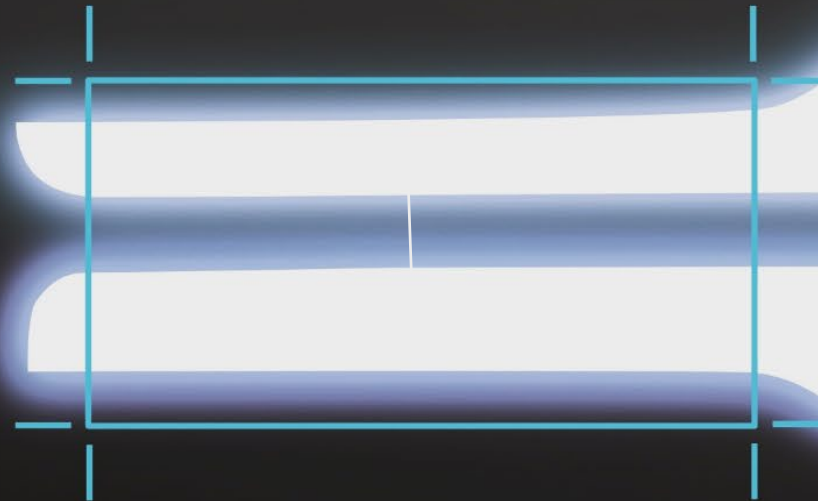
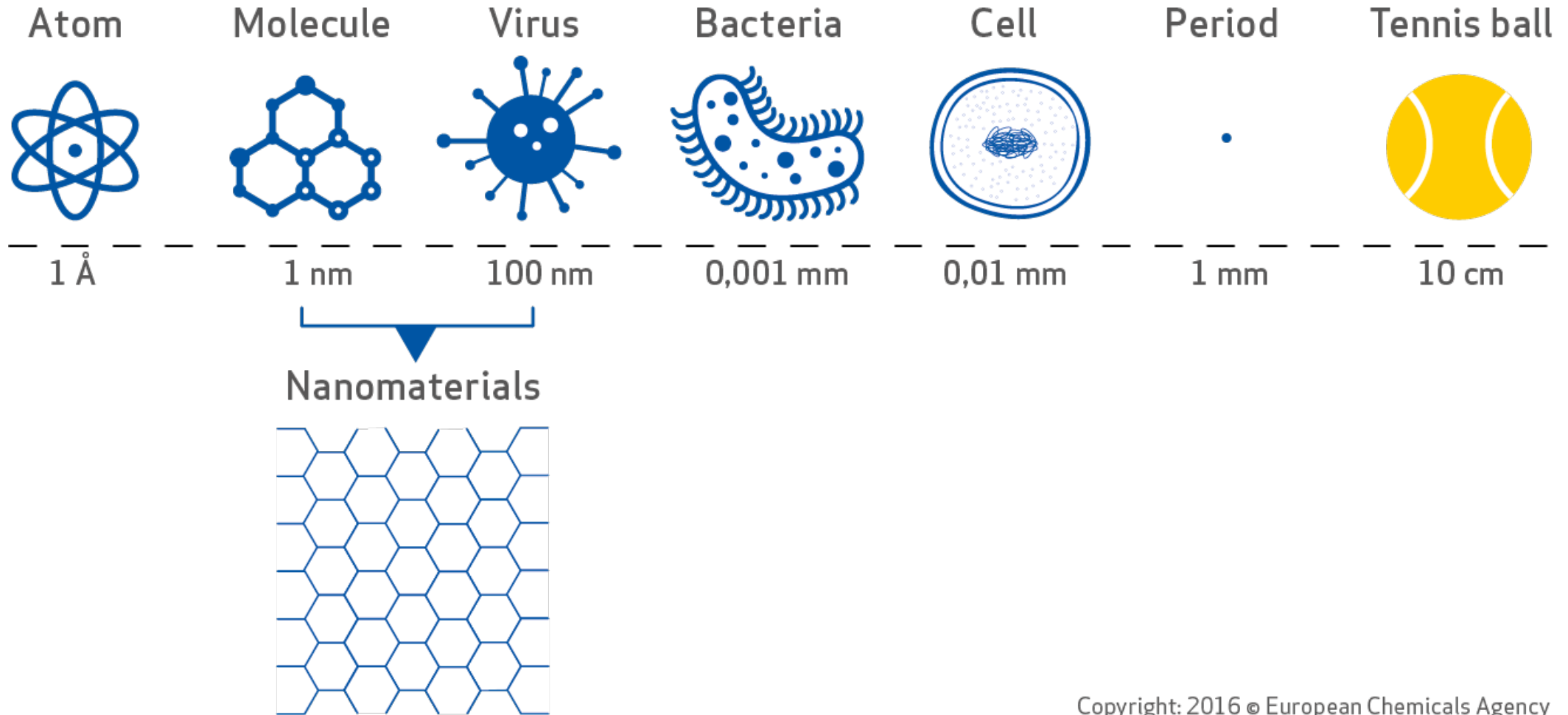




**Nano-Transistoren für Spin-Qubits und Sensoren:  
Nur das Beste ist gut genug**



# Wir verwenden die besten verfügbaren Materialien, und die sind winzig klein



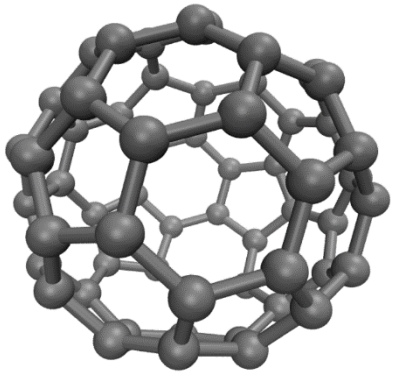
Copyright: 2016 © European Chemicals Agency

