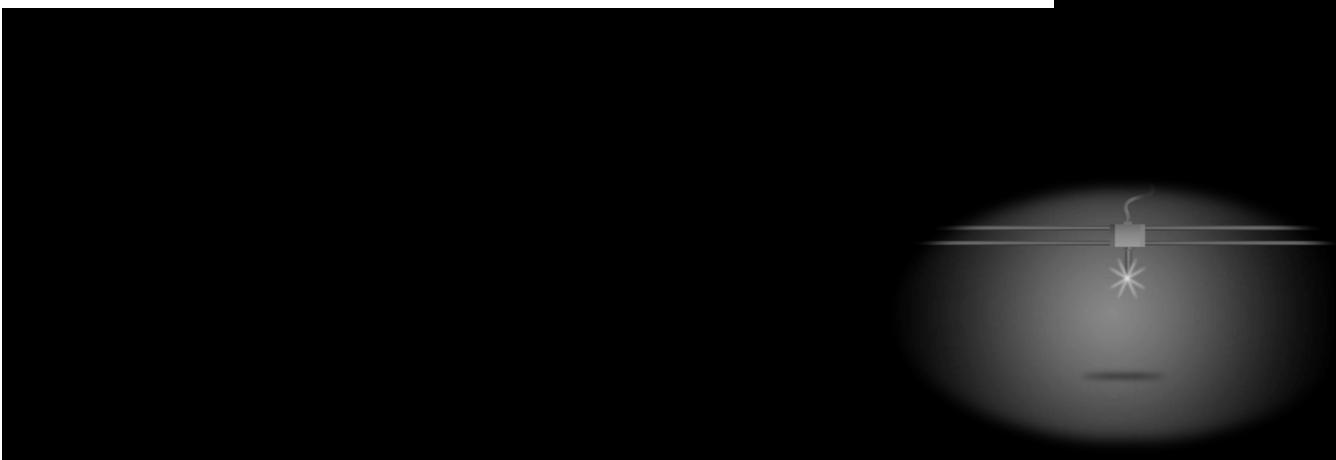


AMORPHOUS

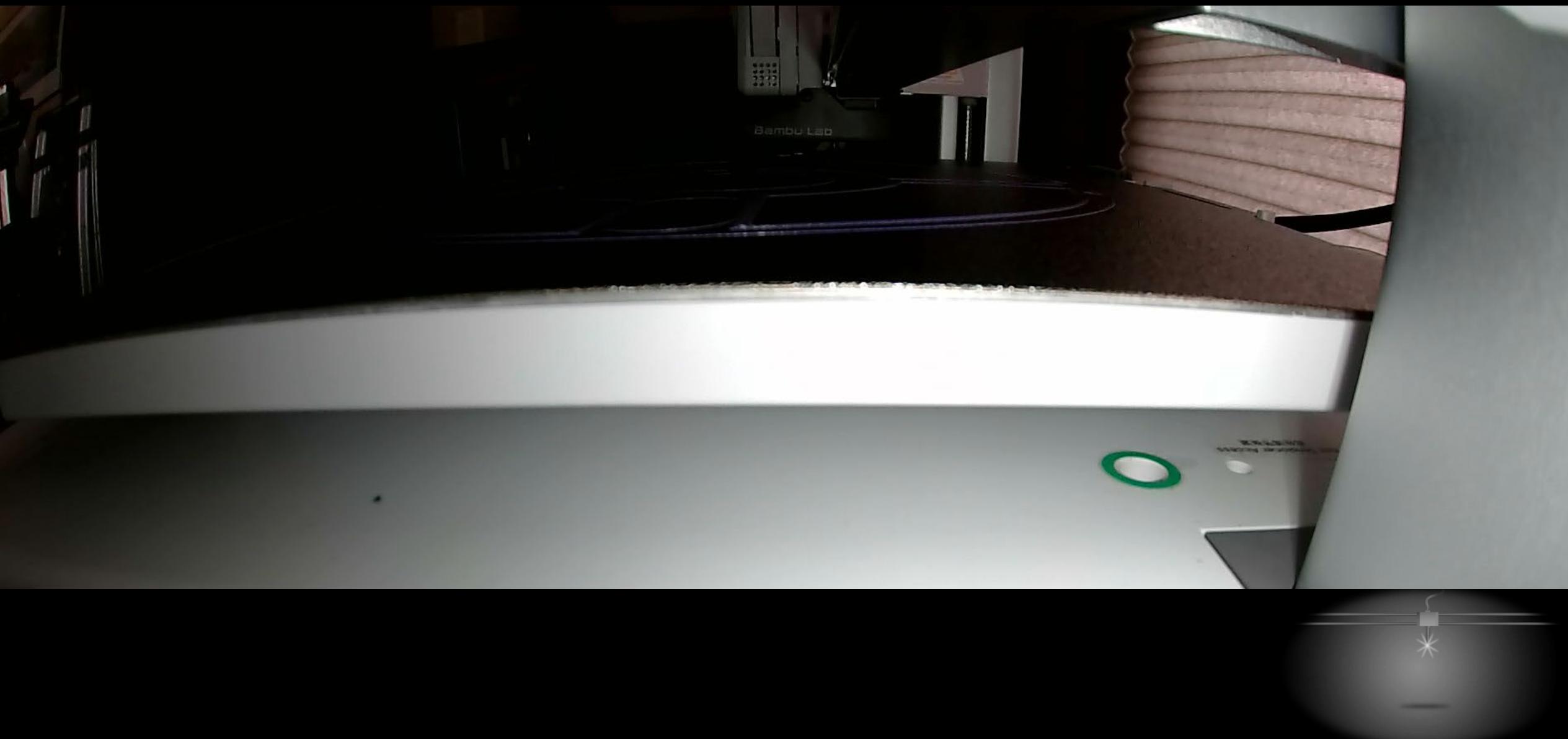
SEMI-CRYSTALLINE

And while we're on the subject...

