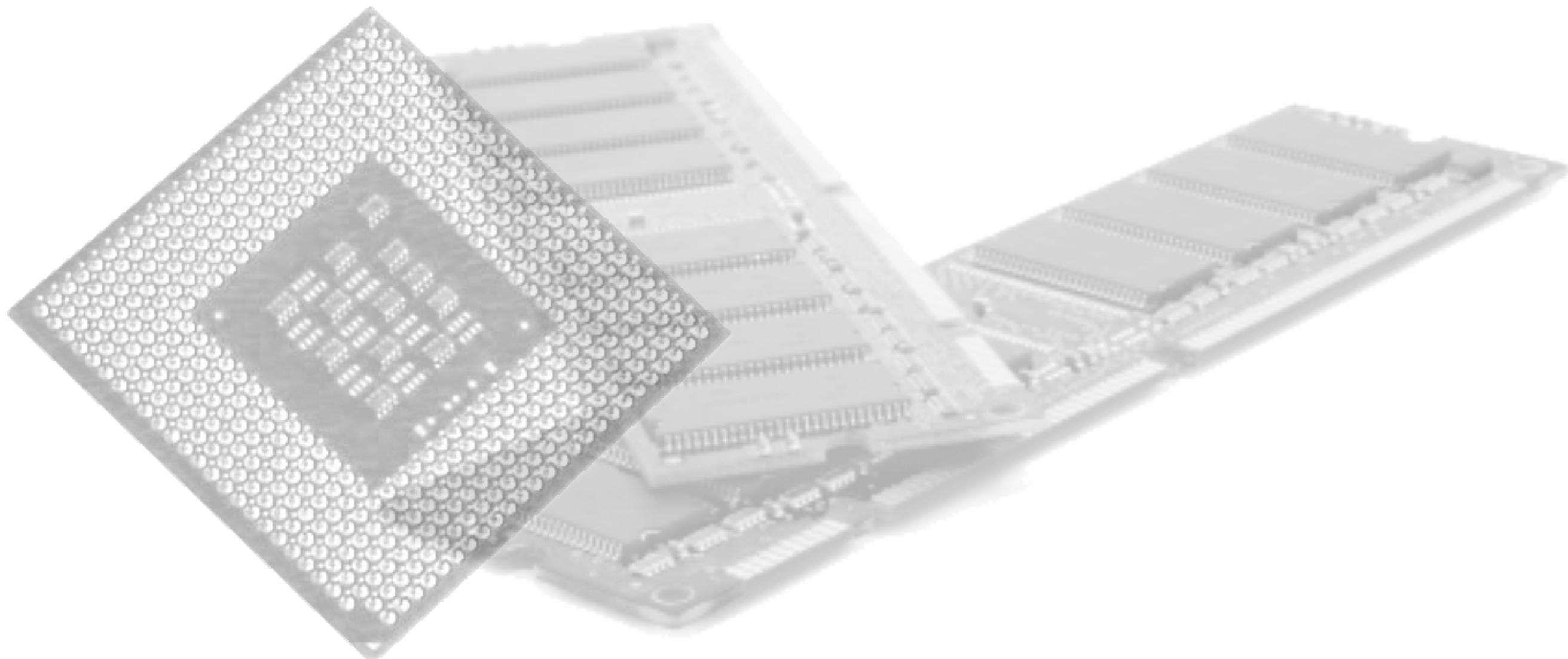
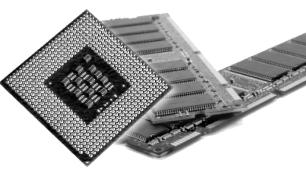


