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1 CAR T-Cell therapy

Delivering DNA into cells allows for advanced treatment in disease, e.g. Car-T therapy. They are very expensive. THe hardest part is the transvection process. Technical expertice is hard.

I really like the speed of this presentation. Presenter is clearly a great communicator. Image of carbon nanotube arrays allows for tranfsection, which creates vertically aligned carbon tubes to a 13 milimeter AAO wafer. This is key to getting

About 84% effective. How do you build these devices?

1.1 Manufacturing

- template AAO
- CVD (chemical vapor deposition)
- Oxygen plasma etching using ion mill
- RIE or ICBRIE

How do you improve the yield?

1.1.1 CVD

- CVD - carbon deposition using ethylene, high temperatures break down the gas, and carbon sublimes into the deposit.
- Variability of this can be done through carbon depsition boat information. Edge cases exist in tube thickness, pore diameter, tip height. There is a corellation between tube thickness and tip height - that is, thicker tubes mean you have taller tip heights.

1.1.2 Reactive Ion Etching

Don't really understand this ngl

1.1.3 Intra-device variability

Chaotic graphs, not a single patterns, either across carrier wafer or across the entire device itself.

Ultimately, built a processing mechanism to improve yield of these carbon nanotubes, tube thickness improved, thin in general.