0D

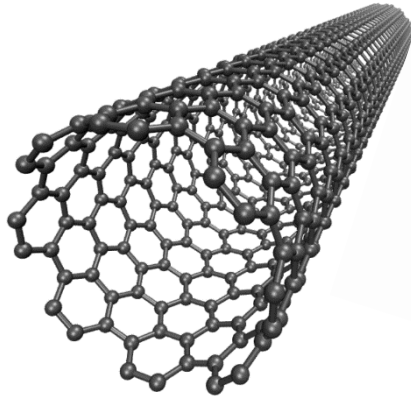
1D

2D

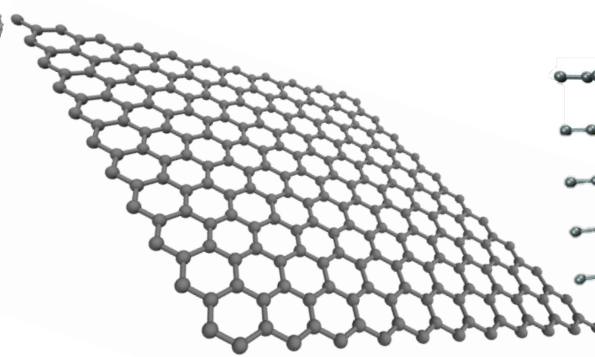
3D



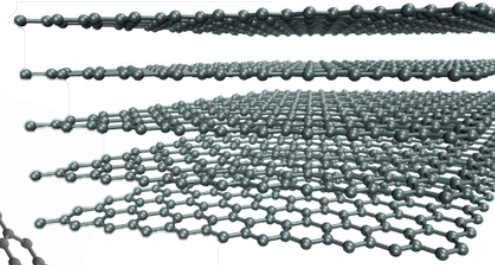
Fullerene



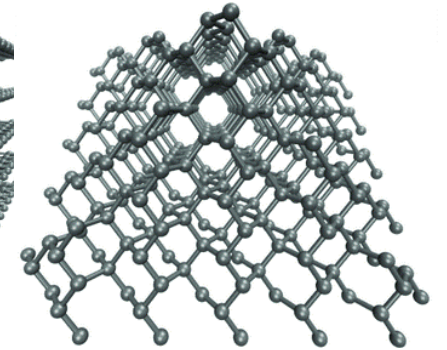
Nanotubes



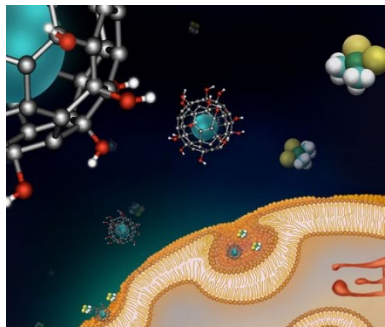
Graphen



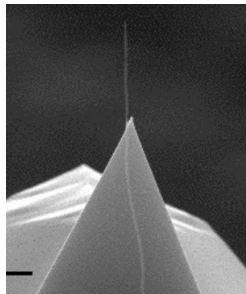
Graphit



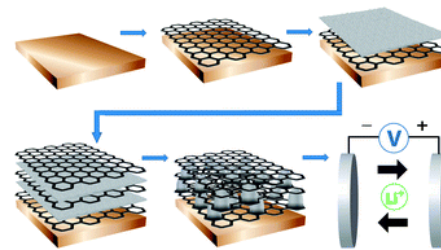
Diamant



Proactive Agent for Cells [2]



AFM probe tip [5]



Energy storage [3]



Pencil

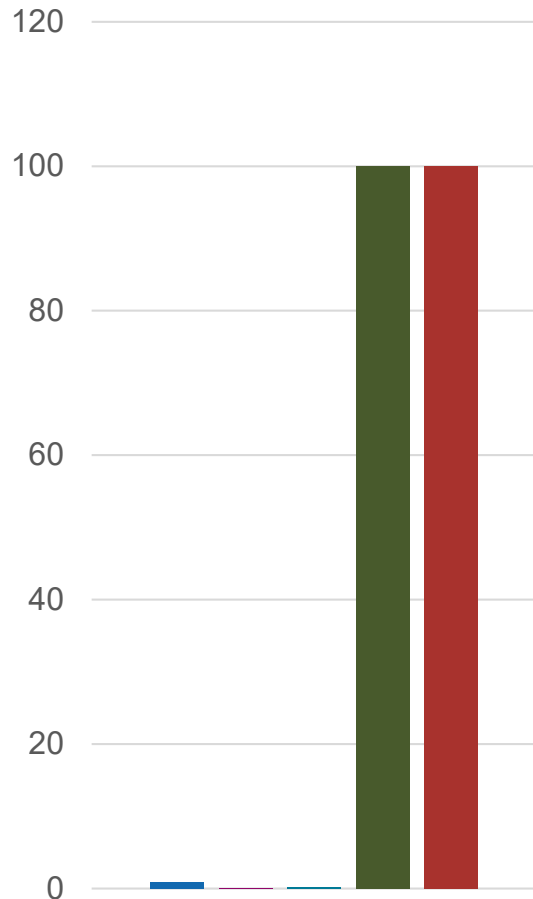


PCD diamond drill (6C Tools AG)

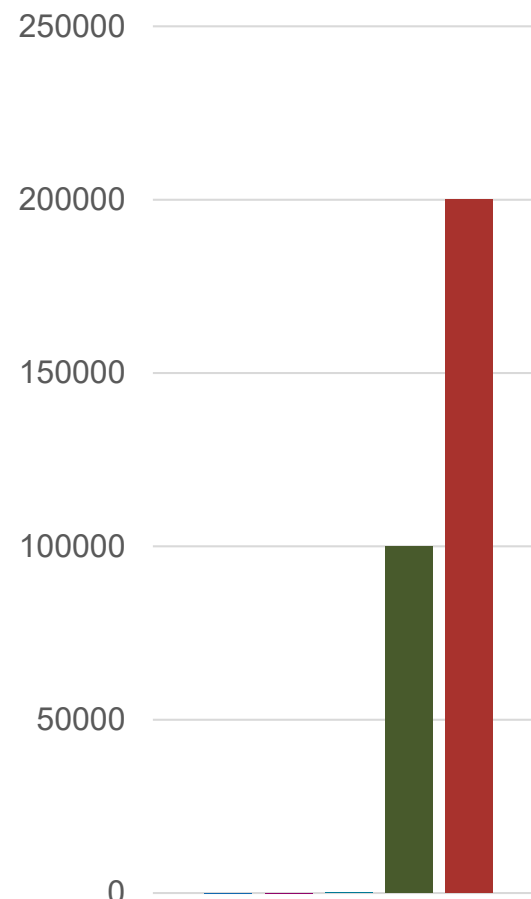
# Die besten Materialien haben die besten Eigenschaften

■ Carbon Steel ■ Aluminum ■ Copper ■ Carbon Nanotube ■ Graphene

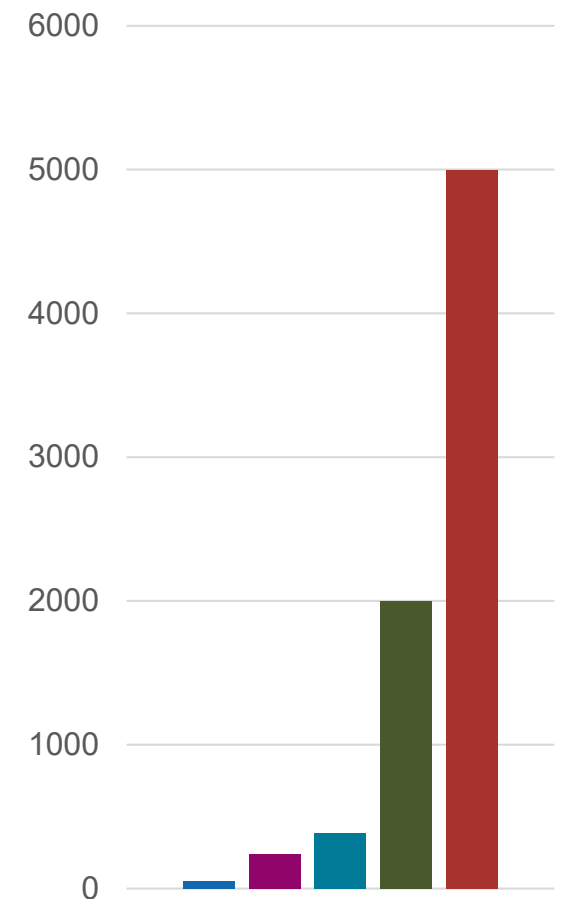
### Tensile Strength [GPa]