## Produktion Hardware





## Silizium

- aus Quarzsand

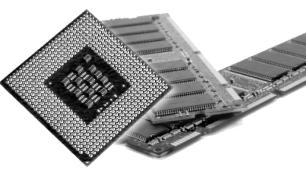




## Silizium

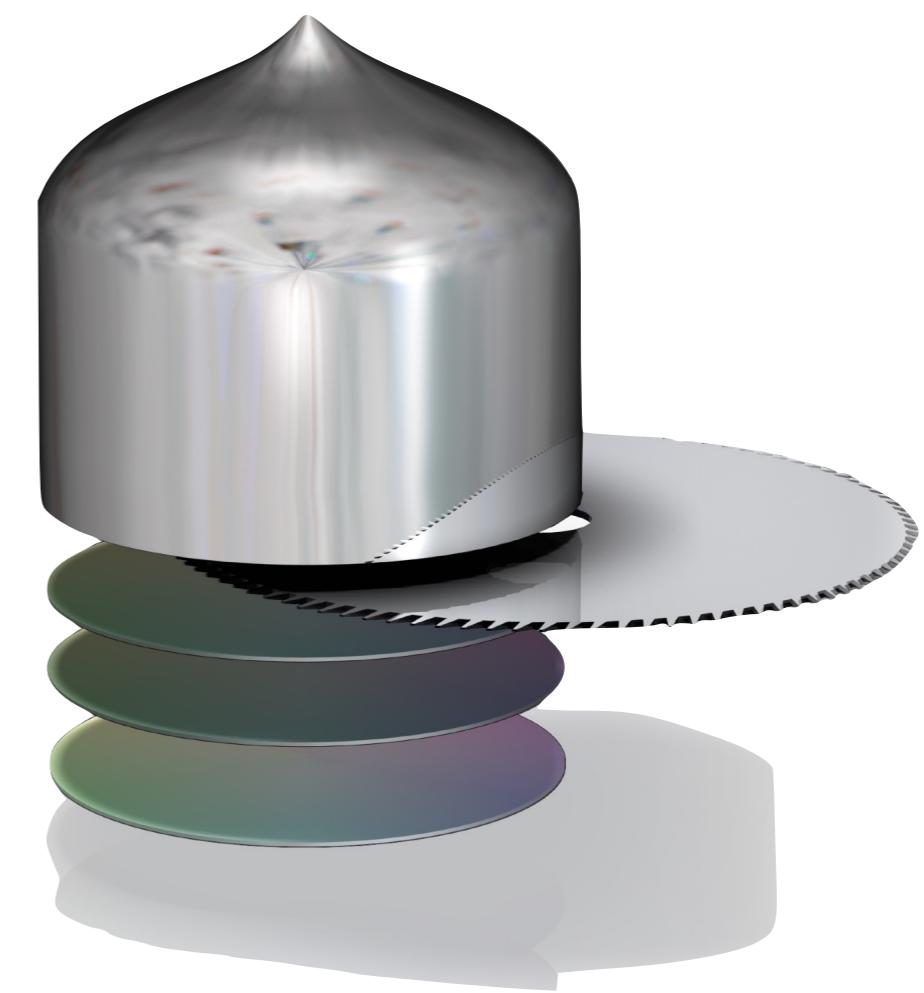
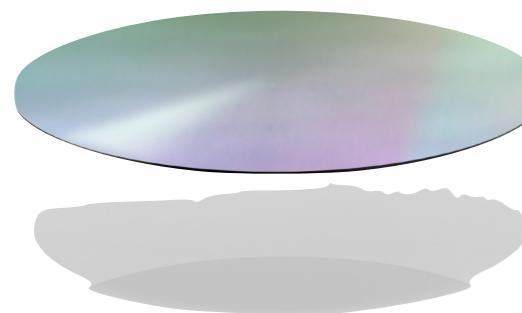
- wird geschmolzen
- und mehrfach gereinigt
  - ein Fremdatom pro Milliarde Silizium-Atome

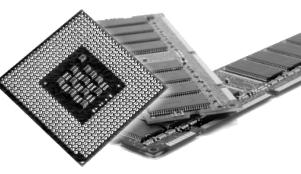




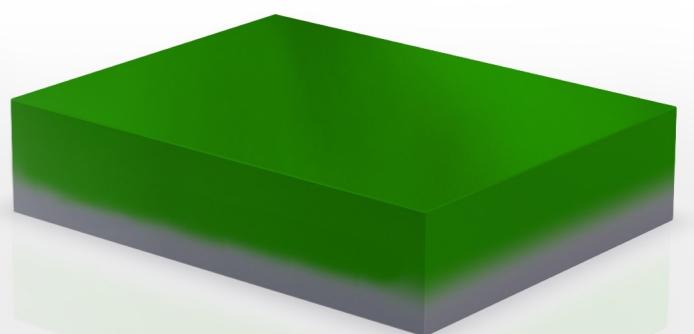
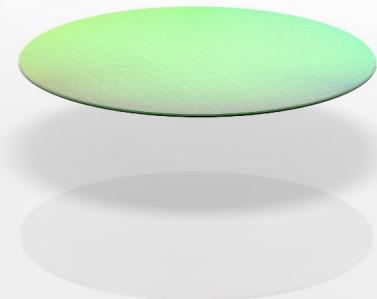
## Silizium Wafer

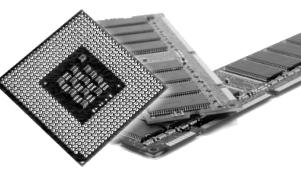
- Waferformat: 300mm
- Wafer werden dann poliert





