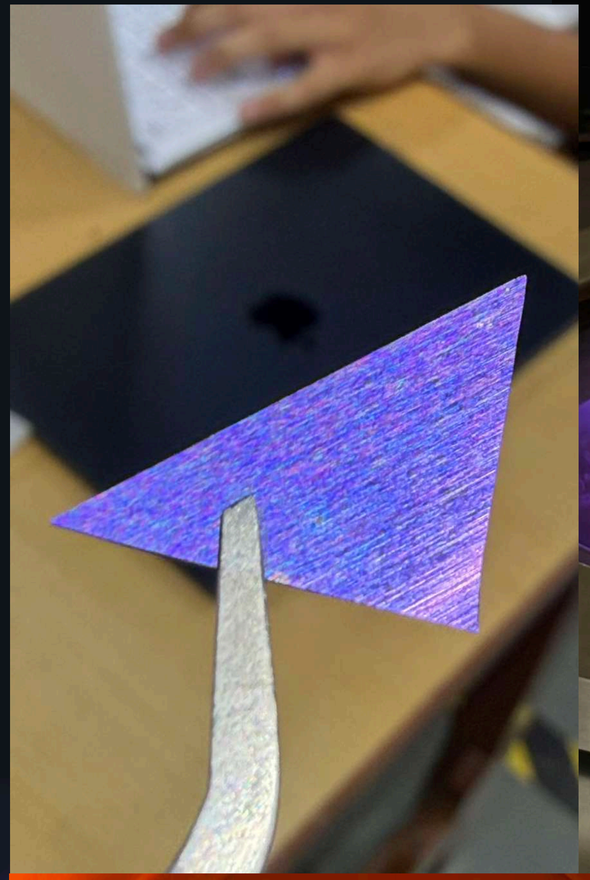
HackerFab IITB

A comprehensive guide.