### Conductivity\* [ $\frac{cm^2}{V*s}$ ]

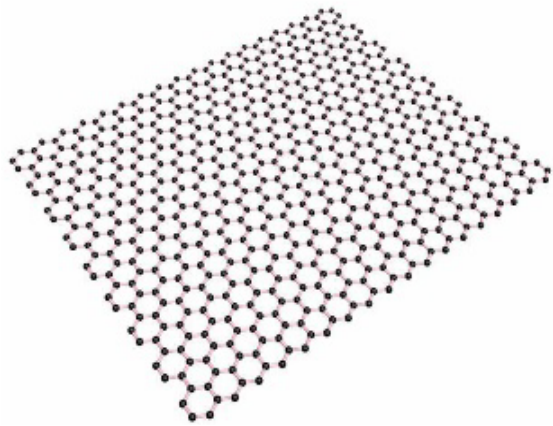


### Thermal Conductivity [ $\frac{W}{m*K}$ ]

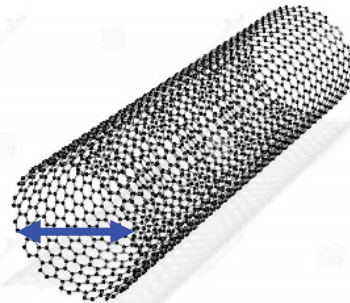


\*Electron Mobility

Wir integrieren diese Materialien mechanisch in unsere Devices,  
hier am Beispiel eine Double-Quantum-Dots

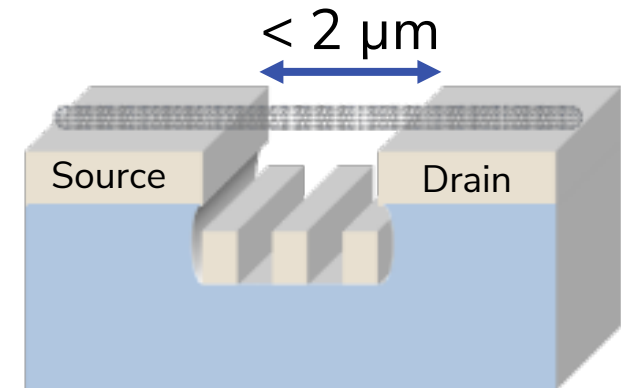


Graphene



1 nm

Carbon Nanotube



Electrical device  
(Double Quantum Dot)

# Bisher wissen wir von drei Anwendungsbeispielen für unsere Devices...



**Quantum Dots  
(Spin – Qubits)**

hohe Kohärenzzeiten  
niedriger Kontaktwiderstand



**Gas Sensoren**

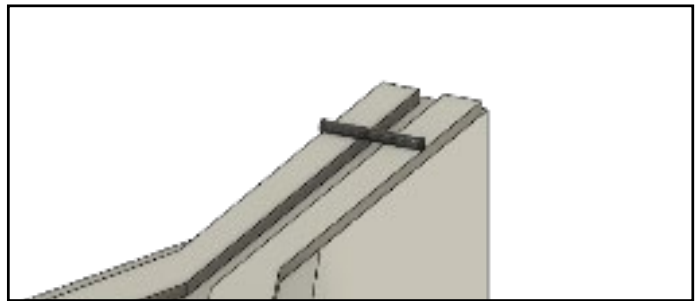
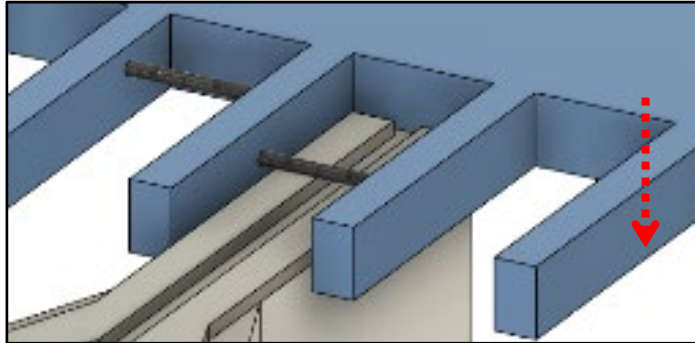
giftige Gaskonzentrationen  
hohe Empfindlichkeit (LOD)  
niedriger Energieverbrauch