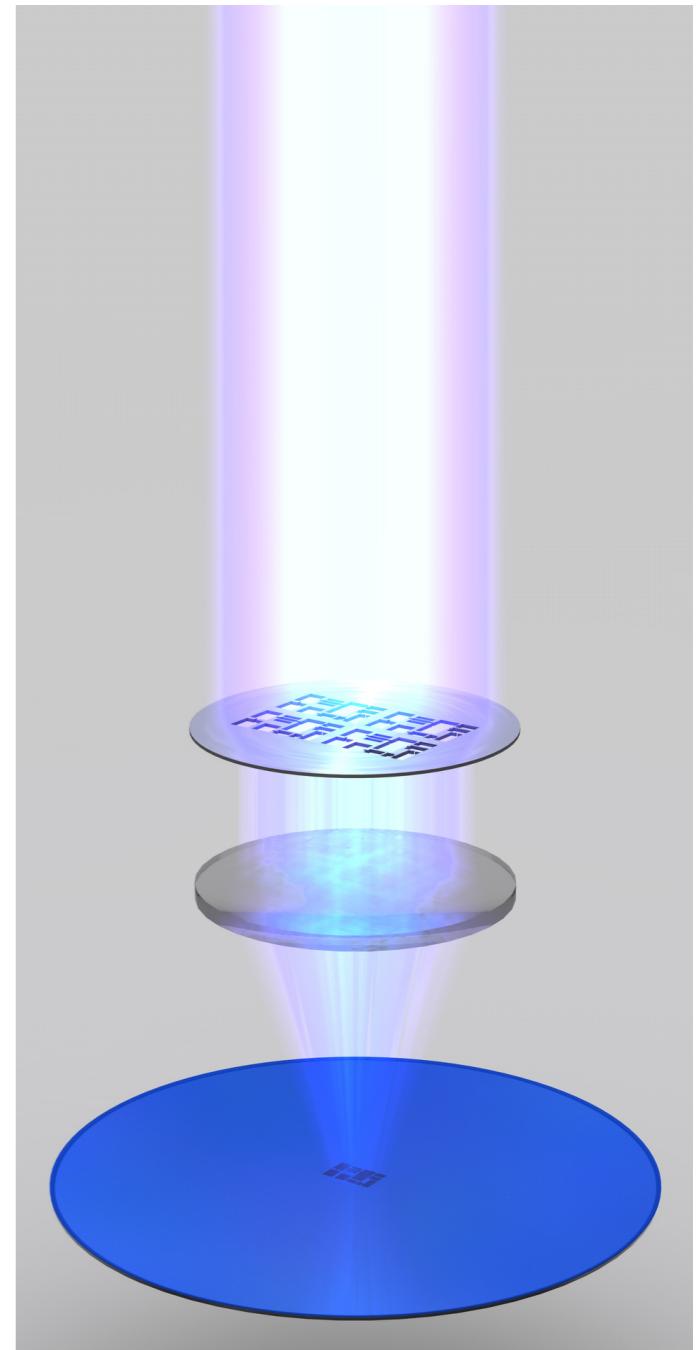
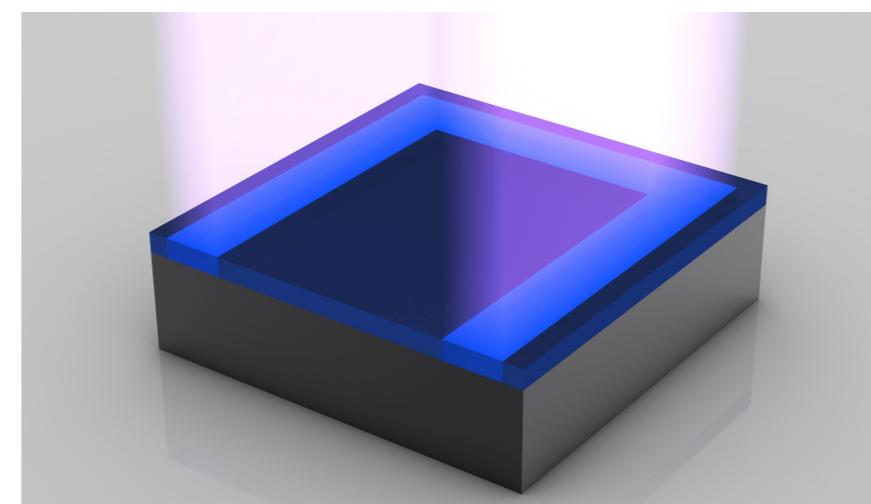
## Dotieren

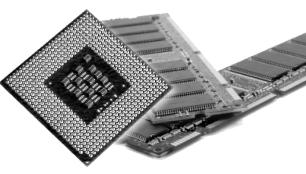




## Belichtung

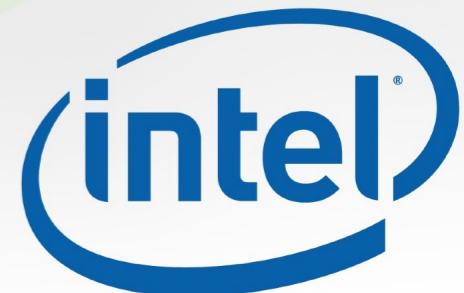