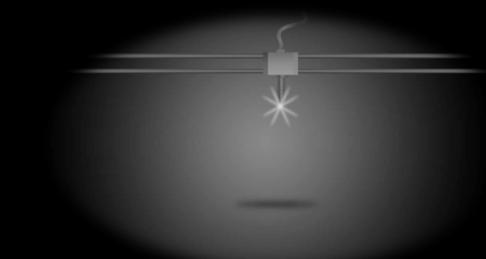
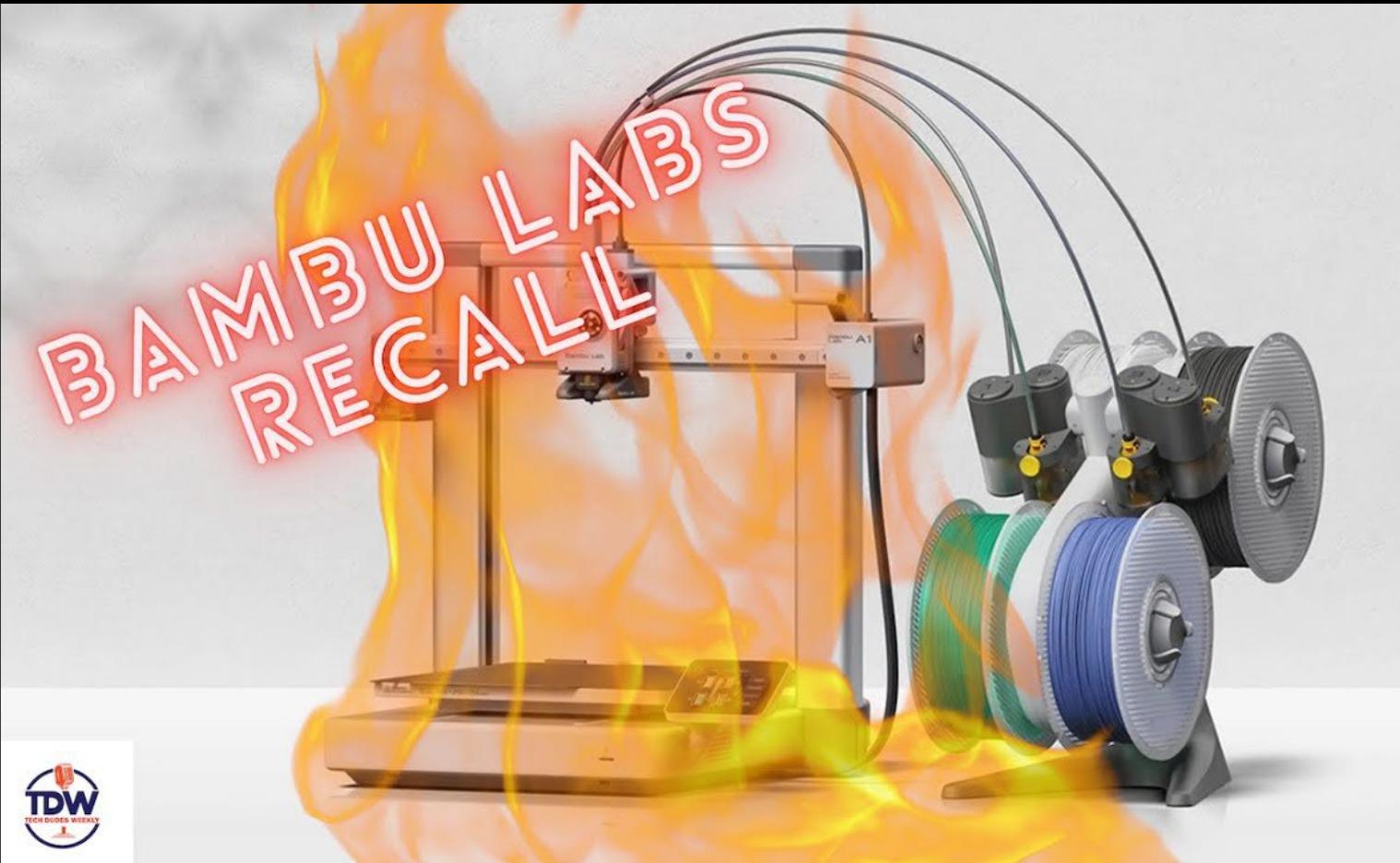
- ▲ HIGH PERFORMANCE POLYMERS
- ▲ ADVANCED ENGINEERING POLYMERS
- ▲ COMMODITY POLYMERS