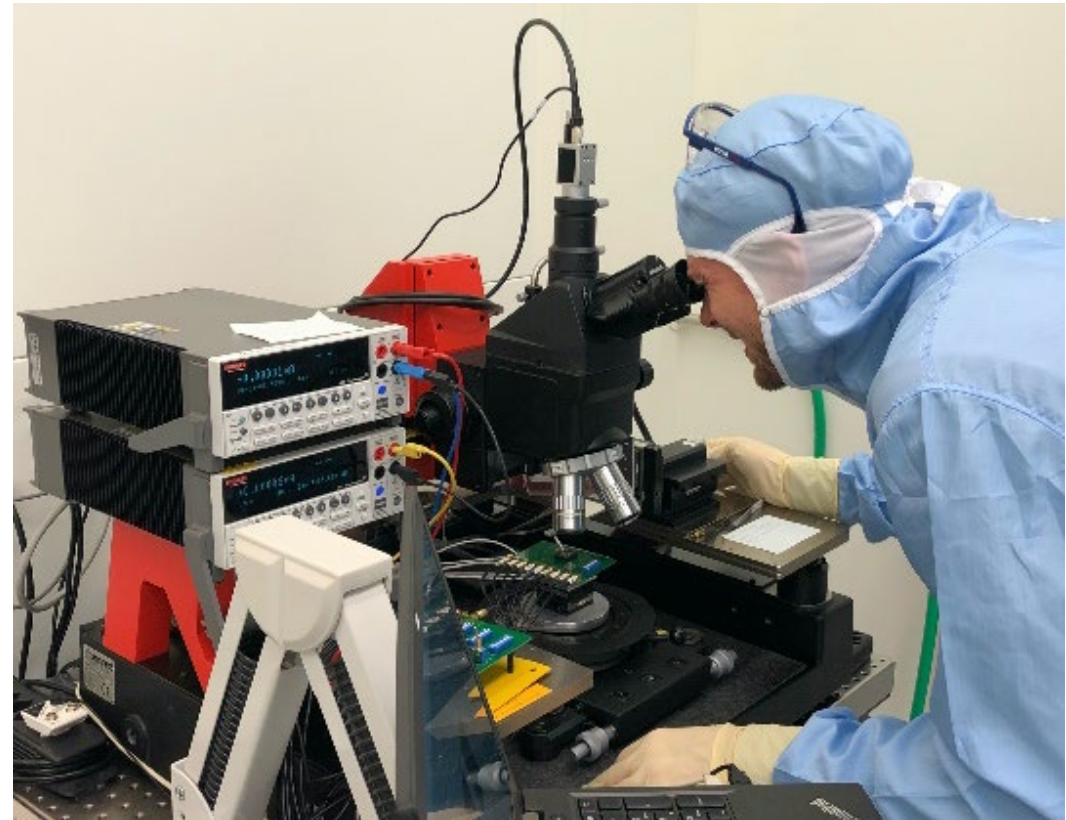
**Medikamententransport**

ultra-rein  
molekulare Grösse  
frei-schwebend

# Wir verbauen Carbon-Nanotubes mechanisch via Dry-Transfer... was bisher nur mühsam und langsam möglich war

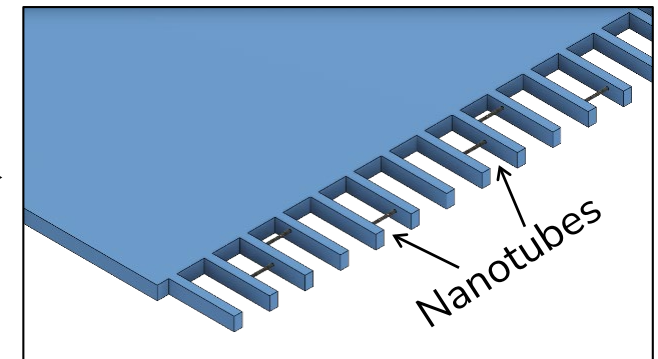
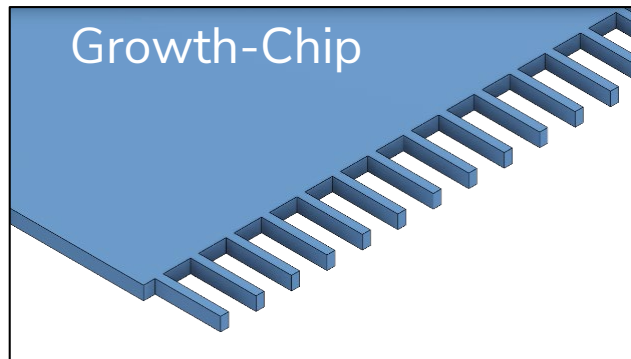
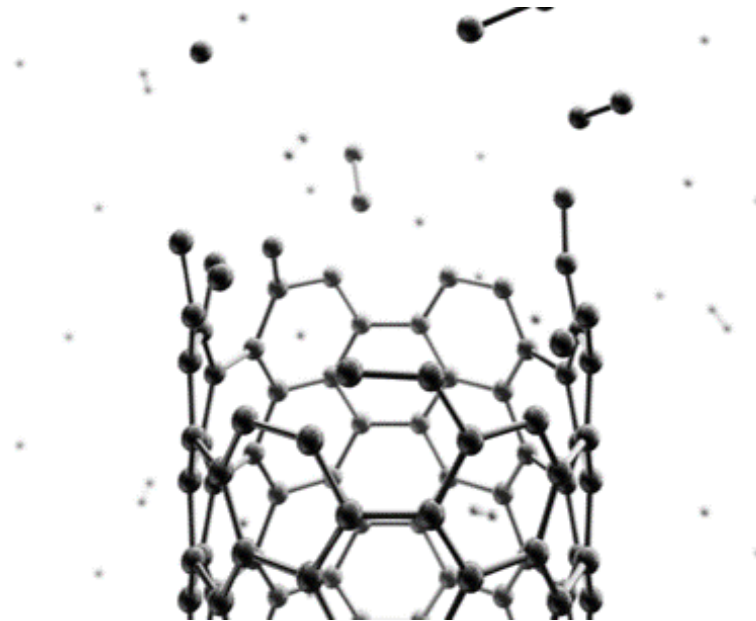


Nanotransistor



Manuelle Manipulation  
( $< 1$  CNT transistor / Stunde)

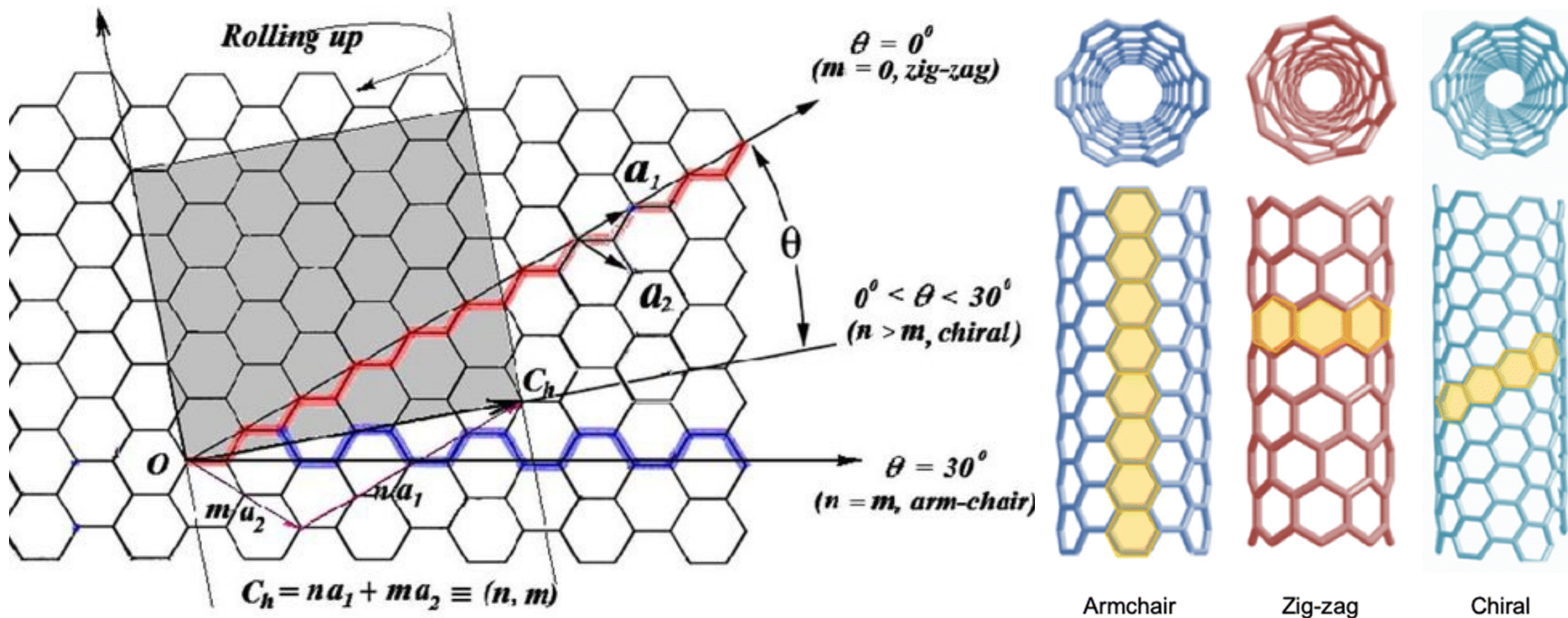
# Nano-Tubes wachsen auf unserem neuartigen Chip-Design