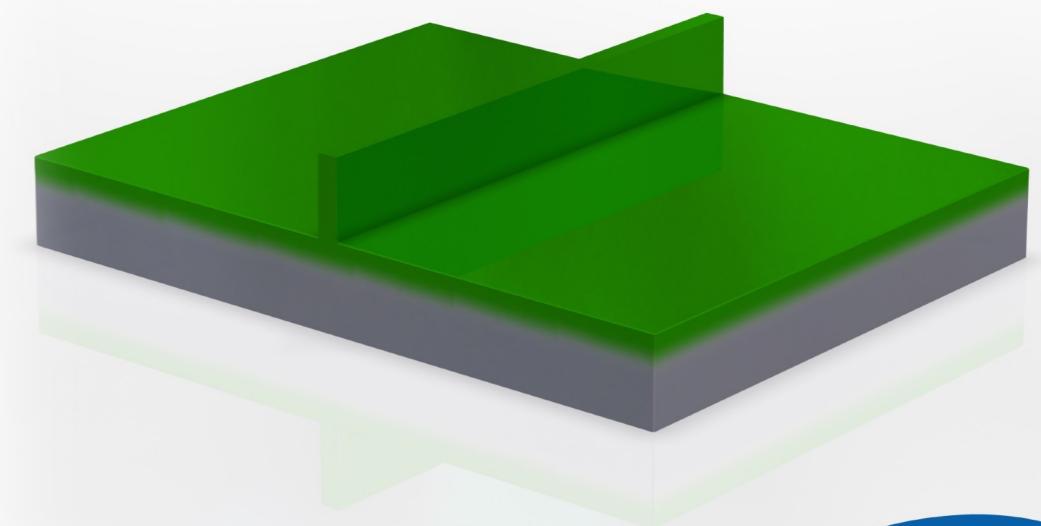
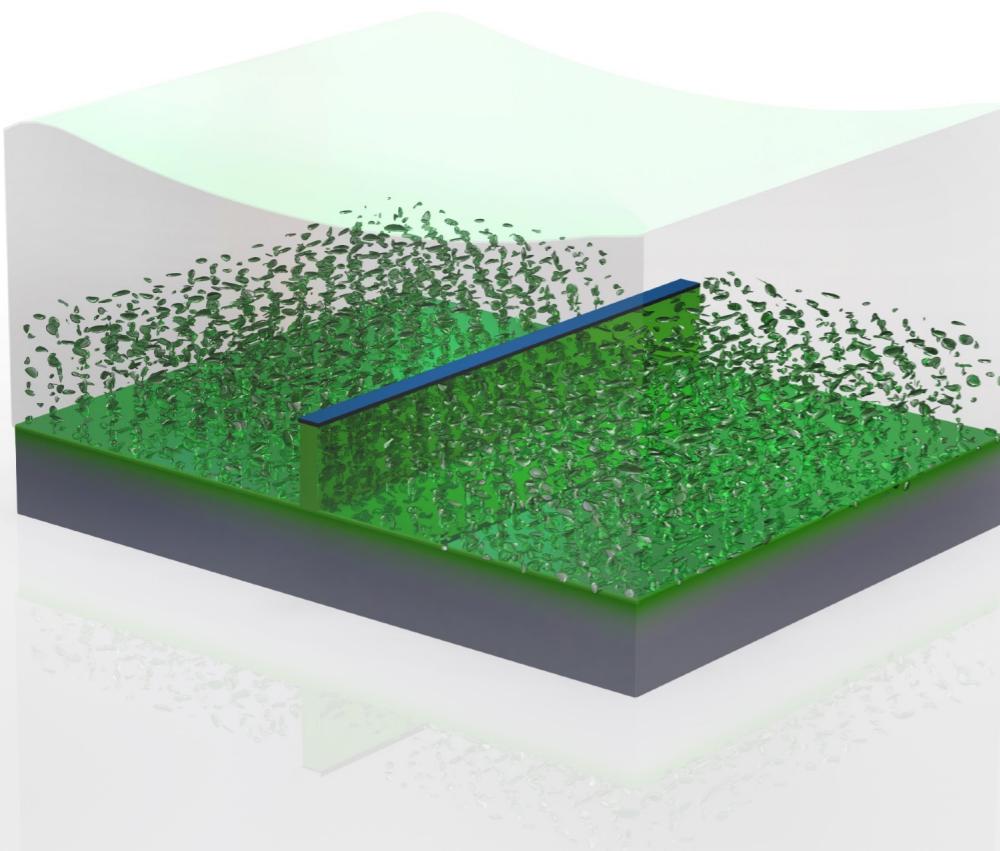
- mit UV-Licht
- der Fotolack löst sich an diesen Stellen
- durch das Lichtsystem darf die Vorlage typischerweise viel mal größer sein