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Some useful resources

How to build your own HackerFab by Aryamman Bhatia -

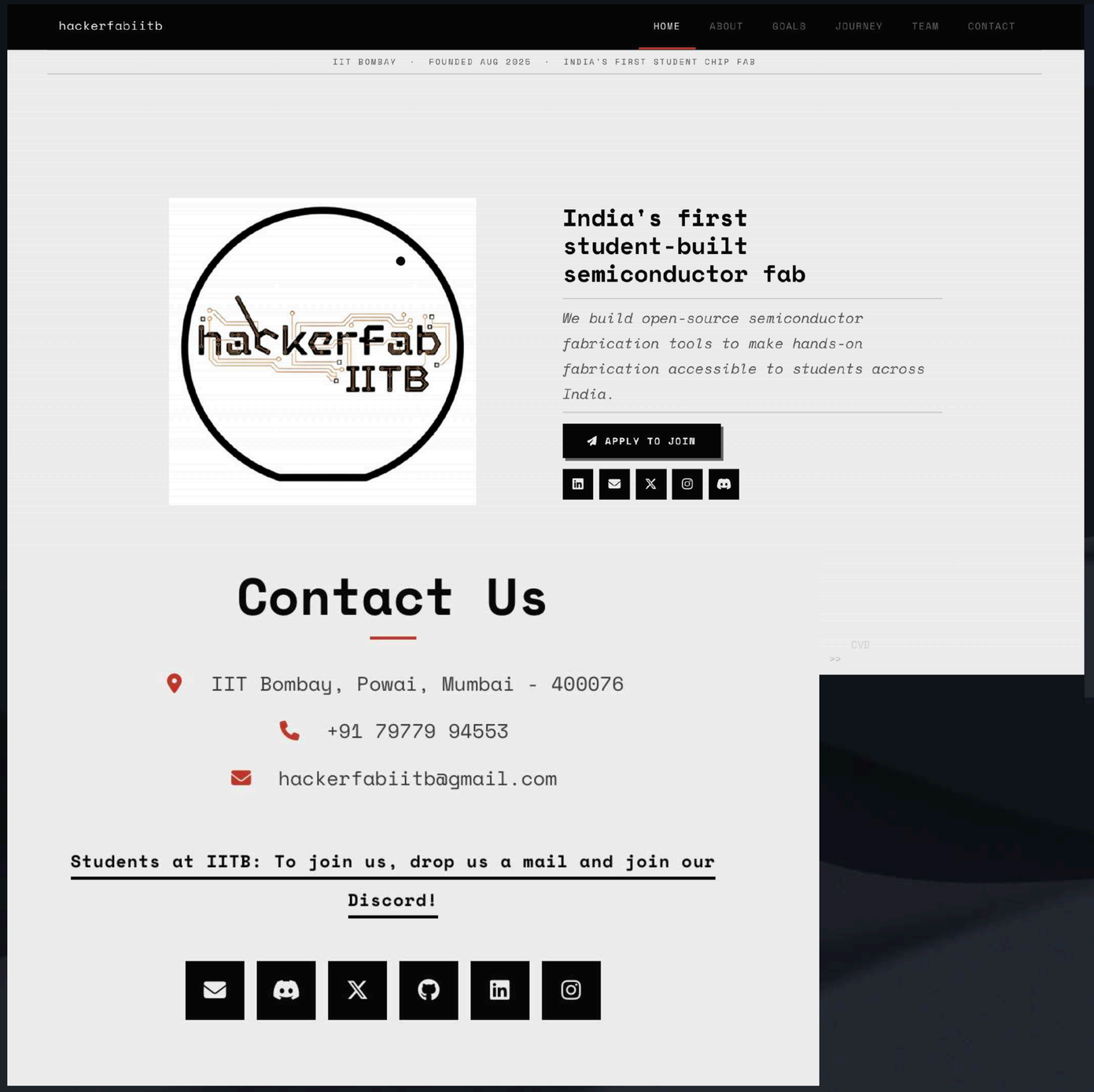
https://youtu.be/McIU-L6DveY

HackerFab India Discord Server -

https://discord.gg/2WcgX9R6Dt

Our website -

hackerfabiitb.github.io



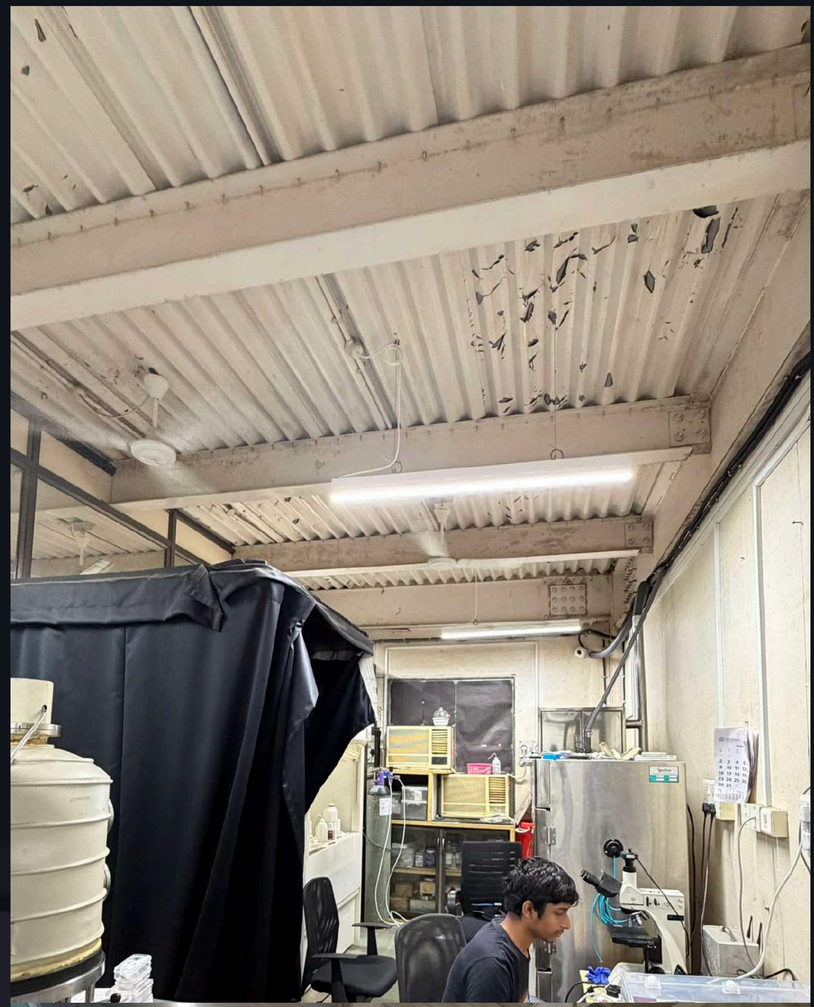
Building a HackerFab...