>800 °C CVD-Prozess

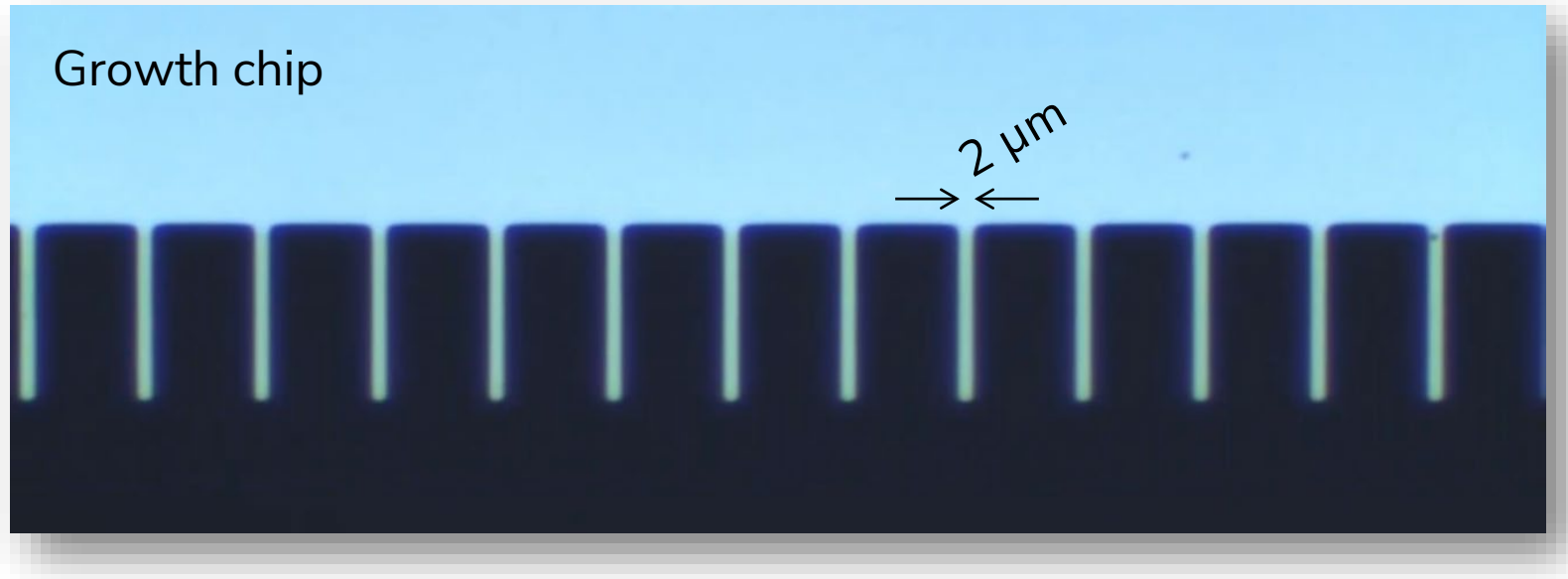


# Woher stammt unser Name?



# Wie identifizieren wir die besten CNTs?

Unter dem Lichtmikroskop sind sie nicht zu erkennen

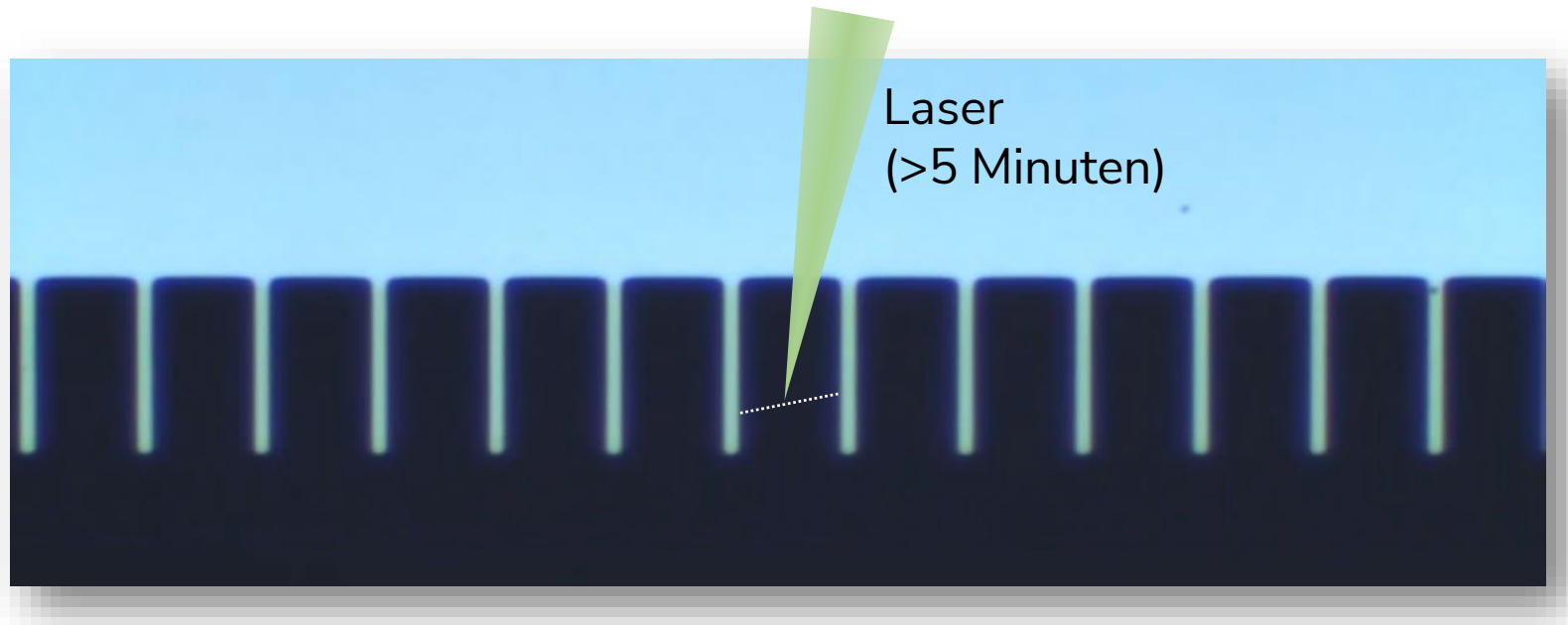


Nun befinden sich sehr viele CNTs auf unserem Substrat,

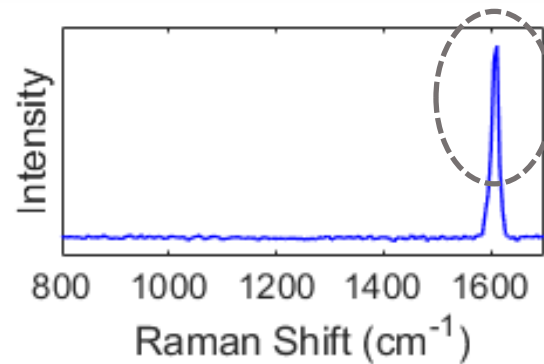
diese sind aber winzig klein (1 nm) und dementsprechend unter dem Lichtmikroskop unsichtbar