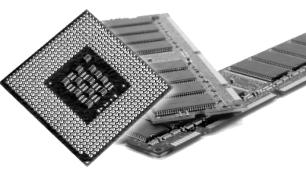




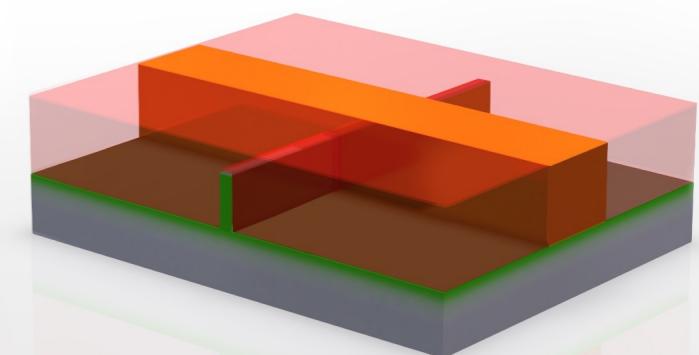
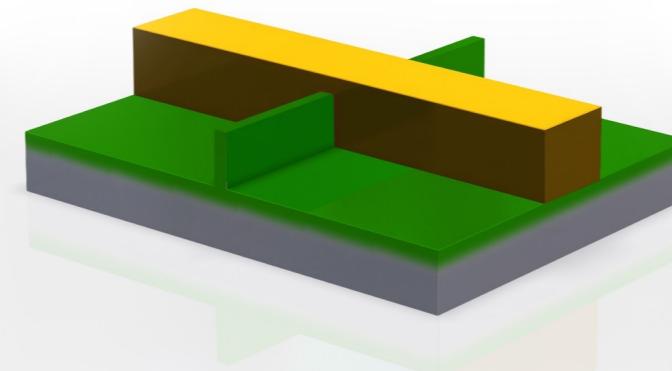
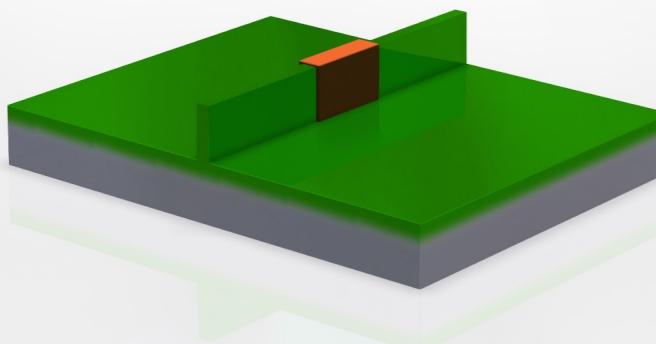
## Etch erstellen (chemisch)

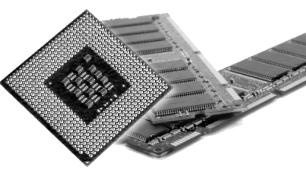
- wieder mit Fotolack die Bereiche schützen