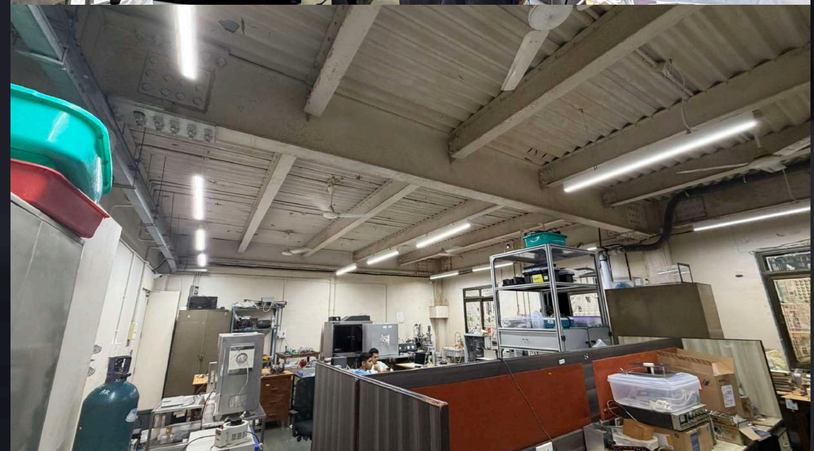
Is pretty easy!

Overall Infrastructure Required?

Burning Questions - 1

- An independent space for students to tinker
  - Our lab space is shared
- Space should be at least 200 sq ft. to house all the equipment
- Of those 200 sq ft., there must be a separate dedicated space for housing all chemical (wet-bench) work





Necessary Equipment

Burning Questions - 2

- Absolutely Necessary -
  - Fume hood
  - Optical Microscope
  - DI Water Machine
- Good to have -
  - Laminar flow bench
  - PC and Monitor Setup
- Fabrication Equipment - None in lab

Supporting Tools

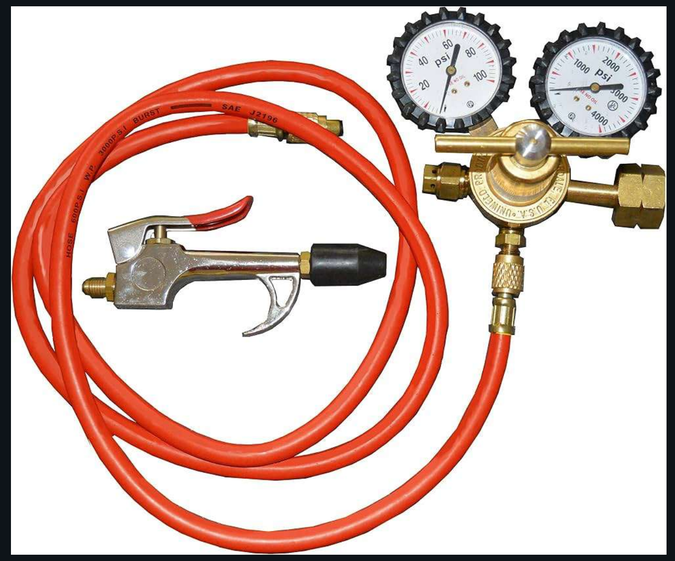
Burning Questions - 3

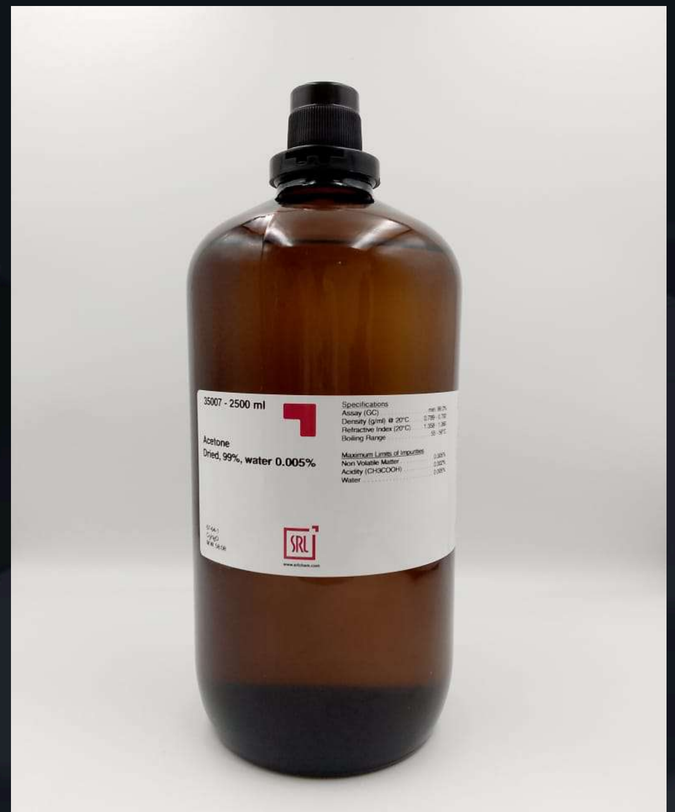
- Angle grinder, Drill, Screw drivers, Allen keys etc.
- Glassware - Beakers, petri dishes etc.
- Hot plate, weighing scale etc.
- Basic electrical equipment - multimeters, clamp meters etc.
- Basic lab safety equipment - nitrile gloves, safety goggles, masks, lab slippers, first aid box
- Basic electrical safety equipment - insulating gloves, rubber shoes etc.
- Basic fire safety equipment - CO2 fire extinguisher and smoke detectors

