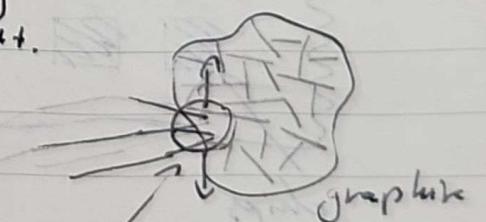


11/17 Graphene Exfoliation Summary

1. SiO_2 chips were prepared a few days ahead.
They were stored under vacuum at room temperature for 2 days (before, took hot SiO_2 right from the furnace...)
2. Put SiO_2 chips onto a hotplate at 110°C -
~~temperature~~ steady state temperature as read on the screen.
first put SiO_2 , then turn up temperature
3. Cleaned work station (table, +lezzers) with IPA and got flakes and tape.
4. Flake selection focused on:
 - find thin & shiny flake smaller flake from a bigger parent.
 - appropriate flake was selected & positioned on the tape.
 - see "initial_flake_size".

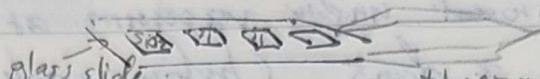


separating top & bottom
layers to get to the
shiny middle

5. Tape was folded multiple times, starting from the center & making way out towards the ends.

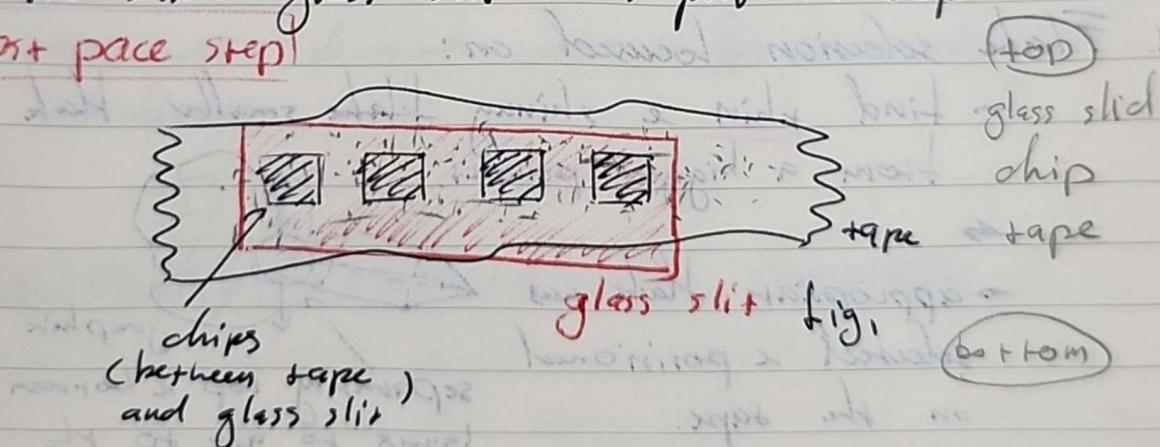
Folding was stopped after tape looked like
"folded_flake-side" or/and "folded_flake-top".

6. Slide with SiO_2 chips on top was taken away from the hot plate & put near exfoliated tape.


SIMULTANEOUSLY, timer was started for *30-35s.

7. At *30s, the first chip was placed onto the exfoliated tape. Additional chips were placed immediately after.

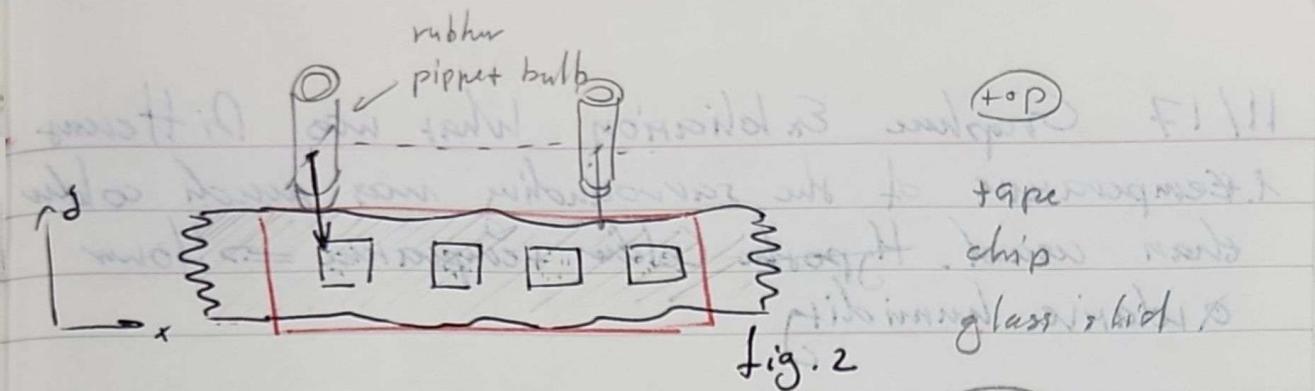
8. After all chips were placed onto tape, ~~=~~ the same glass slit was put on top
for pace step



The whole object was flipped by 180° .

using small rubber pipet bulb, gently press on tape in the areas where chips are located.

DO NOT press too many times; this was found to make flakes stick too firmly to the chip surface \Rightarrow too many tall features
*depending on surroundings temperature, may need longer cool down time.



press across the whole surface

(bottom)

9. Change hotplate temperature to $66^{\circ}-67^{\circ}\text{C}$
at the steady state.

10. Place whole objects (tape-chip-slide... etc?) onto the hotplate and start timer for 2min.

during these 2min, press (firmly, harder than
during step 8) into a similar manner as before.

make sure to work through each chip's
surface area.

11. Stop after 2min and take off the hot-
plate to cool down for another 2min.

12. After 2min, SLOWLY pull off tape from
the ~~g~~ chips.
peel

NOTE:

- ~ 90s per chip
- uniform peel velocity
- peel direction only in \hat{x} (see fig. 2)
- peeling must be parallel to the z -axis surface for coordinate reference

→ minimize!

11/17 Graphene Exfoliation What was Different

1. Temperature of the surrounding was much colder than usual. ~~Hypothesis~~ Colder temperature \Rightarrow lower relative humidity
2. SiO₂ chips were old. ~~Today~~ They were stored for 3 days in vacuum chamber.
3. Fewer and lighter tapping during step 8.
4. Longer peal off time per chip (increased from ~30s previously to ~90s this time)

Initial_flake_size





Folded_flake_top