# Wie identifizieren wir die besten CNTs?

Unter dem Raman Lasermikroskop hingegen schon



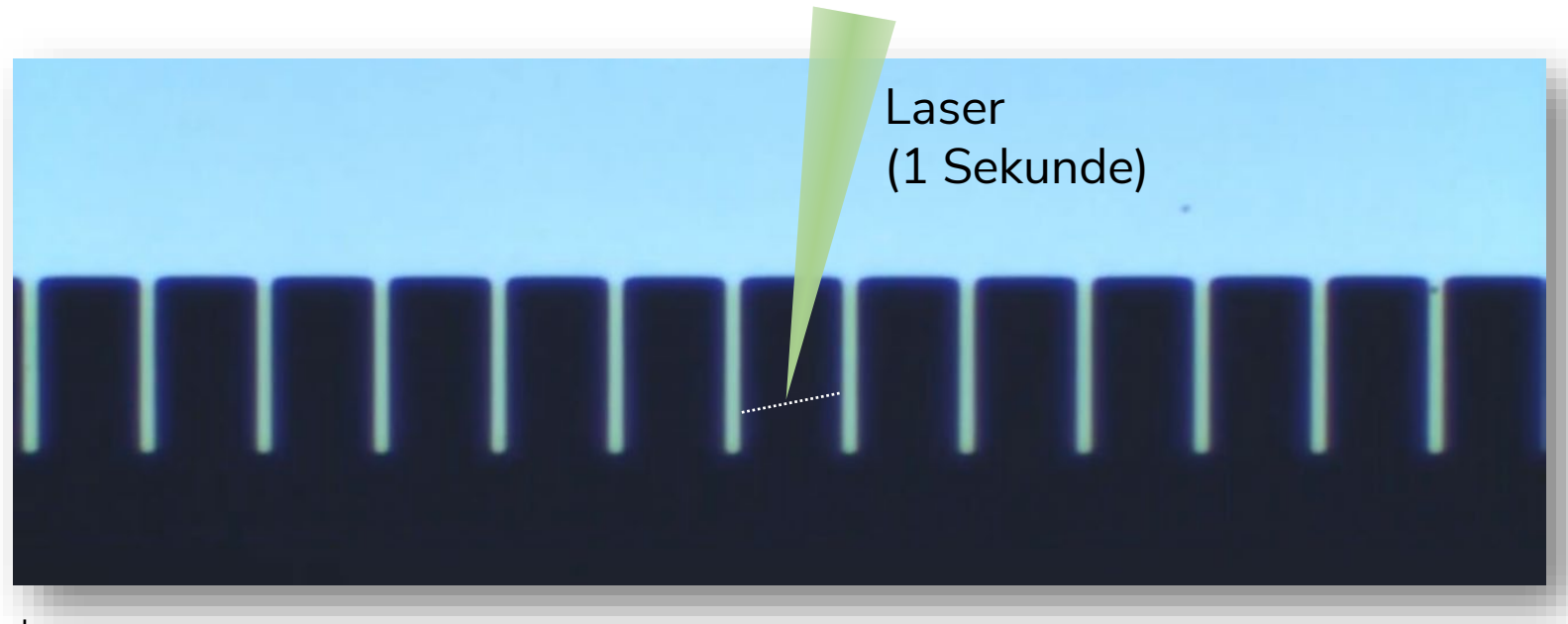
Nach >5 minutes



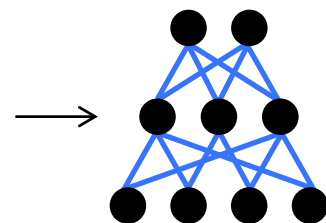
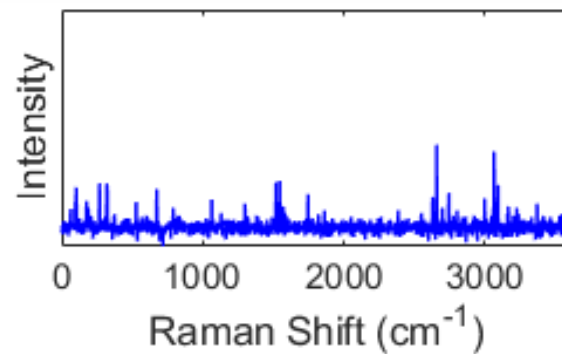
Der Peak entwickelt sich langsam über die Zeit

# Wie identifizieren wir die besten CNTs?

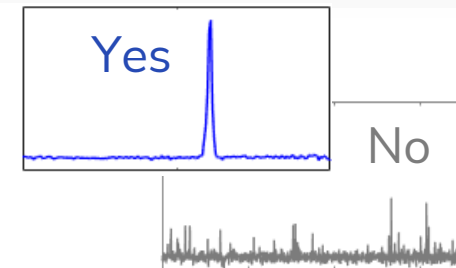
Mit AI geht's schneller...