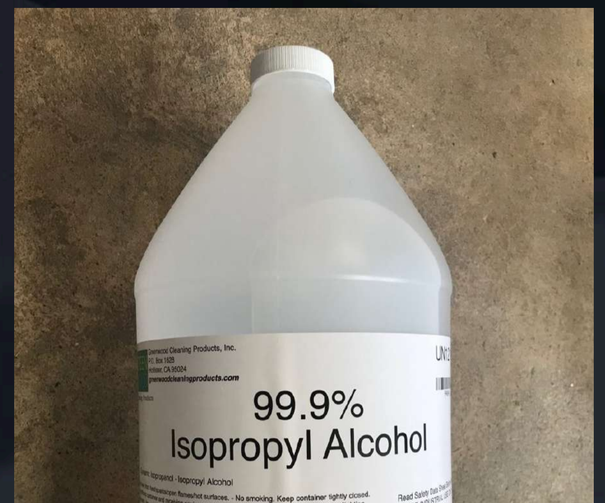
Raw Materials

Burning Questions - 4

- As per student needs
- Acetone
- IPA
- DI Water
- 5N Nitrogen Cylinder with nozzle



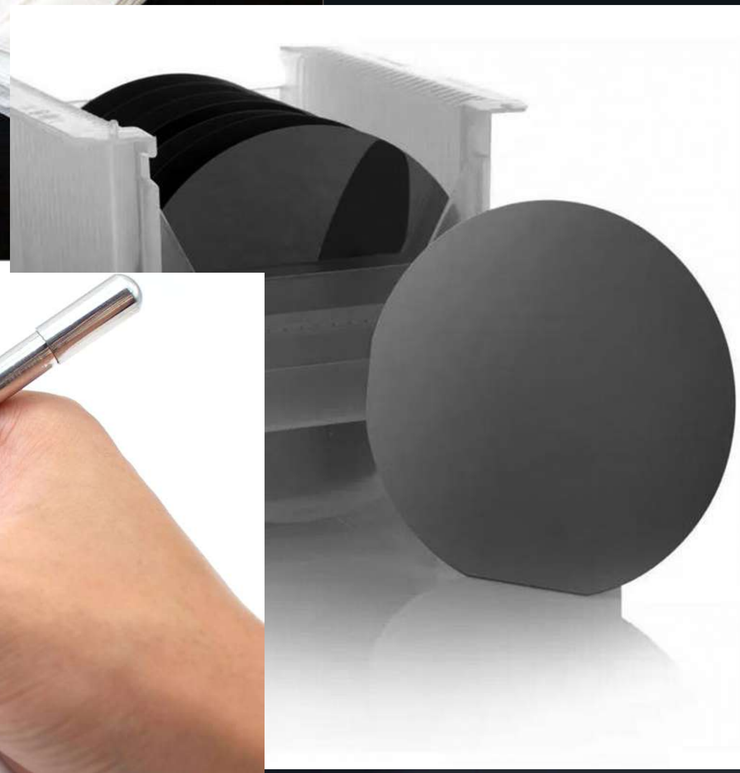




Recurring Costs

Burning Questions - 5

- All of the raw materials stated previously
- Nitrile gloves, masks
- After students finish fabricating their first tool :
  - Silicon wafers (4”)
  - Photoresist
  - Lint free cloths
  - Wafer cutting pen