2nd print (1<sup>st</sup> was the bENCHY of course)



# The Heatbed Recall of '24





# Slice & dice...

Design

- 3D modeling
- Fusion360, Shapr3D, TinkerCAD, RhinoCad, etc

Slicing

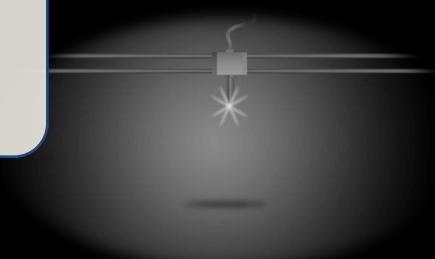
- Prepping the 3D image for the printer
- Orca, Cura, Bambu Studio, Prusa, etc

Printing

- Laying down the layers
- G-Code

Finishing

- Sanding, heating, polishing, spraying, painting, etc.



Intimidation by 3D modeling...

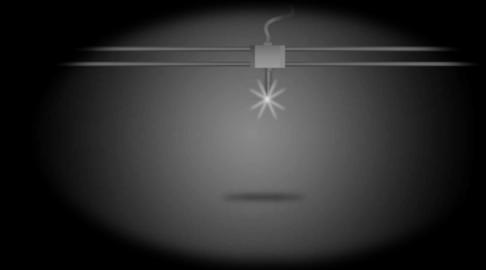
IS 3D MODELING  
**HARD TO  
LEARN?**



I've gone functional



# The paranoia of supply, demand, & politics



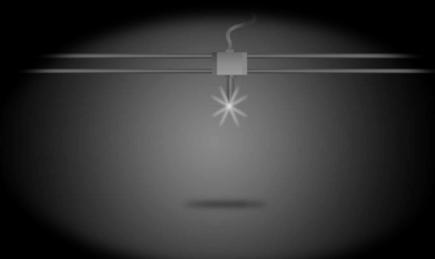
# Early on...

I thought I knew:

- ⌚ How to print something
- ⌚ What kind of printing I wanted to do
- ⌚ How filament printing works
- ⌚ What filament is
- ⌚ What adhesion is
- ⌚ How not to break things
- ⌚ How to fix things

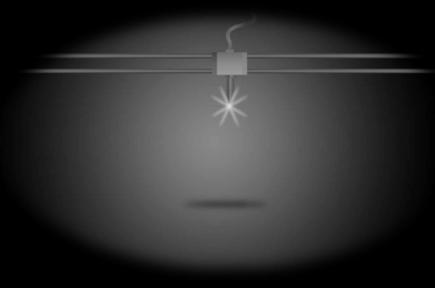
What I needed to learn:

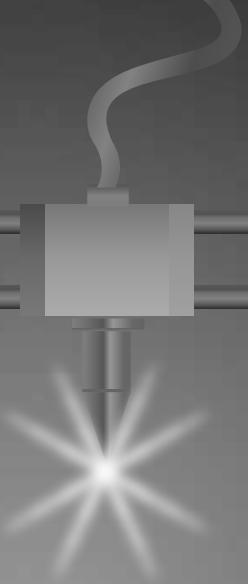
- ⌚ Modeling & Slicers
- ⌚ Filament types & limitations
- ⌚ What are extruders, hot ends, nozzles , & layers
- ⌚ Filament types & the spectrum of colors
- ⌚ Sticky sometimes isn't sticky or sticky enough
- ⌚ The force
- ⌚ mechanicals, electricals, tools, & tolerances



# What I really should have focused on earlier...

- ⌚ Terminology of the trade
  - ⌚ supports, rafts, walls, parts, infill, travel, shells, seams, ...
- ⌚ Consume intel on manufacturers
  - ⌚ Yes, most “just work” OOB, but...
  - ⌚ support & warranty
- ⌚ Listen to your friends, both virtual & physical
- ⌚ Learn how to 3D model
- ⌚ Absorbing knowledge





Thank you!

Mike Nelson

[mike@mikenelson.io](mailto:mike@mikenelson.io)



[mikenelson.io](https://mikenelson.io)