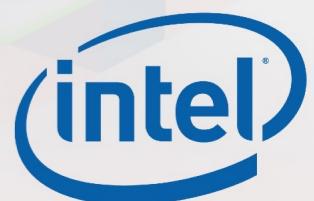
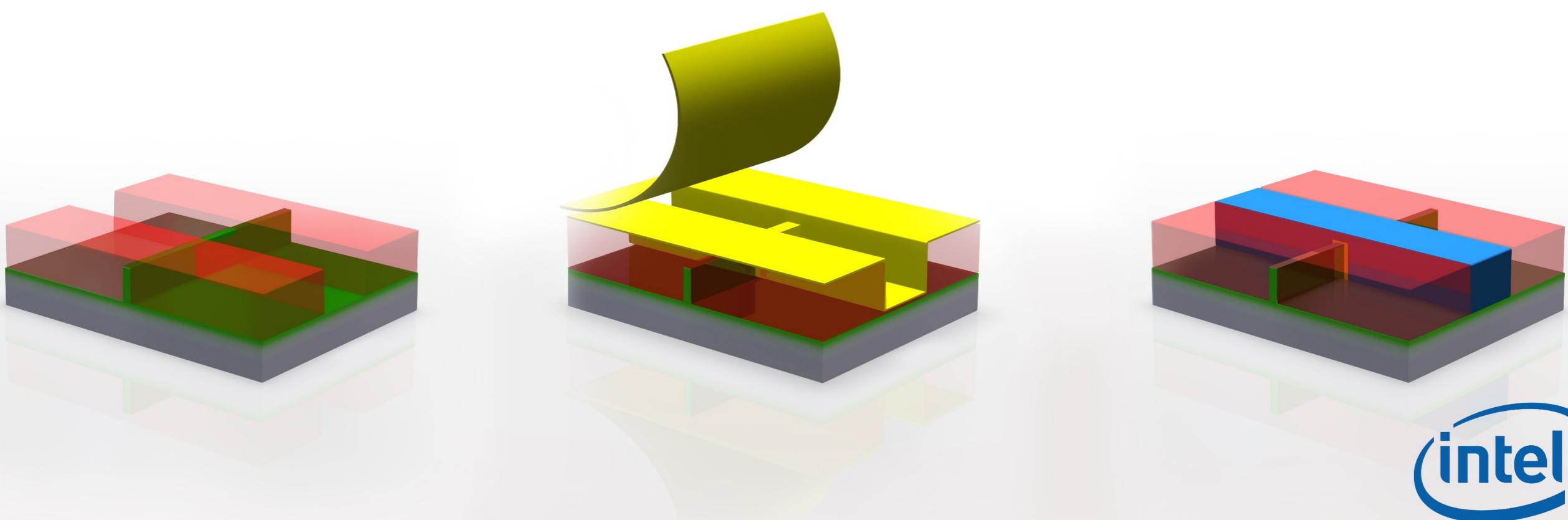


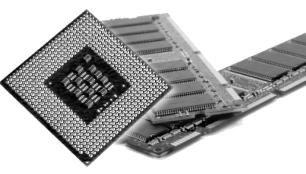
## SI Gate aufbauen



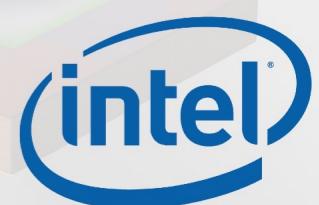
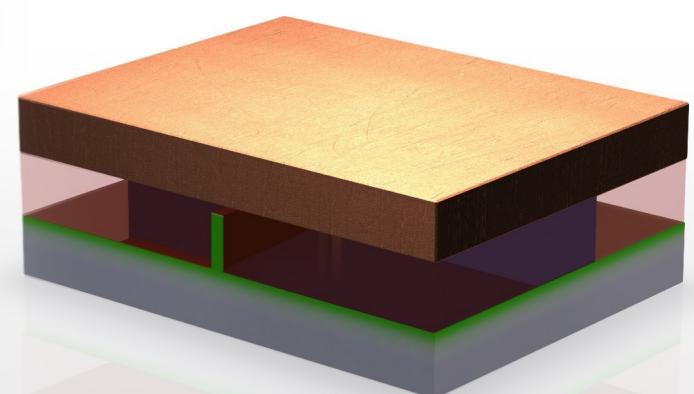
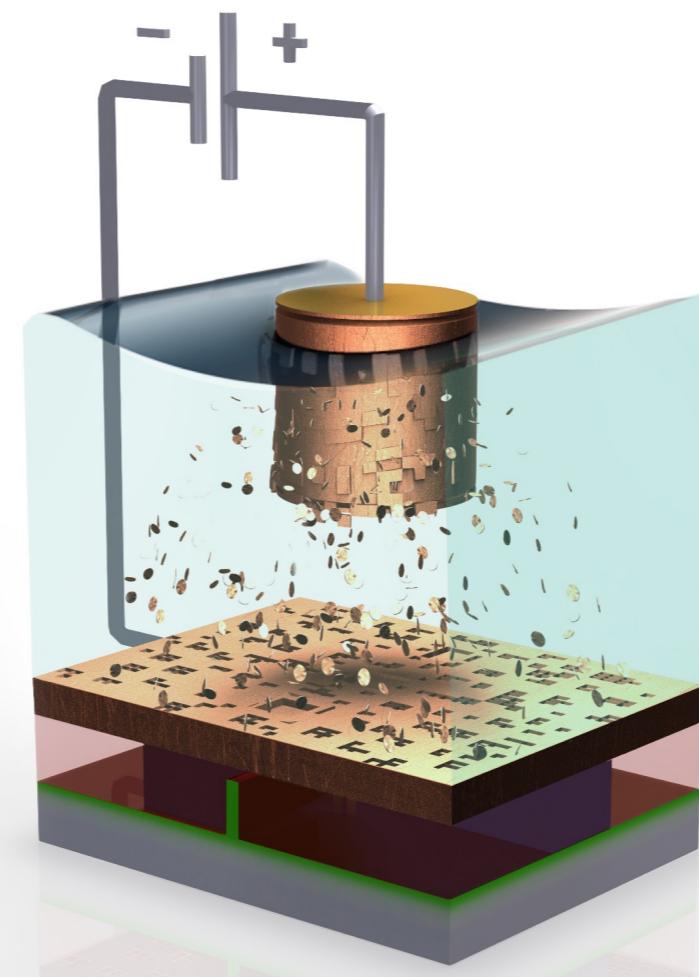
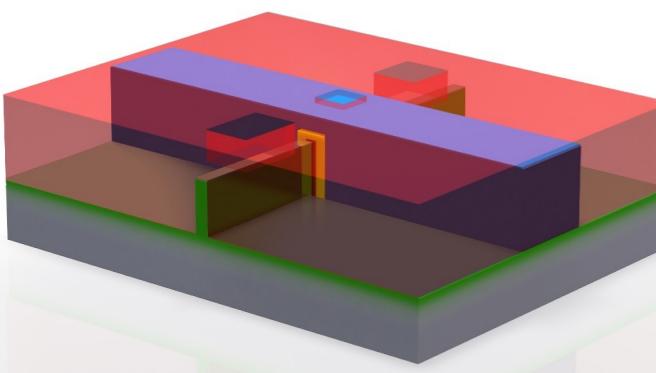