nach  
1 Sekunde



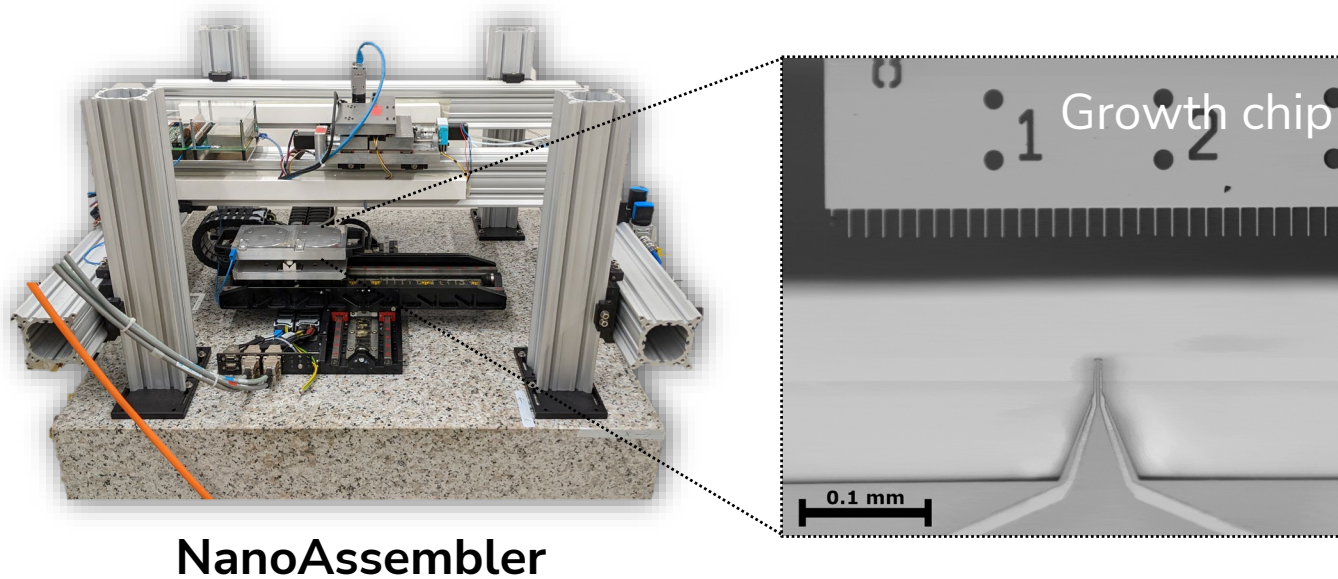
**Trained AI**



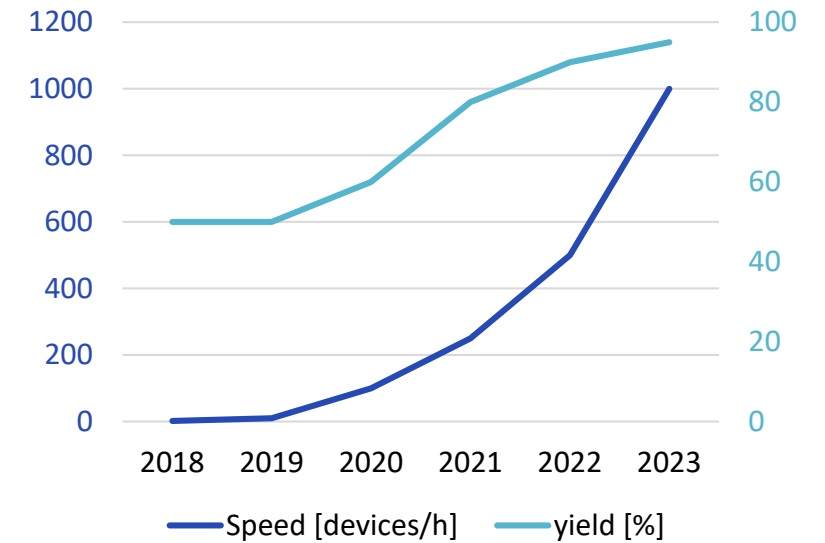
AI kann Peaks im Signal  
trotzdem identifizieren

# Wir integrieren die Materialien voll-automatisiert mit unserem selbstentwickelten Fertigungs-System...

High-speed Fertigungssystem (300 Komponenten / Stunde)



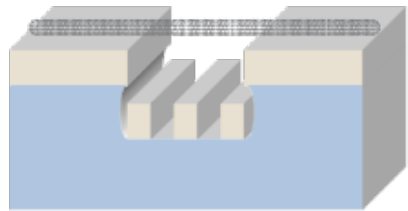
> 300x schneller als heute



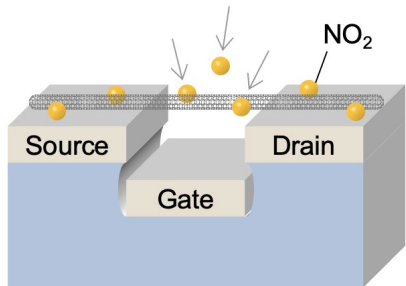
# Wir fertigen im Wafer-Massstab...

Wobei wir sowohl fertige Komponenten/Wafer als auch Fabrikationsmaschinen verkaufen

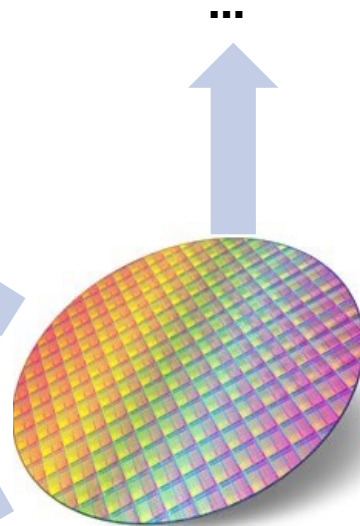
## Device wafer



Quantum-Dots



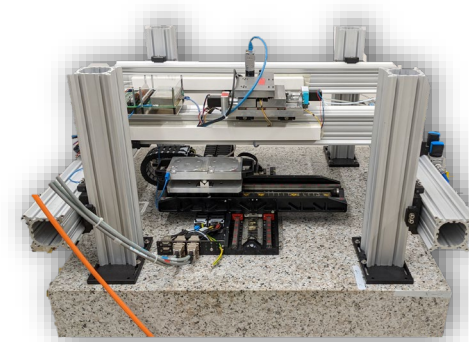
Sensoren



> 300 Devices / Wafer

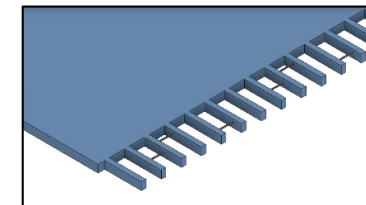
2023

## CNT fabrication



CNT devices

Fertigungssystem



CNT chip (consumable)

2026

# Unser Team besteht aus Fachleuten im Business- und Wissenschaftsbereich

## chiral



**Seoho Jung**  
CEO, Co-founder

- PhD in nanotech, ETH Zurich
- 14y nanotech R&D
- [10x improvement in nanotube qubit quality](#)



**Natanael Lanz**  
CTO/COO, Co-founder

- PhD/postdoc in precision engineering, ETH Zurich
- 9y development of machine control tech



**André Butzerin**  
CPO, Co-founder

- PhD in automation, ETH Zurich
- Patent on AI-enhanced manufacturing



We're looking for VP Sales/Marketing

Working together since 2018

## Business advisory



**Keith Ryu**

- Founder, Fountain (Y Combinator '15)
- Forbes 30 Under 30
- Raised \$220M
- Helping us with US market & investor relations



**Mario Jenni**

- CEO, glatec
- CEO, BIO-TECHNOPARK
- Helping us with Swiss/EU network & infrastructure