Practical Limitations

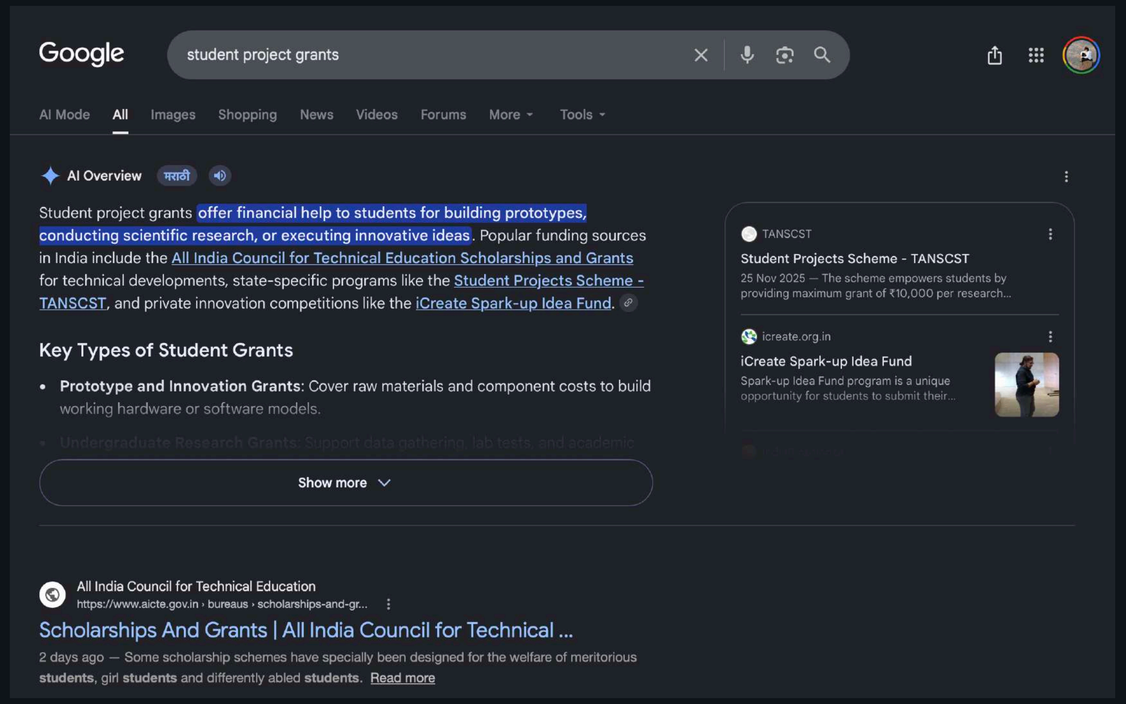
Burning Questions - 6

- HackerFab wasn’t built in a day
- Funding and reimbursements take time
- Safety comes first - be thorough with everything
- Start small and keep iterating
- Good things take time
  - Litho == 1 sem
  - Tube furnace == 1 sem
  - Sputter == 1 sem

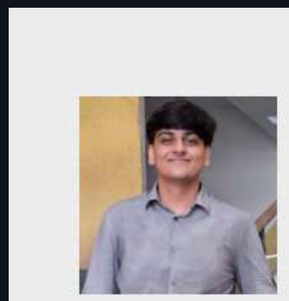
Setup Cost

Burning Questions - 7

- Things college needs to provide -
  - Lab space with fume hood setup
  - Basic funding (~INR 30k) for students to get started
- If college isn’t ready to provide financial support -
  - Search for student project grants
  - Look for investors and pitch to them



How did we do it?



Aryamman Bhatia

Abhineet Agarwal

Kartik U.C

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Shaashvat Sekhar

Suchet Gopal

Devavrat Patni

Akshat K.

Abhineet Avhad

Rushat Dixit

Jai Bellare

Shridhar Patil

Supriya Mishra

Lakshmi Pooshan Konakalla

Yogesh Sawant

- All started with 3 passionate students
- They recruited their friends and built a Litho, showcased it at SemiX
- Got a shared lab space from their professors
- Now the team has grown to an amazing 14 members!

Our Advice

Be patient, opportunities will come!

Centre for Semiconductor Technologies (SEMIX)

From a booth at SemiX

To winning best project at VLSID'26

To receiving the Nandan Nilekani Fellowship

QnA

Ask away!

Thank you!

We wish you the best for starting your own HackerFab!