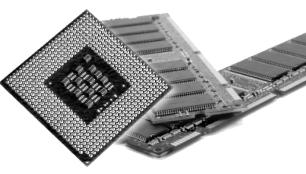
## Metall Gate aufbauen



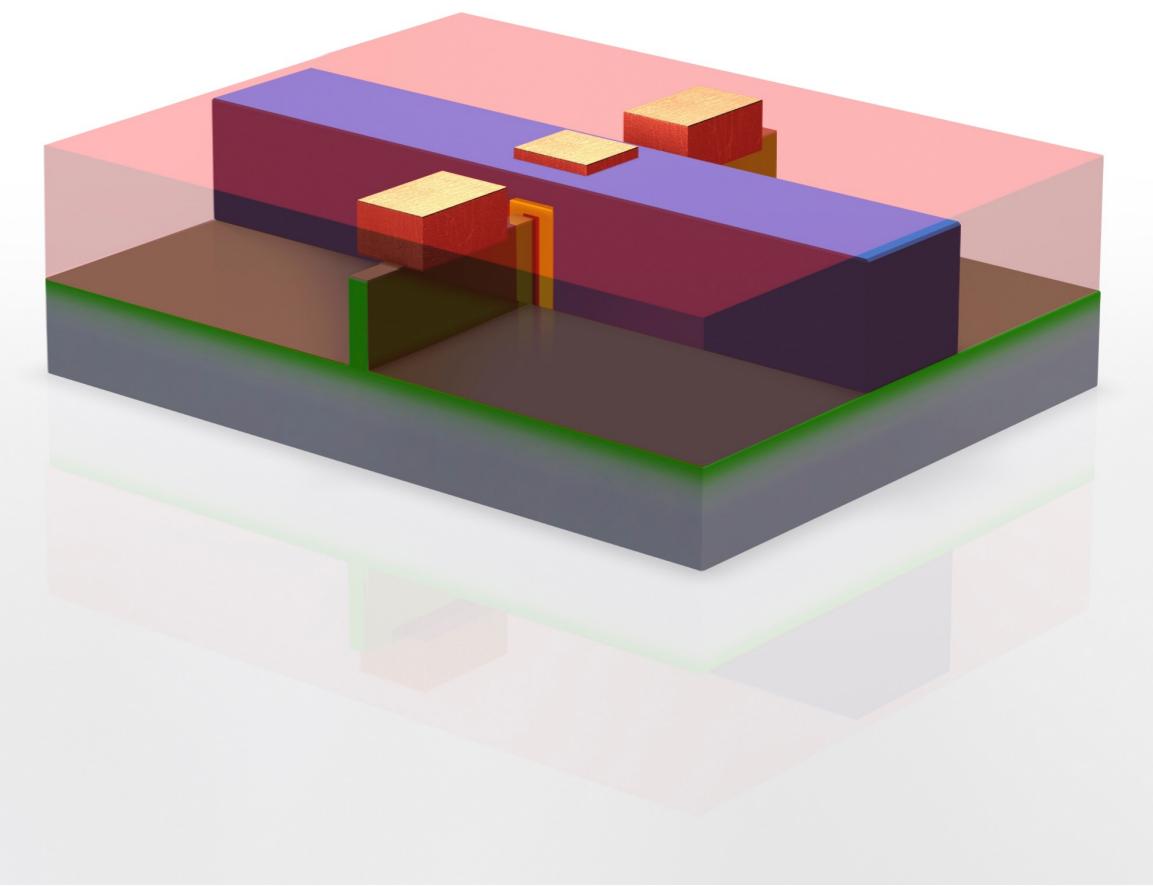
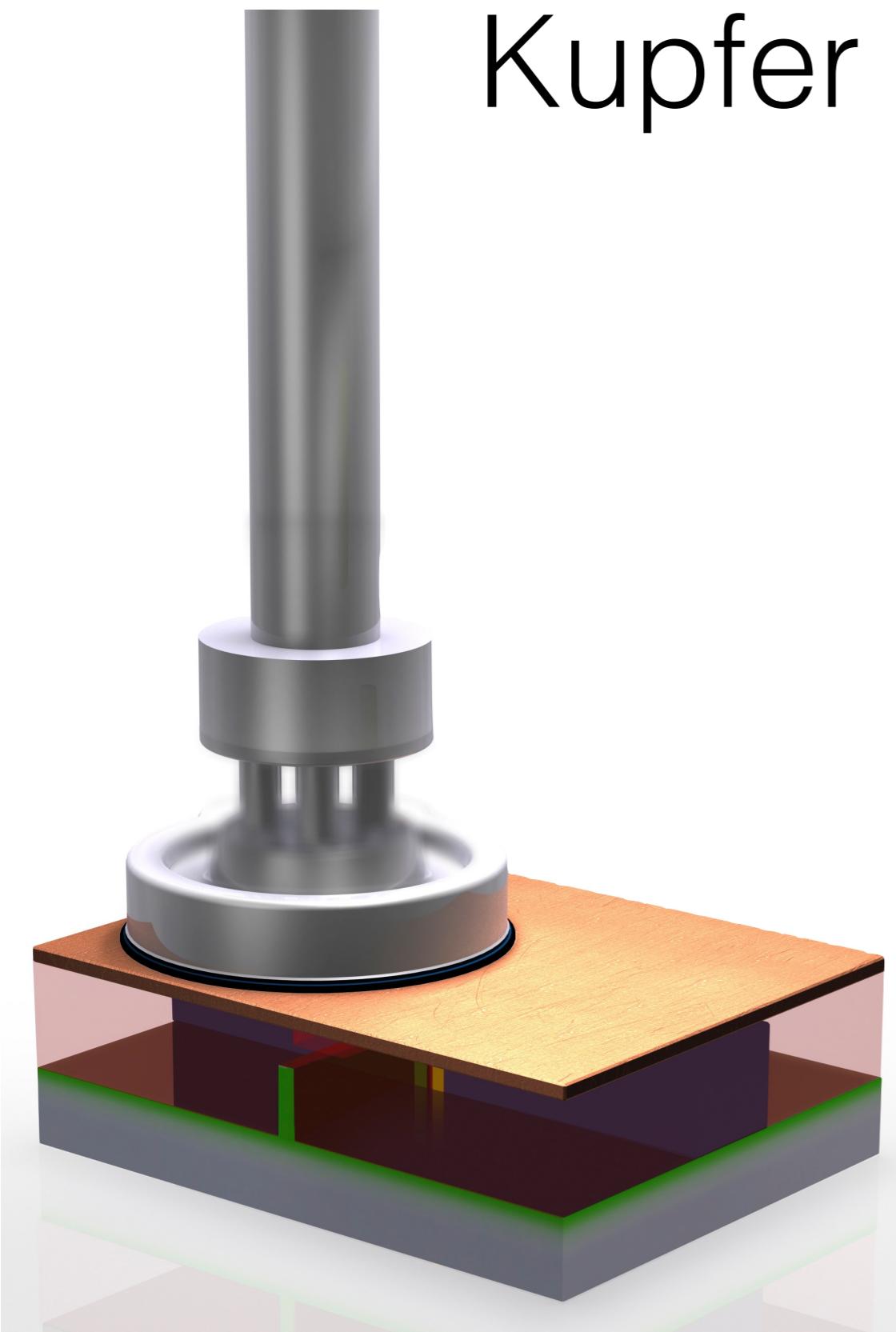