## Scientific advisory



**Prof. Hierold**  
(ETH Zurich)

- Semiconductor, nanotechnology



**Prof. Wegener**  
(ETH Zurich)

- High-precision engineering



**Prof. Calame**  
(Empa)

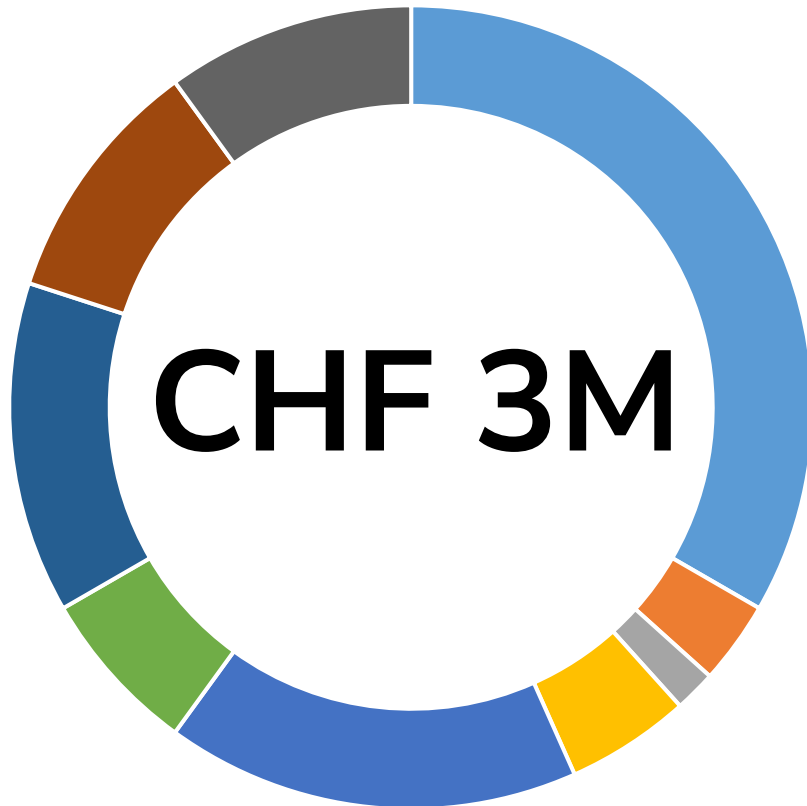
- Quantum science



**Prof. Jaggi**  
(EPFL)

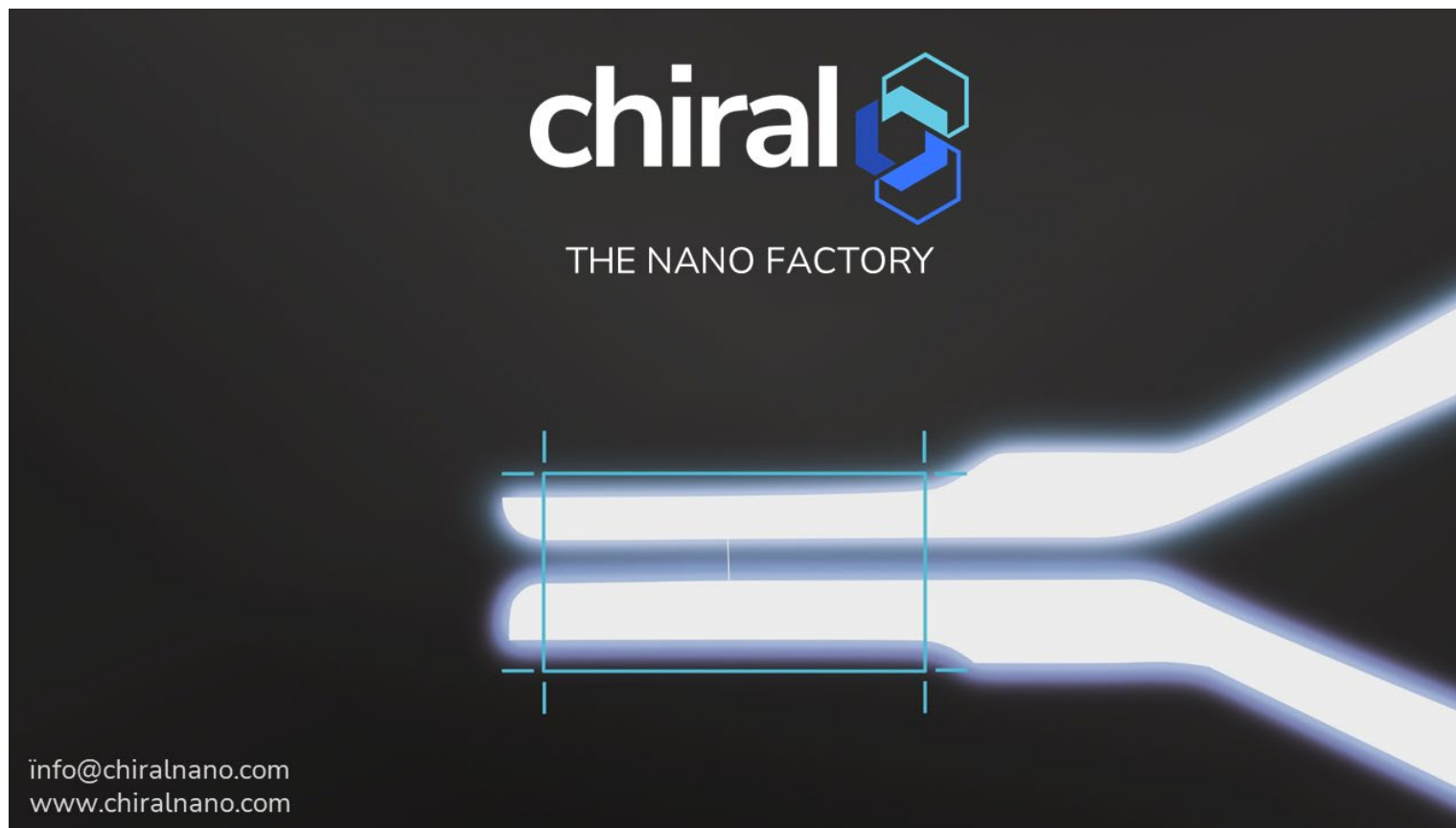
- Deep learning

# Wir haben kürzlich unsere Pre-Seed Finanzierungsrunde erfolgreich abgeschlossen



- Bietet uns 18-24 Monate Runway
- Wir erhielten zudem ein 150kFr. Fellowship von der ETH ([ETH Pioneer Fellowship](#))
- **Runde ist beendet**
- **Series A Fundraising 2025**





Watch our 3-minute tech summary: <https://youtu.be/a3MLmDM8Zoc>

**Natanael Lanz** | CTO  
natanael@chiralnano.com