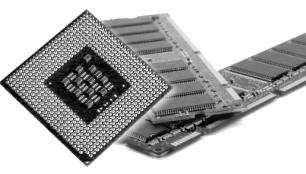
## Kupfer Anschlüsse





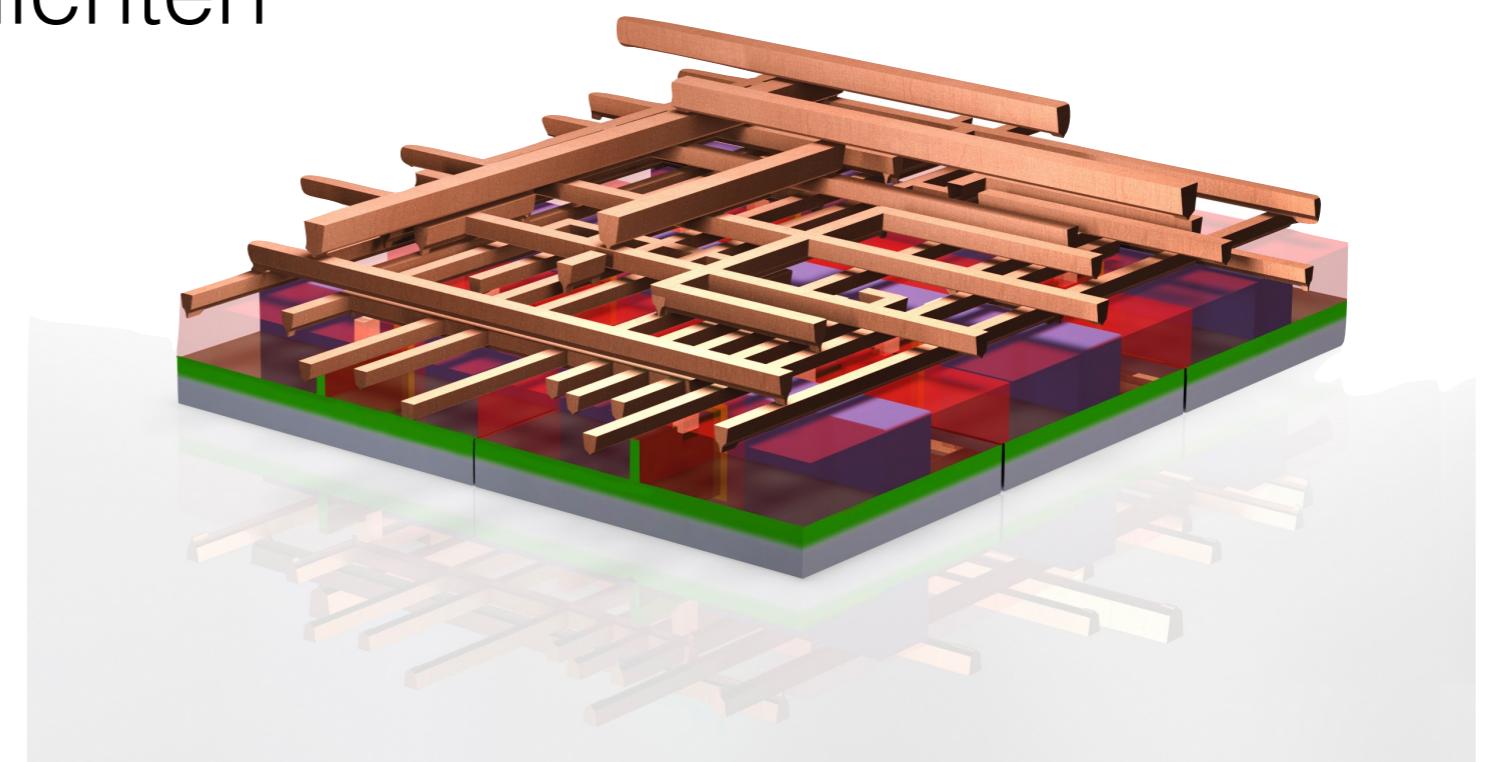
## Kupfer Anschlüsse

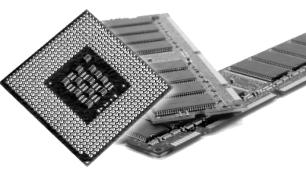




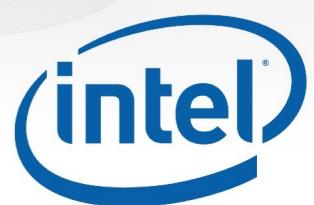
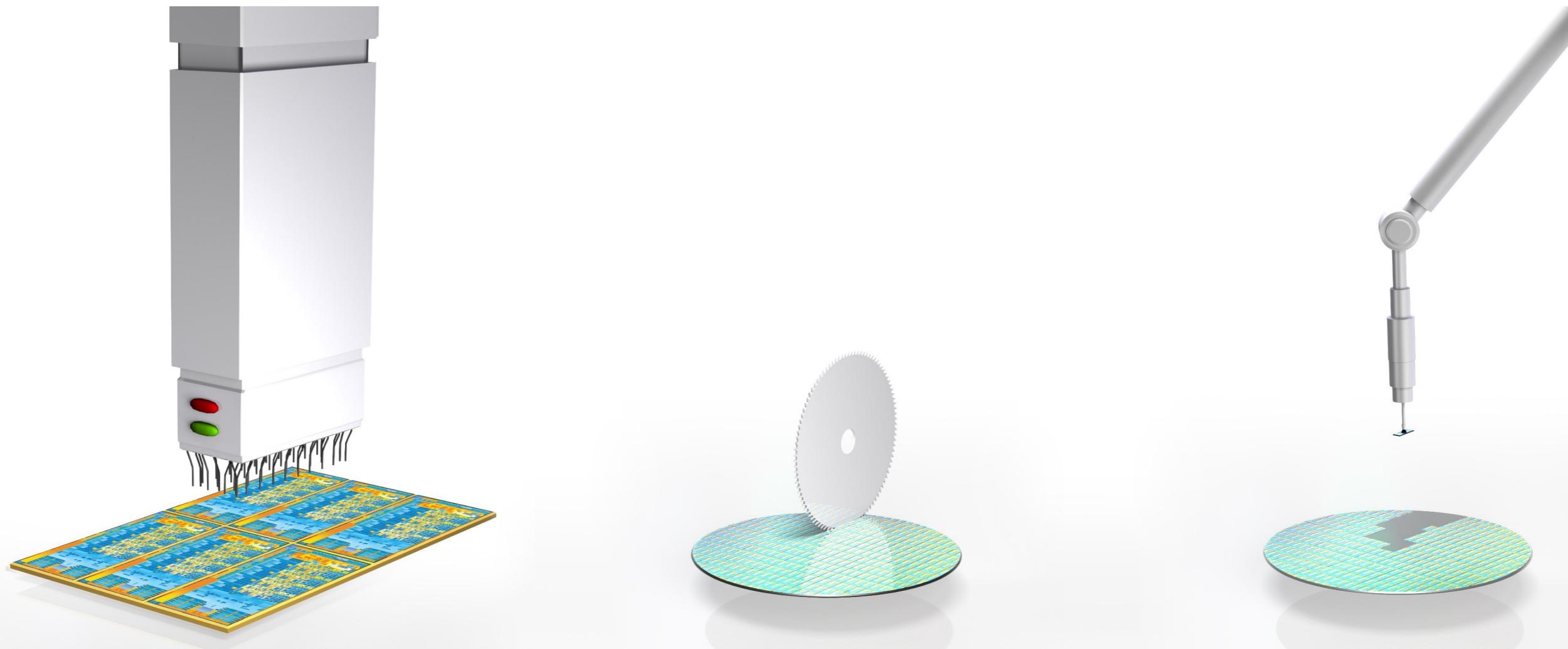
## Leiterbahnen

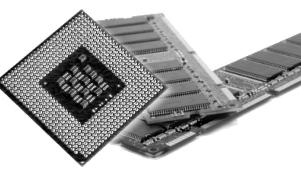
- mehrere metallische Leiterbahnen werden gestapelt, damit die Transistoren untereinander verbunden werden
- meist über 30 Schichten





## Test und in Dies schneiden





## Substrat + Die + Heatspreader

